Compliance Test Report
Haverhill North Coke Company
Facility ID 0773000182

June 2009

Prepared for:

Haverhill Coke Company
2446 Gallia Pike
Franklin Furnace, Ohio 45629

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ACRONYMS

CEM	Continuous Emissions Monitor
CFR	Code of Federal Regulations
CO	Carbon Monoxide
dscf	dry standard cubic feet
EPA	Environmental Protection Agency
HNCC	Haverhill North Coke Company
MACT	Maximum Achievable Control Technology
NOx	Nitrogen Oxides
SO_2	Sulfur Dioxide
TCDD	Tetrachlorodibenzo-p-dioxin
VOC	Volatile Organic Compound

1.0 INTRODUCTION/OVERVIEW

A series of emission tests were performed at Haverhill North Coke Company (HNCC) on April 7-17, to determine initial compliance for the Unit 2 main stack, pushing/charging machine and flat-push hot car. The tests were performed using the methods and procedures listed in the Permit to Install (07-00511) with the modifications described in the Intent To Test Notification submitted March 6, 2009.

The emission limits from the permit are listed in Table 1-1 along with the measured values. The permit also required testing from the main stack for information purposes. The results of these tests are summarized in Table 1-2.

Personnel on-site during the tests included:

- Kris Kinder, Environmental Manager, HNCC;
- Cindy Charles, Ohio EPA, Portsmouth;
- Todd Brown, Ohio EPA, Columbus; and
- Michael Mowery, Source Sampling Manager, URS Corporation.

This report summarizes the test results for each emission unit in Section 2.0 and lists the test methods in Section 3.0. The appendixes contain process data (Appendix A), calculations (Appendixes B, C, and D), analytical reports (Appendix E), calibration information (Appendix F), and a copy of the Intent to Test (Appendix G).

Table 1-1
Compliance Demonstration
Stack Tests at Haverhill North Coke Company Unit 2 (April 7–17, 2009)

Emission Unit Name	Emission Unit Number	Pollutant	Emission Limit	Measured Value	Comply?
Main Stack	P902	Lead	0.060 lb/hour	0.0013 lb/hour	Yes
		PM/PM_{10}[a]	30.69 lb/hour	6.26 lb/hour	Yes
		PM/PM_{10}[a]	0.014 gr/dscf	0.0035 gr/dscf	Yes
		HCl	0.10 lb/ton coal	0.0009 lb/ton coal	Yes
		HCl	12.06 lb/hour	0.086 lb/hour	Yes
		SO_2	192.0 lb/hour	140.2 lb/hour	Yes
		SO_2	1.6 lb/ton coal	1.5 lb/ton coal	Yes
		NO_x	120.0 lb/hour	120.0 lb/hour	Yes
		NO_x	1 lb/ton coal	1.3 lb/ton coal	No
		CO	21.81 lb/hour	1.41 lb/hour	Yes
		CO	20 ppm	1.5 ppm	Yes
		VOC	4.67 lb/hour	0.04 lb/hour	Yes
		VOC	10 ppm	0.08 ppm	Yes
		VE	10% opacity	0% opacity	Yes
Coal Charging	P902	PM/PM_{10}[a]	0.0081 lb/ton dry coal	0.0027 lb/ton dry coal	Yes
		VE	Oven Door - 20% opacity [b]	1.43% avg. opacity	Yes
		VE	PCM Stack - 10% opacity [c]	0.04% avg. opacity	Yes
Coke Pushing	P902	PM/PM_{10}[a]	13.72 lb/hour	7.51 lb/hour	Yes
		PM/PM_{10}[a]	0.04 lb/ton coke	0.04 lb/ton coke	Yes
		SO_2	24 lb/hour	10 lb/hour	Yes
		SO_2	0.05 lb/ton coal	0.05 lb/ton coal	Yes
		NO_x	7.68 lb/hour	0.60 lb/hour	Yes
		NO_x	0.016 lb/ton coal	0.003 lb/ton coal	Yes
		CO	36.96 lb/hour	3.55 lb/hour	Yes
		CO	0.077 lb/ton coal	0.019 lb/ton coal	Yes
		VOC	96.0 lb/hour	0.1 lb/hour	Yes
		VOC	0.2 lb/ton coal	<0.01 lb/ton coal	Yes
		VE	Oven Door – 20% opacity [b]	1.14% avg. opacity	Yes
		VE	Hot Car Stack – 20% opacity [d]	1.53% opacity	Yes

[a] Filterable particulate matter.
[b] Average opacity from 5 consecutive charges.
[c] 6 minute average.
[d] 3 minute average.

CO = Carbon Monoxide
dscf = dry standard cubic foot
HAP = Hazardous Air Pollutant
HCl = Hydrogen Chloride
NO_x = Nitrogen Oxides
PM = Particulate Matter
PM_{10} = Particulate matter less than 10 microns
ppm = parts per million
SO_2 = Sulfur Dioxide
VOC = Volatile Organic Compound
VE = Visible Emission

Table 1-2
Information Test Results
Stack Tests at Haverhill North Coke Company Unit 2 (April 7 and 9, 2009)

Emission Unit		Pollutant	Measured Value
Name	Number		
Main Stack	P902	Dioxins/Furans (TEQ)[a]	2.23E-13 lb/hour
		Mercury	4.84E-04
		Antimony	ND
		Arsenic	3.82E-06
		Barium	ND
		Beryllium	ND
		Cadmium	ND
		Chromium	4.73E-04
		Cobalt	3.82E-06
		Copper	4.35E-05
		Manganese	9.38E-05
		Nickel	3.83E-04
		Phosphorous	ND
		Selenium	1.20E-05
		Silver	1.02E-05
		Thallium	ND
		Zinc	1.98E-04

[a]Toxic equivalent to 2,3,7,8-TCDD.

ND = Not Detectable
TEQ = Toxic Equivalent

2.0 TEST RESULTS

HNCC utilizes the Jewell-Thompson heat recovery oven to manufacture metallurgical coke. In coke production from both heat recovery and byproduct ovens, the volatile fraction of the coal is driven off in a reducing atmosphere. Coke is essentially the remaining carbon and ash. With byproduct ovens, the volatiles and combustion products are collected downstream of the oven chamber and refined in a chemical plant to produce coke oven gas and other products such as tar, ammonia, and light oils. In heat recovery ovens, all the coal volatiles are oxidized.

Heat recovery steam generators recover heat from the oven waste gases. The cooled gases pass through a lime spray dryer/baghouse system prior to being exhausted from the main stack. The oven pushing/charging machine travels on rails between ovens during the production cycle. A traveling hood/baghouse system controls emissions from coal charging that escape the ovens. On the opposite side of the ovens from the pushing/charging machine, coke is pushed into a flat push hot car that travels on rails from the oven to the quench tower. A multicyclone captures and controls emissions from pushing the coke into the car and during travel to the quench tower. A baghouse controls particulate emissions from the coke screening and crushing facilities in the coke processing area.

There are currently 200 ovens at HNCC that operate on a 48-hour coking cycle. There are 100 ovens in Unit 1 and 100 ovens in Unit 2. The operating schedule is arranged such that half of the ovens are charged each day. For example, the 50 even-numbered ovens in Unit 2 are charged one day and the 50 odd-numbered ovens in Unit 2 are charged the next.

Since emissions from the ovens are essentially continuous, testing on the main stack can be performed anytime. At least one set of test runs on the main stack was performed during the production cycle. However, emissions from the charging machine and hot car can only be performed during production. Each production cycle consists of pushing and charging 25 ovens.

2.1 Main Stack

The tests for particulate matter, acid gases, sulfur dioxide (SO_2), nitrogen oxides (NO_x), carbon monoxide (CO), and volatile organic compounds (VOCs) were performed on April 9, 2009. The results are summarized in Table 2-1.

HNCC experienced an unexpected production delay during the main stack tests such that the ovens could not be pushed and charged as usual on the afternoon of April 8. Two complete test runs had been completed for dioxins/furans, mercury, and metals. After discussions with Ohio EPA personnel who were onsite to observe the tests, it was decided to postpone the third tests until after normal production resumed - which occurred after midnight. The third test runs for dioxins/furans, mercury, and metals were performed on April 9 along with the other scheduled tests (hydrogen chloride and halides/halogens, PM/PM10, SO2, NOx, CO, and VOC). The effect of the outage was that, as the ovens had to be operated in a way to return to the typical production schedule, the emission data collected on April 9 represents worst case emissions. All emission limits were met with one exception.

The P902 main stack has two emission limits for NOX - a short term limit of 120.0 lb/hour and an annual limit of 438.0 tons/year. Compliance with the annual limit is based on coal tonnage and an emission factor. The emission factor stated in the PTI is 1 lb NOx/ton coal. The NOx main stack test results are shown in Table 2-1. The measured emission rate was 120.0 lb/hour which demonstrates compliance with the short term limit and current compliance with the annual limit. However, during the test unrepresentative conditions may have existed which resulted in the measured emission factor of 1.3 lb/ton coal. HNCC feels that an evaluation of operating conditions and a recharacterization of the emission factor is warranted to ensure future compliance with the permit limits.

Table 2-1

Main Stack Particulate Matter, Acid Gases, SO_2, NO_x, CO, and VOCs -- Unit 2

	Run 1	Run 2	Run 3	Average
Date	4/9/2009	4/9/2009	4/9/2009	
Test Time	08:09 – 09:17	10:02 - 11:08	11:45 - 12:52	
Average coking rate (tons coal/hour)[a]	92.2	92.2	92.2	92.2
Temperature (°F)	262	262	263	262
Moisture (%)	20.7	20.0	19.8	20.2
O_2 (%)	9.4	9.4	9.6	9.5
CO_2 (%)	7.9	7.6	7.5	7.7
Sample volume (dscf)	44.850	45.954	44.673	45.159
Percent Isokinetic	101.8	99.4	96.6	99.3
Gas Flowrate – ***Based on the average of the OTM-28 and M26A test trains.***				
acfm	370,440	375,166	363,376	369,661
dscfm	210,090	214,985	210,976	212,071
PM/PM_{10} (filterable & condensable)				
Concentration (gr/dscf)	0.0031	0.0033	0.0040	0.0035
Emission rate (lb/hour)	5.64	6.11	7.02	6.26
HCl [b]				
Concentration (ppm)c	< 0.5	< 0.5	< 0.5	< 0.5
Emission rate (lb/hour)	< 1.0	< 1.0	< 1.0	< 1.0
Emission factor (lb/ton coal)	< 0.01	< 0.01	< 0.01	< 0.01
SO_2				
Concentration (ppm)	67.38	63.71	67.73	66.27
Emission rate (lb/hour)	141.33	136.75	142.66	140.25
Emission factor (lb/ton coal)	1.53	1.48	1.55	1.52
NO_x				
Concentration (ppm)	72.64	78.02	86.19	78.95
Emission rate (lb/hour)	109.40	120.25	130.36	120.00
Emission factor (lb/ton coal)	1.19	1.30	1.41	1.30
CO				
Concentration (ppm)	1.88	1.16	1.52	1.52
Emission rate (lb/hour)	1.73	1.09	1.40	1.41
VOC				
Concentration (ppm)	< 1.0	< 1.0	< 1.0	< 1.0
Emission rate (lb/hour)	< 0.5	< 0.5	< 0.5	< 0.5
VE (% opacity)	0	0	0	0

[a] Based on average charge tonnage for April 9, 2009.
[b] No other acid gas compound (hydrogen halide or halogen) detected.
[c] HCL was detected and estimated, but below the method detection limit.

acfm = actual cubic feet per minute
CO = Carbon Monoxide
CO_2 = Carbon Dioxide
dscf = dry standard cubic feet
dscfm = dry standard cubic feet per minute
HCl = Hydrogen Chloride
NO_x = Nitrogen Oxides
O_2 = Oxygen
PM = Particulate Matter
PM_{10} = Particulate matter less than 10 microns
ppm = parts per million
SO_2 = Sulfur Dioxide
VOC = Volatile Organic Compound

The tests for lead and mercury and dioxin/furans were performed on April 7 and 9, 2009. The lead and other metals, except mercury, testing was performed by EPA Method 29. The mercury sampling was performed by ASTM Method D6784-02. All three test runs were originally performed on April 7, 2009. However, test run 3 was withdrawn due to issues with the

Haverhill production. A fourth test run was performed on April 9, 2009 to replace test run 3. The results for the metals are summarized in Tables 2-2 and 2-3. The results for the dioxin/furans are summarized in Table 2-4.

Table 2-2
Main Stack Lead - Unit 2

	Run 1	Run 2	Run 4[a]	Average
Date	4/7/2009	4/7/2009	4/9/2009	
Test Time	9:54 - 13:15	14:41 - 17:54	15:24 - 18:36	
Temperature (°F)	256	259	262	259
Moisture (%)	19.5	20.0	19.4	19.6
O_2 (%)	8.8	8.8	10.3	9.3
CO_2 (%)	8.3	7.8	7.2	7.8
Sample volume (dscf)	81.845	78.981	79.502	80.109
Percent Isokinetic	101.8	99.4	96.6	99.3
Gas Flowrate				
acfm	358,329	358,207	368,321	361,619
dscfm	207,221	204,827	212,170	208,073
Lead				
Concentration (gr/dscf)	1.96E-06	2.47E-07	ND	7.43E-07
Emission rate (lb/hour)	0.003	0.0004	ND	0.0013

[a] Test Run 3 was started on 4/8/09 but was void due to production outage.

acfm = actual cubic feet per minute
CO_2 = Carbon Dioxide
dscf = dry standard cubic feet
dscfm = dry standard cubic feet per minute
ND = Non-detectable
O_2 = Oxygen

Table 2-3
Main Stack Mercury - Unit 2

	Run 1	Run 2	Run 4[a]	Average
Date	4/7/2009	4/7/2009	4/9/2009	
Test Time	9:54 - 13:15	14:41 - 17:54	15:24 - 18:36	
Temperature (°F)	264	265	267	265
Moisture (%)	18.9	19.0	19.5	19.1
O_2 (%)	8.8	8.8	10.3	9.3
CO_2 (%)	8.3	7.8	7.2	7.8
Sample volume (dscf)	69.313	69.033	71.426	69.924
Percent Isokinetic	97.4	100.6	101.0	99.6
Gas Flowrate				
acfm	376,215	363,039	375,776	371,676
dscfm	216,867	208,445	214,772	213,362
Mercury[b]				
Concentration ($\mu g/m^3$)	0.56	1.13	0.15	0.61
Emission rate (lb/hour)	4.55E-04	8.79E-04	1.19E-04	4.84E-04

[a] Test Run 3 was started on 4/8/09 but was void due to production outage.
[b] Based on the combined totals of particle bound, oxidized and elemental mercury.

acfm = actual cubic feet per minute
CO_2 = Carbon Dioxide
dscf = dry standard cubic feet
dscfm = dry standard cubic feet per minute
O_2 = Oxygen
$\mu g/m^3$ = micrograms/cubic meter

Table 2-4
Main Stack Dioxins/Furans - Unit 2

Dioxins/Furans	Run 1	Run 2	Run 3	Average
Date	4/7/2009	4/7/2009	4/7/2009	
Test Time	9:53 - 13:15	14:41 - 17:54	15:24 - 18:36	
Temperature (°F)	257	260	261	260
Moisture (%)	19.3	19.6	19.7	19.5
O_2 (%)	8.8	8.8	10.3	9.3
CO_2 (%)	8.3	7.8	7.2	7.8
Sample volume (dscf)	138.034	133.893	135.287	135.738
Percent Isokinetic	95.9	95.6	98.3	96.6
Gas Flowrate				
acfm	378,639	371,378	364,849	371,622
dscfm	219,103	213,276	209,574	213,985
Total PCDD/Fs (TEQ, pg)	0.115	0.067	0.061	0.081
Dioxin/Furan TEQ (lb/hour) [a]	2.41E-11	1.41E-11	1.25E-11	1.69E-11

[a] Toxic equivalent to 2,3,7,8-TCDD. Sample results similar to field blank and method blank.

acfm = actual cubic feet per minute
CO_2 = Carbon Dioxide
dscf = dry standard cubic foot
dscfm = dry standard cubic feet per minute
O_2 = Oxygen
pg = picagrams
TEQ = Toxic Equivalent

2.2 Charging Machine

The tests for particulate matter were performed on April 15–17, 2009. The results are summarized in Table 2-5. All runs were performed during a production cycle. The tests were performed using the test procedure from the MACT standard for nonrecovery charging in 40 CFR 63, Subpart L. Sampling was only performed while the oven door was open during coal charging. The sample train was turned on while the oven was open, then turned off when the door was closed. The sampling train was operated at one traverse point for the first oven then moved to the next traverse point for the next oven. This was supposed to be repeated until a 24-point traverse was completed and 24 ovens were charged. However, for test runs 1 and 2, sampling was cut short due to Haverhill production equipment problems. The minimum sample volume required was met for both tests, so the velocity traverse was completed on the traverse points not included in the particulate testing in order to determine the actual gas flow from the baghouse. The duration of the test in Table 2-5 represents the total time of the test, while the time sampled is the time the sampler was operated. Emissions were determined using the equation in the MACT standard:

$$Ep = \frac{C \times Q \times T}{P \times K}$$

Where:

Ep (Emission factor) = Process weighted mass emissions of PM, lb/ton;
C = Concentration of PM, grains per dry standard cubic foot (gr/dscf);
Q = Volumetric flow rate of stack gas, dscf/min;
T = Total time during a run that a sample is withdrawn from the stack during charging, min;
P = Total amount of dry coal charged during the test run, tons;
K = Conversion factor, 7,000 grains per pound (gr/lb).

Table 2-5
Charging Baghouse Compliance Test Results - Unit 2

	Run 1	Run 2	Run 3	Average
Date	4/15/2009	4/16/2009	4/17/2009	
Test Time	14:25 - 20:37	15:49 - 18:37	15:26 - 20:02	
Duration of test (minutes)	372	168	276	272
Time sampled (minutes) [a]	169	105	132	
Dry tons coal charged	977.2	603.7	826.9	802.6
Average charging rate (dry tons/hour)	159.6	215.6	179.8	186.5
Temperature (°F)	129	144	159	144
Moisture (%)	1.3	1.5	1.3	1.4
O_2 (%)	21.1	21.2	21.0	21.1
CO_2 (%)	0.0	0.1	0.0	0.0
Sample volume (dscf)	127.667	75.503	97.179	100.116
Gas Flowrate				
acfm	52,657	55,774	52,964	53,798
dscfm	45,743	47,529	44,084	45,786
PM/PM_{10} (filterable)				
Concentration during charging (gr/dscf)	0.0023	0.0021	0.0029	0.0025
Emission factor (lb/dry ton coal) [b]	0.0026	0.0025	0.0030	0.0027
Average emission rate (lb/hour) [c]	0.40	0.54	0.53	0.49
VE				
Oven Doors (% opacity)	1.20	1.70	1.40	1.43
PCM Baghouse Stack (% opacity)	0.00	0.04	0.07	0.04
PCM Baghouse				
Fan Amps	143.5	143.1	140.5	142.4
Pressure Reading	4.2	4.2	4.1	4.2

[a] Sampler only operated during charging.
[b] Time weighted emission rate, PMR = (Tons of coal charged / Total Charging Time) × Mass Rate, lb/ton process weighted.
[c] Time weighted emission rate, PMR = (Average Emission Rate Over Test = EF x Average Charging Rate)

acfm = actual cubic feet per minute
CO_2 = Carbon Dioxide
dscf = dry standard cubic foot
dscfm = dry standard cubic feet per minute
O_2 = Oxygen
PM = Particulate Matter
PM_{10} = Particulate matter less than 10 microns

2.3 Hot Car

The tests for particulate matter, lead, SO_2, NO_x, CO, and VOCs were performed on April 15–17, 2009. The results are summarized in Table 2-6. All runs were performed during a production cycle. The tests were performed using the test procedure for pushing from the MACT standard (40 CFR 63, Subpart CCCCC), which requires that testing only be performed while pushing is actually occurring and the fan and control device are engaged. Since the standard is for a mobile control device that captures emissions during travel, the sampling train was started as coke was being pushed into the hot car and stopped as the coke was pushed into the quench tower. This was repeated for each oven pushed during each test run.

Table 2-6
Pushing Hot Car Compliance Test Results - Unit 2

	Run 1	Run 2	Run 3	Average
Date	4/15/2009	4/16/2009	4/17/2009	
Test Time	14:26 - 20:37	15:48 - 18:37	15:27 - 20:04	
Duration of test (minutes)	372	168	276	272
Time sampled (minutes) [a]	151	70	105.7	108.9
Wet tons coke pushed	750.4	464.1	624.4	613.0
Average pushing rate (wet tons coke/hour)	121.4	164.6	135.2	140.4
Average charging rate (wet tons coal/hour)	173.4	235.4	194.9	201.2
Wet tons coal charged (total tons)	1072	663	900	878.3
Temperature (°F)	382	396	442	407
Moisture (%)	2.1	2.3	2.0	2.2
O_2 (%)	19.7	19.3	18.8	19.2
CO_2 (%)	2.1	1.9	2.3	2.1
Sample volume (dscf)	85.866	34.939	63.916	61.574
Gas flowrate				
acfm	46,849	46,045	42,969	45,288
dscfm	28,261	27,576	24,042	26,626
PM/PM_{10} (filterable)				
Concentration during pushing (gr/dscf)	0.059	0.0295	0.053	0.061
Emission factor (lb/ton coke pushed) [b]	0.0478	0.0424	0.0306	0.0403
Average emission rate (lb/hour) [c]	5.80	6.98	4.14	5.64
Lead				
Concentration during pushing (gr/dscf)	3.50E-5	5.79E-5	6.13E-5	5.14E-5
Emission factor (lb/ton coal) [d]	2.85E-5	3.44E-5	3.57E-5	3.28E-5
Average emission rate (lb/hour) [c]	0.0045	0.0074	0.0064	0.0061
SO_2				
Concentration during pushing (ppm)	110.1	84.41	71.47	91.95
Emission factor (lb/ton coal) [d]	0.08	0.04	0.04	0.05
Average emission rate (lb/hour) [e]	13.77	9.65	6.55	9.99
NO_x				
Concentration during pushing (ppm)	7.20	6.58	9.45	7.74
Emission factor (lb/ton coal) [d]	0.004	0.003	0.004	0.003
Average emission rate (lb/hour) [e]	0.59	0.59	0.63	0.60

CO				
Concentration during pushing (ppm)	82.00	67.12	78.59	75.90
Emission factor (lb/ton coal) [d]	0.025	0.016	0.018	0.019
Average emission rate (lb/hour) [e]	4.13	3.35	3.16	3.55
VOC				
Concentration during pushing (ppm)	1.28	1.50	2.13	1.64
Emission factor (lb/ton coal) [d]	0.0006	0.0005	0.0009	0.0006
Average emission rate (lb/hour) [e]	0.098	0.098	0.158	0.118
VE				
Oven Doors (% opacity)	0.47	2.14	0.82	1.14
Hot Car Multiclone Stack (% opacity)	1.87	1.70	1.02	1.53
Multiclone				
Fan Amps	71.6	65.7	63.4	66.9
Pressure	7.6	7.2	4.6	6.5

[a] Sampler only operated during pushing.
[b] Equation from MACT standard, EF = (Gas flowrate x Concentration × Time Sampled)/(Tons Coal Charged × 7,000).
[c] Average emission rate over test = EF × Average Pushing Rate.
[d] Equation from MACT standard, EF = (Gas flowrate × Concentration × Time Sampled)/(Tons Coal Charged × 7,000).
[e] Time weighted emission rate, PMR = (Tons of coal charged / Total Charging Time) × Mass Rate, lb/ton process weighted.

acfm	=	actual cubic feet per minute	O_2	=	Oxygen
CO	=	Carbon Monoxide	PM	=	Particulate Matter
CO_2	=	Carbon Dioxide	PM_{10}	=	Particulate matter less than 10 microns
dscf	=	dry standard cubic foot	ppm	=	parts per million
dscfm	=	dry standard cubic feet per minute	SO_2	=	Sulfur Dioxide
NO_x	=	Nitrogen Oxides	VOC	=	Volatile Organic Compound

The hot car is a "one of a kind" device, designed for the heat recovery coking technology. It was designed specifically for this process and presents several challenges for testing. The testing was performed, as agreed with Ohio EPA prior to the tests, with modifications to standard methods. The modifications were:

- The stack was extended enough to meet the 2.0 diameter upstream from where the stack attaches to the fan to the ports and 0.5 diameter downstream criteria from the ports to the top of the stack.
- For safety reasons, it was not possible to traverse the stack during the test. Sampling was performed at a single representative point during a test run, and each run was performed at a different point within the stack.
- A complete velocity traverse was performed with the car parked, before the production cycle started. Since the fan speed is constant, comparing the actual flow from the initial traverse with the actual flow during the tests should indicate whether the sampling procedure provided a reasonable indicator of gas flow.
- A cyclonic flow check was performed along with the initial velocity traverse. The absolute average rotation to obtain the "null" reading by the procedure in EPA Method 1 was 1.2 degrees compared to the allowed value of 20 degrees.
- It was not possible to safely mount a continuous emissions monitor (CEM) probe on the stack to measure SO_2, NO_x, CO, and VOCs. Gas samples were collected in Tedlar bags in the same way as the particulate samples. That is, the bags were filled as coke being pushed into the hot car and stopped as the coke was pushed into the quench tower. Two bag samples were collected per run. The bags were taken to the CEM trailer and analyzed on-site at the conclusion of the test run.

The duration of the test in Table 2-6 represents the total time of the test, while the time sampled is the time the sampler was operated. Particulate and lead were measured in a combined train, and emissions were determined using the equation in the MACT standard:

$$Ep = \frac{C \times Q \times T}{P \times K}$$

Where:

Ep = Process weighted mass emissions of particulate matter, lb/ton;
C = Concentration of particulate matter, gr/dscf;
Q = Volumetric flow rate of stack gas, dscf/min;
T = Total time during a run that a sample is withdrawn from the stack during pushing, min;
P = Total amount of coke pushed during the test run, tons;
K = Conversion factor, 7,000 gr/lb.

Average emissions during the production cycle were determined as follows:

Average emission rate (lb/hour) = Emission factor (lb/ton) x average pushing rate (tons/hour)

Emissions of SO_2, NO_x, CO, and VOCs were determined using a similar procedure except that the measured concentration was in units of ppm, which was converted to lb/dscf, and the production units were tons coal charged.

3.0 TEST METHODS

The sampling methods used during the tests are summarized in Table 3-1.

Table 3-1
Test Method Summary

Emission Unit	Pollutant	Test Method	Comment
Main Stack - P902	Particulate Solid and Condensable	EPA Method OTM-28	Solid PM determined by EPA Method 5. Condensable PM determined by OTM-28.
	Acid Gases	EPA Method 26A	
	SO_2	EPA Method 6C	
	NO_x	EPA Method 7E	
	CO	EPA Method 10	
	VOC	EPA Method 25A	Referenced to carbon
	Lead and mercury	EPA Method 29	
	Dioxins/furans	EPA Method 23	
	Traverse point layout	EPA Method 1	
	Gas flowrate	EPA Method 2	
	Gas molecular weight	EPA Method 3	
	Moisture	EPA Method 4	
Charging Baghouse - P902	Particulates	EPA Method 5	Sample per MACT standard – only during coal charging.
	Traverse point layout	EPA Method 1	
	Gas flowrate	EPA Method 2	
	Gas molecular weight	EPA Method 3	
	Moisture	EPA Method 4	
Pushing Multicyclone - P902	Particulate and Lead	Modified EPA Method 5/12	Sample at single representative point. Sample per MACT standard - only during push and travel to quench tower.
	SO_2	Modified EPA Method 6C	Bag samples. Fill only during push and travel to quench tower.
	NO_x	Modified EPA Method 7E	Bag samples. Fill only during push and travel to quench tower.
	CO	Modified EPA Method 10	Bag samples. Fill only during push and travel to quench tower.
	VOC	Modified EPA Method 25A	Bag samples. Fill only during push and travel to quench tower.
	Traverse point layout	EPA Method 1	Perform complete velocity traverse while unit is stationary.
	Gas flowrate	EPA Method 2	
	Gas molecular weight	EPA Method 3	
	Moisture	EPA Method 4	

CO = Carbon Monoxide
EPA = U.S. Environmental Protection Agency
MACT = Maximum Achievable Control Technology
NO_x = Nitrogen Oxides
SO_2 = Sulfur Dioxide
VOC = Volatile Organic Compound

Appendix A

HAVERHILL UNIT 2
PROCESS DATA

Coal Data
4/5-17/09

Charge Date	Phase 2 Wet Coal Tons	Coal Moisture	Coal Sulphur
4/5/2009	2,254.09	8.61	0.89
4/6/2009	2,257.85	8.10	0.91
4/7/2009	2,241.51	8.69	0.93
4/8/2009	1,107.55	8.27	0.95
4/9/2009	2,213.17	7.85	0.89
4/10/2009	2,303.30	8.24	0.90
4/11/2009	2,184.60	8.25	0.90
4/12/2009	2,293.73	8.43	0.93
4/13/2009	2,057.09	8.02	0.87
4/14/2009	1,850.18	8.96	0.96
4/15/2009	1,342.82	8.84	0.88
4/16/2009	1,878.27	8.94	0.89
4/17/2009	2,373.25	8.12	0.89

Pushing Report
4/15-17/09

Production During Charging and Pushing Compliance Tests
Haverhill North Coke Company - Unit 2 - April 15-17, 2009

Test Run	Date	Approx. Time	Oven Charged /Pushed	Coal Charged (wet tons)	Coal moisture (%)	Coal Charged (dry tons)	Previous Coal Charge (wet tons)	Coke Pushed [A] (wet tons)	Pressure Reading	Fan Amps
1	4/15/2009	14:26	104	45	8.84	41.0	45	31.5	3.8	133.0
		14:41	108	45		41.0	45	31.5	4.1	133.0
		15:40	112	45		41.0	45	31.5	4.2	145.0
		15:50	116	45		41.0	45	31.5	4.2	142.0
		16:01	120	45		41.0	45	31.5	4.2	144.0
		16:16	124	45		41.0	45	31.5	4.4	144.5
		16:25	128	43		39.2	43	30.1	4.2	144.9
		16:38	132	43		39.2	43	30.1	4.5	145.0
		16:48	136	43		39.2	43	30.1	4.6	146.9
		17:00	140	43		39.2	43	30.1	4.5	145.6
		17:10	144	45		41.0	45	31.5	4.3	144.3
		17:21	148	45		41.0	45	31.5	3.9	144.3
		17:33	152	45		41.0	45	31.5	3.9	144.6
		17:46	156	45		41.0	45	31.5	3.9	144.5
		17:58	160	45		41.0	45	31.5	4.1	149.4
		18:24	164	45		41.0	45	31.5	4.0	143.1
		18:36	168	45		41.0	45	31.5	4.1	145.0
		18:48	172	45		41.0	45	31.5	4.2	144.2
		19:03	176	45		41.0	45	31.5	4.2	143.5
		19:16	180	45		41.0	45	31.5	4.3	142.7
		19:30	184	45		41.0	45	31.5	4.3	143.2
		19:44	188	45		41.0	45	31.5	4.4	143.2
		19:58	192	45		41.0	45	31.5	4.4	144.3
		20:31	196	45		41.0	45	31.5	3.9	144.5
									Average	
	Total for run		24	1072		977.2		750.4	4.2	143.5

Test Run	Date	Approx. Time	Oven Charged /Pushed	Coal Charged (wet tons)	Coal moisture (%)	Coal Charged (dry tons)	Previous Coal Charge (wet tons)	Coke Pushed [A] (wet tons)	Pressure Reading	Fan Amps
2	4/16/2009	15:49	103	45	8.94	41.0	45	31.5	3.7	142.0
		16:00	107	45		41.0	45	31.5	3.9	142.0
		16:09	111	45		41.0	45	31.5	3.9	144.1
		16:18	115	45		41.0	45	31.5	4.1	143.0
		16:41	119	43		39.2	43	30.1	4.2	142.6
		16:52	123	43		39.2	43	30.1	4.1	142.9
		17:03	127	43		39.2	43	30.1	4.4	142.9
		17:12	131	43		39.2	43	30.1	4.5	144.5
		17:23	135	43		39.2	43	30.1	4.5	143.1
		17:33	139	43		39.2	43	30.1	4.5	144.3
		17:43	143	45		41.0	45	31.5	4.6	143.9
		17:56	147	45		41.0	45	31.5	4.5	143.3
		18:07	151	45		41.0	45	31.5	4.0	142.5
		18:18	155	45		41.0	45	31.5	3.9	142.3
		18:32	159	45		41.0	45	31.5	4.0	143.6
									Average	
	Total for run		15	663		603.7		464.1	4.2	143.1

Test Run	Date	Approx. Time	Oven Charged /Pushed	Coal Charged (wet tons)	Coal moisture (%)	Coal Charged (dry tons)	Previous Coal Charge (wet tons)	Coke Pushed [A] (wet tons)	Pressure Reading	Fan Amps
3	4/17/2009	15:27	104	45	8.12	41.3	45	31.5	3.6	141.0
		16:11	108	45		41.3	45	31.5	3.9	141.6
		16:25	112	45		41.3	45	31.5	4.0	139.8
		16:35	116	45		41.3	45	31.5	4.1	140.4
		16:46	120	45		41.3	45	31.5	4.2	138.9
		16:58	124	45		41.3	45	31.5	4.3	141.7
		17:08	128	45		41.3	43	30.1	4.3	139.4
		17:18	132	45		41.3	43	30.1	4.3	141.9
		17:28	136	45		41.3	43	30.1	4.4	140.2
		17:38	140	45		41.3	43	30.1	4.4	141.0
		17:49	144	45		41.3	45	31.5	4.5	139.6
		18:05	148	45		41.3	45	31.5	3.9	139.8
		18:18	152	45		41.3	45	31.5	3.8	141.4
		18:28	156	45		41.3	45	31.5	3.8	139.9
		18:41	160	45		41.3	45	31.5	3.9	141.6
		18:59	164	45		41.3	45	31.5	3.7	139.6
		19:13	168	45		41.3	45	31.5	3.8	138.7
		19:27	172	45		41.3	45	31.5	4.0	141.2
		19:43	176	45		41.3	45	31.5	4.1	140.5
		19:58	180	45		41.3	45	31.5	4.2	142.1
									Average	
	Total for run		20	900		826.9		624.4	4.1	140.5

[A] 70% run of oven coke yield (wet)
[Basis - 65% wet furnace coke yield plus historical breeze estimate of 100 tons/day]

HNCC PUSHING REPORT

DATE: 04/15/09

MITTAL

OPERATOR INITIALS NB/BC AS

OVEN	PREV TIME	PREV Weight	DATE	CHG TIME	AM/PM CIRCLE	DATE	TONS GHG	OVEN INSP	DOOR/LINTEL DAMAGE	DOOR FIRE - PUSHER SIDE: DOOR OBS.	DOOR FIRE	Cor. Act. & Fire Out T.	PCM Pressure Readings: Pressure Reading	Fan Amp Reading	Corrective Action Required	Operator's / Maintenance Comments
104	650 am	45	4/13	2:26	AM/PM	4-15	45	Y // N	door // lintel	Y // N	Y // N		3.8	133	Y // N	
108	701	45	4/13	2:41	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N		4.1	133	Y // N	
112	713	45	4/13	3:40	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N		4.2	145	Y // N	Quench car Prax.
116	723	45	4/13	3:50	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N		4.2	142	Y // N	
120	732	45	4/13	10:01	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N		4.2	144.	Y // N	
124	743	43	4/13	10:10	AM/PM	"	[illegible]	Y // N	door // lintel	Y // N	Y // N		4.4	144.5	Y // N	Had to show when to take Readings
128	752	43	4/13	10:20	AM/PM	"	43	Y // N	door // lintel	Y // N	Y // N		4.2	144.9	Y // N	
132	803	43	4/13	10:35	AM/PM	"	43	Y // N	door // lintel	Y // N	Y // N		4.5	145	Y // N	Door Machine
136	815	43	4/13	10:45	AM/PM	"	43	Y // N	door // lintel	Y // N	Y // N		4.6	146.9	Y // N	
140	911	43	4/13	11:00	AM/PM	"	43	Y // N	door // lintel	Y // N	Y // N		4.5	145.6	Y // N	
144	828	45	4/13	11:10	AM/PM	"	45	Y // N	door // lintel	Y // N	Y // N		4.3	144.8	Y // N	
148	839	45	4/13	11:21	AM/PM	"		Y // N	door // lintel	Y // N	Y // N		3.9	144.3	Y // N	
152	849	45	4/13	11:33	AM/PM	"		Y // N	door // lintel	Y // N	Y // N		3.9	144.6	Y // N	
156	900	45	4/13	11:40	AM/PM	"		Y // N	door // lintel	Y // N	Y // N		3.9	144.5	Y // N	
160	922	45	4/13	11:53	AM/PM	"		Y // N	door // lintel	Y // N	Y // N		4.1	149.4	Y // N	
164	945	45	4/13	18:24	AM/PM	4-15	45	Y // N	door // lintel	Y // N	Y // N		4.0	143.1	Y // N	
168	956	45	4/13	18:30	AM/PM			Y // N	door // lintel	Y // N	Y // N		4.1	145.0	Y // N	
172	1008	45	4/13	18:40	AM/PM			Y // N	door // lintel	Y // N	Y // N		4.3	146.0	Y // N	
176	1021	45	4/13	19:03	AM/PM			Y // N	door // lintel	Y // N	Y // N		4.2	145.5	Y // N	
180	913 am	45	4/11	10:10	AM/PM			Y // N	door // lintel	Y // N	Y // N		4.3	142.7	Y // N	
184	1034	45	4/13	19:31	AM/PM			Y // N	door // lintel	Y // N	Y // N		4.3	143.2	Y // N	
188	1047	45	4/13	19:44	AM/PM			Y // N	door // lintel	Y // N	Y // N		4.4	143.2	Y // N	
192	1101	45	4/13	19:58	AM/PM			Y // N	door // lintel	Y // N	Y // N		4.4	144.3	Y // N	
196	1114	45	4/13	20:31	AM/PM			Y // N	door // lintel	Y // N	Y // N		3.9	144.5	Y // N	Quench Car
200	1128	45	4/13	20:41	AM/PM			Y // N	door // lintel	Y // N	Y // N		3.7	145.2	Y // N	Hot car [illegible] Coke

PCM Pressure Readings

Tons Charged: 45/43

Shift	Hours	Initials
1		
2		
3		
4		
5		

	PCM	D/M	HOT CAR
Charged Fire Ext.	YES-NO	YES-NO	YES-NO
Hydraulic Oil Spill	YES-NO	YES-NO	YES-NO
Windows Good Condition.	YES-NO	YES-NO	YES-NO
Doors Good Condition.	YES-NO	YES-NO	YES-NO

Door fire correction step list

1) Tighten door
2) Place K-Wool
3) Open uptake
4) Check blocks
5) Verify up take setting
6) Raise draft
7) Close SF 50%
8) Reduce door holes
9) Open EVS

Must be in the required range of 3.0 to 12.0

If the reading isn't within the required range. Notify maintenance and the Turn Manager immediately. Write in the corrective actions taken t bring the pressure readings back into the EPA range.

Pressure Readings are to be recorded Once Per 8 Hour Shift / Every turn

Fan Amps are to be recorded Once Per 8 Hour Shift / Every Turn

~83 min

HNCC PUSHING REPORT
DATE: 04/16/09

SEVERSTAL

OPERATORS INITIALS [illegible] / DU

OVEN	PREV TIME	PREV WEIGHT	DATE	CHG TIME	AM/PM CIRCLE	DATE	TONS CHG	OVEN INSP	DOOR/LINTEL DAMAGE	DOOR FIRE - PUSHER SIDE: DOOR OBS.	DOOR FIRE - PUSHER SIDE: DOOR FIRE	DOOR FIRE - PUSHER SIDE: Cor. Act. & Fire Out T.	PCM Pressure Readings: Pressure Reading	PCM Pressure Readings: Fan Amp Reading	PCM Pressure Readings: Corrective Action Required	Operator's / Maintenance Comments
103	703am	45	4/14	15:49	AM/PM	4/16	45	Y // N	door // lintel	Y // N	Y // N		3.7	142	Y // N	
107	712	45	4/14	16:10	AM/PM	"		Y // N	door // lintel	Y // N	Y // N		3.9	142	Y // N	
111	721	45	4/14	16:29	AM/PM	"		Y // N	door // lintel	Y // N	Y // N		3.9	144.1	Y // N	
115	730	45	4/14	16:18	AM/PM	"		Y // N	door // lintel	Y // N	Y // N		4.1	143.0	Y // N	
119	739	45	4/14	16:41	AM/PM	"		Y // N	door // lintel	Y // N	Y // N		4.2	142.6	Y // N	No Crane Pressure fuse Blown
123	749	43	4/14	16:58	AM/PM	"	43	Y // N	door // lintel	Y // N	Y // N		4.1	142.9	Y // N	
127	802	43	4/14	17:03	AM/PM	"	43	Y // N	door // lintel	Y // N	Y // N		4.4	142.9	Y // N	
131	812	43	4/14	17:12	AM/PM	"	43	Y // N	door // lintel	Y // N	Y // N		4.5	144.5	Y // N	
135	822	43	4/14	17:23	AM/PM	"	43	Y // N	door // lintel	Y // N	Y // N		4.3	143.1	Y // N	
139	833	43	4/14	17:32	AM/PM	"	43	Y // N	door // lintel	Y // N	Y // N		4.5	144.3	Y // N	
143	843	45	4/14	17:43	AM/PM	"	45	Y // N	door // lintel	Y // N	Y // N		4.6	143.9	Y // N	
147	855	45	4/14	17:56	AM/PM	"		Y // N	door // lintel	Y // N	Y // N		4.5	143.3	Y // N	
151	906	45	4/14	18:07	AM/PM	"		Y // N	door // lintel	Y // N	Y // N		4.0	142.5	Y // N	
155	917	45	4/14	18:18	AM/PM	"		Y // N	door // lintel	Y // N	Y // N		3.9	142.3	Y // N	
159	935	45	4/14	18:32	AM/PM	"		Y // N	door // lintel	Y // N	Y // N		4.0	143.6	Y // N	
163	959	45	4/14	23:33	AM/PM	"	45	Y // N	door // lintel	Y // N	Y // N				Y // N	Hot Car Alarm / Punch / Hot Car
167	1013	45	4/14	23:41	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
171	1026	45	4/14	12:15	AM/PM	4/17	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
175	1039	45	4/14	12:41	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	Tripper belt fault
179	1052	45	4/14	12:56	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
183	1107	45	4/14	1:09	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
187	1120	45	4/14	1:24	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
191	1134	45	4/14	1:37	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
195	1148	45	4/14	1:52	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
199	138pm	45	4/14	2:07	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	

Key			14-Apr	BCM	D/M	HOT CAR
1			Charged Fire Ext.	YES-NO	YES-NO	YES-NO
2			Hydraulic Oil Spill	YES-NO	YES-NO	YES-NO
3			Windows Good Condition.	YES-NO	YES-NO	YES-NO
4			Doors Good Condition.	YES-NO	YES-NO	YES-NO
5						

Door fire correction step list

1) Tighten door
2) Place K-Wool
3) Open uptake
4) Check blocks
5) Verify up take setting
6) Raise draft
7) Close SF 50%
8) Reduce door holes
9) Open EVS

PCM Pressure Readings

Must be in the required range of 3.0 to 12.0

If the reading isn't within the required range: Notify maintenance and the Turn Manager Immediately. Write in the corrective actions taken t bring the pressure readings backinto the EPA range.

Pressure Readings are to be recorded Once Per 8 Hour Shift / Every turn

Fan Amps are to be recorded Once Per 8 Hour Shift / Every Turn

Tons Charged: [illegible]

' Batch for 163 is on Phase 2 Tripper Belt
Batch for 167 is in Phase 2 Charge Bin

PUSHING REPORT — MITTAL — OPERATOR INITIALS SD/BC/TH

DATE: 04/17/09

OVEN	PREV TIME	PREV Weight	DATE	CHG TIME	AM/PM CIRCLE	DATE	TONS CHG	OVEN INSP	DOOR/LINTEL DAMAGE	DOOR FIRE PUSHER SIDE: DOOR OBS.	DOOR FIRE	Cor. Act. & Fire Out T.	PCM Pressure Readings: Pressure Reading	Fan Amp Reading	Corrective Actions Required	Operator's / Maintenance Comments
104	226 pm	45	4/15	3:27	AM/PM	4/17	45	Y // N	door // lintel	Y // N	Y // N		3.6	141	Y // N	hot car
108	241	45	4/15	4:11	AM/PM			Y // N	door // lintel	Y // N	Y // N		3.9	141.6	Y // N	
112	340	45	4/15	4:25	AM/PM			Y // N	door // lintel	Y // N	Y // N		4.0	139.8	Y // N	
116	350	45	4/15	4:35	AM/PM			Y // N	door // lintel	Y // N	Y // N		4.1	140.4	Y // N	
120	401	45	4/15	4:46	AM/PM			Y // N	door // lintel	Y // N	Y // N		4.2	138.9	Y // N	
124	416	43	4/15	4:58	AM/PM			Y // N	door // lintel	Y // N	Y // N		4.3	141.7	Y // N	
128	425	43	4/15	5:08	AM/PM			Y // N	door // lintel	Y // N	Y // N		4.3	139.4	Y // N	
132	438	43	4/15	5:18	AM/PM			Y // N	door // lintel	Y // N	Y // N		4.3	141.9	Y // N	missing FS latch
136	448	43	4/15	5:28	AM/PM			Y // N	door // lintel	Y // N	Y // N		4.4	140.2	Y // N	" " BS latch
140	500	43	4/15	5:38	AM/PM			Y // N	door // lintel	Y // N	Y // N		4.4	141	Y // N	
[illegible]	510	45	4/15	5:49	AM/PM			Y // N	door // lintel	Y // N	Y // N		4.5	139.6	Y // N	hot car box
146	521	45	4/15	6:05	AM/PM			Y // N	door // lintel	Y // N	Y // N		3.9	139.8	Y // N	
152	533	45	4/15	6:18	AM/PM			Y // N	door // lintel	Y // N	Y // N		3.8	141.4	Y // N	
156	546	45	4/15	6:28	AM/PM			Y // N	door // lintel	Y // N	Y // N		3.8	139.9	Y // N	
160	558	45	4/15	6:41	AM/PM			Y // N	door // lintel	Y // N	Y // N		3.9	141.6	Y // N	
164	624	45	4/15	6:59	AM/PM			Y // N	door // lintel	Y // N	Y // N		3.7	139.6	Y // N	
168	636	45	4/15	7:13	AM/PM			Y // N	door // lintel	Y // N	Y // N		3.8	138.7	Y // N	
172	648	45	4/15	7:27	AM/PM			Y // N	door // lintel	Y // N	Y // N		4.0	141.2	Y // N	
176	703	45	4/15	7:43	AM/PM			Y // N	door // lintel	Y // N	Y // N		4.1	140.5	Y // N	
180	716	45	4/15	7:58	AM/PM			Y // N	door // lintel	Y // N	Y // N		4.2	142.1	Y // N	
184	730	45	4/15	12:28	AM/PM	4/18	45	Y // N	door // lintel	Y // N	Y // N				Y // N	Hot car electrical
188	744	45	4/15	12:50	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	Hot car pin
192	758	45	4/15	1:03	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
196	830	45	4/15	1:17	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
[illegible]	847	45	4/15	1:35	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	

[illegible]				PCM	D/M	HOT CAR
1			Charged Fire Ext.	YES-NO	YES-NO	YES-NO
2			Hydraulic Oil Spill	YES-NO	YES-NO	YES-NO
3			Windows Good Condition.	YES-NO	YES-NO	YES-NO
4			Doors Good Condition.	YES-NO	YES-NO	YES-NO
5						

Door fire correction step list

1) Tighten door
2) Place K-Wool
3) Open uptake
4) Check blocks
5) Verify up take setting
6) Raise draft
7) Close SF 50%
8) Reduce door holes
9) Open EVS

PCM Pressure Readings

Must be in the required range of 3.0 to 12.0

If the reading isn't within the required range. Notify maintenance and the Turn Manager immediately. Write in the corrective actions taken t bring the pressure readings back into the EPA range.

Pressure Readings are to be recorded Once Per 8 Hour Shift / Every turn

Fan Amps are to be recorded Once Per 8 Hour Shift / Every Turn

Tons Charged:

Pushing Report
4/6-9/09

SHING REPORT

E: 04/06/09

INITIAL

OPERATOR INITIALS DW/SD

OVEN	PREV TIME	PREV WEIGHT	DATE	CHG TIME	AM/PM CIRCLE	DATE	TONS GHG	OVEN INSP	DOOR/LINTEL DAMAGE	DOOR FIRE - PUSHER SIDE: DOOR OBS.	DOOR FIRE	Cor. Act. & Fire Out T.	PCM Pressure Readings: Pressure Reading	Fan Amp Reading	Corrective Action Required	Operator's / Maintenance Comments
102	1237 AM	45	4/4	1:30	AM/PM	4/6	45	Y // N	door // lintel	Y // N	Y // N		4.6	12.6	Y // N	
106	1246	45	4/4	1:38	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
110	1254	45	4/4	1:47	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
114	103	45	4/4	1:56	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
118	113	45	4/4	2:05	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
122	124	45	4/4	2:25	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	Hydraulic Leak pcm change hose
126	134	45	4/4	2:34	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
130	144	45	4/4	2:43	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
134	154	45	4/4	2:53	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
138	204	45	4/4	3:05	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
[illegible]	214	45	4/4	3:16	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
146	224	45	4/4	3:29	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	PCM would not trans
150	235	45	4/4	5:01	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	Drench Car tail gate
154	246	45	4/4	5:12	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
158	259	45	4/4	5:25	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
162	316	45	4/4	5:48	AM/PM	4/6	45	Y // N	door // lintel	Y // N	Y // N				Y // N	
166	329	45	4/4	6:00	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
170	341	45	4/4	6:12	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
174	354	45	4/4	6:25	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
178	407	45	4/4	6:38	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
182	516	45	4/4	6:52	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
186	420	45	4/4	7:06	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
190	434	45	4/4	7:20	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
194	448	45	4/4	7:33	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
198	502	45	4/4	7:47	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	

	PCM	D/M	HOT CAR
Charged Fire Ext.	YES-NO	YES-NO	YES-NO
Hydraulic Oil Spill	YES-NO	YES-NO	YES-NO
Windows Good Condition.	YES-NO	YES-NO	YES-NO
Doors Good Condition.	YES-NO	YES-NO	YES-NO

1		
2		
3		
4		
5		

Door fire correction step list

1) Tighten door
2) Place K-Wool
3) Open uptake
4) Check blocks
5) Verify up take setting
6) Raise draft
7) Close SF 50%
8) Reduce door holes
9) Open EVS

PCM Pressure Readings

Must be in the required range of 3.0 to 12.0

If the reading isn't within the required range. Notify maintenance and the Turn Manager immediately. Write in the corrective actions taken t bring the pressure readings back into the EPA range.

Pressure Readings are to be recorded Once Per 8 Hour Shift / Every turn

Fan Amps are to be recorded Once Per 8 Hour Shift / Every Turn

Tons Charged:

PUSHING REPORT
04/06/09

MITTAL

OPERATOR INITIALS NB/TH/[illegible]

OVEN	PREV TIME	PREV Weight	DATE	CHG TIME	AM/PM CIRCLE	DATE	TONS GHG	OVEN INSP	DOOR/LINTEL DAMAGE	DOOR FIRE - PUSHER SIDE: DOOR OBS.	DOOR FIRE - PUSHER SIDE: DOOR FIRE	DOOR FIRE - PUSHER SIDE: Cor. Act. & Fire Out T.	PCM Pressure Readings: Pressure Reading	PCM Pressure Readings: Fan Amp Reading	PCM Pressure Readings: Corrective Action Required	Operator's / Maintenance Comments
~~104~~	108 PM	45	4/4	12:39	AM/PM	4/6	45	Y // N	door // lintel	Y // N	Y // N		4.3	130	Y // N	
~~108~~	1159 AM	45	4/4	1:39	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	Quench Car Brox.
~~112~~	122 PM	45	4/4	1:48	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
~~116~~	134	45	4/4	2:00	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
~~120~~	142	45	4/4	2:31	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
~~124~~	152	45	4/4	2:11	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
~~128~~	202	45	4/4	2:21	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
~~132~~	211	45	4/4	2:43	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
~~136~~	221	45	4/4	2:55	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
~~140~~	232	45	4/4	3:05	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
~~144~~	242	45	4/4	3:16	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
~~148~~	253	45	4/4	3:27	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
~~152~~	334	45	4/4	3:38	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
~~156~~	350	45	4/4	3:49	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
160	402	45	4/4	4:03	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
164	422	45	4/4	4:22	AM/PM			Y // N	door // lintel	Y // N	Y // N				Y // N	
168	435	45	4/4	4:34	AM/PM			Y // N	door // lintel	Y // N	Y // N				Y // N	
172	447	45	4/4	4:47	AM/PM			Y // N	door // lintel	Y // N	Y // N				Y // N	
176	500	45	4/4	5:00	AM/PM			Y // N	door // lintel	Y // N	Y // N				Y // N	
180	514	45	4/4	5:27	AM/PM			Y // N	door // lintel	Y // N	Y // N				Y // N	
184	527	45	4/4	5:13	AM/PM			Y // N	door // lintel	Y // N	Y // N				Y // N	
188	541	45	4/4	5:40	AM/PM			Y // N	door // lintel	Y // N	Y // N				Y // N	
192	546	45	4/4	5:55	AM/PM			Y // N	door // lintel	Y // N	Y // N				Y // N	
196	610	45	4/4	6:10	AM/PM			Y // N	door // lintel	Y // N	Y // N				Y // N	
200	624	45	4/4	6:24	AM/PM			Y // N	door // lintel	Y // N	Y // N				Y // N	

Back	13-Feb	
1		
2		
3		
4		
5		

	PCM	D/M	HOT CAR
Charged Fire Ext.	YES-NO	YES-NO	YES-NO
Hydraulic Oil Spill	YES-NO	YES-NO	YES-NO
Windows Good Condition.	YES-NO	YES-NO	YES-NO
Doors Good Condition.	YES-NO	YES-NO	YES-NO

Door fire correction step list

1) Tighten door
2) Place K-Wool
3) Open uptake
4) Check blocks
5) Verify up take setting
6) Raise draft
7) Close SF 50%
8) Reduce door holes
9) Open EVS

PCM Pressure Readings

Must be in the required range of 3.0 to 12.0

If the reading isn't within the required range. Notify maintenance and the Turn Manager immediately. Write in the corrective actions taken t bring the pressure readings back into the EPA range.

Pressure Readings are to be recorded Once Per 8 Hour Shift / Every turn

Fan Amps are to be recorded Once Per 8 Hour Shift / Every Turn

Tons Charged:

HNCC PUSHING REPORT
DATE: 04/07/09

SEVERSTAL

OPERATORS INITIALS: BC/NB AS/DC

OVEN	PREV TIME	PREV WEIGHT	DATE	CHG TIME	AM/PM CIRCLE	DATE	TONS CHG	OVEN INSP	DOOR/LINTEL DAMAGE	DOOR FIRE - PUSHER SIDE: DOOR OBS.	DOOR FIRE - PUSHER SIDE: DOOR FIRE	DOOR FIRE - PUSHER SIDE: Cor. Act. & Fire Out T.	PCM Pressure Readings: Pressure Reading	PCM Pressure Readings: Fan Amp Reading	PCM Pressure Readings: Corrective Action Required	Operator's / Maintenance Comments
103	1106 AM	45	4/5	2:59	AM/PM	4/7	45	Y // N	door // lintel	Y // N	Y // N				Y // N	
107	1114	45	4/5	3:09	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
111	202 PM	45	4/5	3:30	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N		4.7	125	Y // N	
115	1123	45	4/5	3:19	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
119	1132	45	4/5	3:29	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
123	1141	45	4/5	3:39	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
127	151 PM	45	4/5	3:50	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
131	141 PM	45	4/5	3:03	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
135	1151	45	4/5	3:14	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
139	1201 PM	45	4/5	4:46	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
[illegible]	1212	45	4/5	4:56	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
147	1224	45	4/5	5:01	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
151	1237	45	4/5	5:19	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
155	1248	45	4/5	5:30	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
159	1259	45	4/5	5:42	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N		4.5	130	Y // N	AB. 346
163	316	45	4/5	6:10	AM/PM	-	-	Y // N	door // lintel	Y // N	Y // N				Y // N	
167	329	45	4/5	6:42	AM/PM	4/7	45	Y // N	door // lintel	Y // N	Y // N				Y // N	
171	346	45	4/5	6:55	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
175	401	45	4/5	7:07	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
179	615	45	4/5	8:04	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
183	415	45	4/5	7:36	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
187	428	45	4/5	7:49	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
191	442	45	4/5	8:03	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
195	457	45	4/5	8:17	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
199	637	45	4/5	8:49	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	

				PCM	D/M	HOT CAR
1			Charged Fire Ext.	YES-NO	YES-NO	YES-NO
2			Hydraulic Oil Spill	YES-NO	YES-NO	YES-NO
3			Windows Good Condition.	YES-NO	YES-NO	YES-NO
4			Doors Good Condition.	YES-NO	YES-NO	YES-NO
5						

Door fire correction step list
1) Tighten door
2) Place K-Wool
3) Open uptake
4) Check blocks
5) Verify up take setting
6) Raise draft
7) Close SF 50%
8) Reduce door holes
9) Open EVS

PCM Pressure Readings
Must be in the required range of 3.0 to 12.0
If the reading isn't within the required range. Notify maintenance and the Turn Manager immediately. Write in the corrective actions taken t bring the pressure readings back into the EPA range.
Pressure Readings are to be recorded Once Per 8 Hour Shift / Every turn
Fan Amps are to be recorded Once Per 8 Hour Shift / Every Turn

Tons Charged: 45

4/7 45 tons
161 - 6:29 pm
181 - 7:20 pm
197 - 8:35 pm

101 - 2:38 pm 4/7

HNCC PUSHING REPORT SEVERSTAL OPERATORS INITIALS

DATE: 04/7/09

OVEN	PREV TIME	PREV WEIGHT	DATE	CHG TIME	AM/PM CIRCLE	DATE	TONS CHG	OVEN INSP	DOOR/LINTEL DAMAGE	DOOR FIRE - PUSHER SIDE: DOOR OBS.	DOOR FIRE	Cor. Act. & Fire Out T.	PCM Pressure Readings: Pressure Reading	Fan Amp Reading	Corrective Action Required	Operator's / Maintenance Comments
101	343 AM	45	4/5	2:38	AM/PM	4/7	45	Y // N	door // lintel	Y // N	Y // N				Y // N	
105	117	45	4/5	2:37	AM/PM	4/7	45	Y // N	door // lintel	Y // N	Y // N				Y // N	
109	126	45	4/5	3:16	AM/PM	4/7	45	Y // N	door // lintel	Y // N	Y // N		4.7	125	Y // N	
113	134	45	4/5	3:24	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
117	142	45	4/5	3:33	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
121	151	45	4/5	3:43	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
125	200	45	4/5	3:54	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
129	210	45	4/5	4:03	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
133	221	45	4/5	4:14	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
137	232	45	4/5	4:26	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
	242	45	4/5	4:37	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
145	252	45	4/5	4:46	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
149	303	45	4/5	4:58	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
153	315	45	4/5	5:07	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
157	326	45	4/5	5:18	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
161	449	45	4/5	6:29	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
165	421	45	4/5	6:04	AM/PM	4/7	45	Y // N	door // lintel	Y // N	Y // N				Y // N	
169	436	45	4/5	6:16	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
173	502	45	4/5	6:28	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
177	517	45	4/5	6:41	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
181	633	45	4/5	7:20	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
185	532	45	4/5	6:55	AM/PM	4/7	45	Y // N	door // lintel	Y // N	Y // N				Y // N	
189	547	45	4/5	7:07	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
193	602	45	4/5	7:21	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
197	620	45	4/5	8:35	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	

Check	Draft
1	
2	
3	
4	
5	

	PCM	D/M	HOT CAR
Charged Fire Ext.	YES-NO	YES-NO	YES-NO
Hydraulic Oil Spill	YES-NO	YES-NO	YES-NO
Windows Good Condition.	YES-NO	YES-NO	YES-NO
Doors Good Condition.	YES-NO	YES-NO	YES-NO

Door fire correction step list

1) Tighten door
2) Place K-Wool
3) Open uptake
4) Check blocks
5) Verify up take setting
6) Raise draft
7) Close SF 50%
8) Reduce door holes
9) Open EVS

PCM Pressure Readings

Must be in the required range of 3.0 to 12.0

If the reading isn't within the required range. Notify maintenance and the Turn Manager immediately. Write in the corrective actions taken t bring the pressure readings back into the EPA range.

Pressure Readings are to be recorded Once Per 8 Hour Shift / Every turn

Fan Amps are to be recorded Once Per 8 Hour Shift / Every Turn

Tons Charged:

HNCC PUSHING REPORT

DATE: 04/08/09

MITTAL

OPERATOR INITIALS SD/SD

OVEN	PREV TIME	PREV WEIGHT	DATE	CHG TIME	AM/PM CIRCLE	DATE	TONS CHG	OVEN INSP	DOOR/LINTEL DAMAGE	DOOR FIRE - PUSHER SIDE: DOOR OBS.	DOOR FIRE	Cor. Act. & Fire Out T.	PCM Pressure Readings: Pressure Reading	Fan Amp Reading	Corrective Action Required	Operator's / Maintenance Comments
102	130 AM	45	4/6	5:23	AM/PM	4/8	45	Y // N	door // lintel	Y // N	Y // N				Y // N	
106	138	45	4/6	2:07	AM/PM	4/8	45	Y // N	door // lintel	Y // N	Y // N				Y // N	
110	147	45	4/6	1:56	AM/PM	4/8	45	Y // N	door // lintel	Y // N	Y // N				Y // N	
114	156	45	4/6	5:11	AM/PM	4/8	45	Y // N	door // lintel	Y // N	Y // N				Y // N	
118	205	45	4/6	2:17	AM/PM	4/8	45	Y // N	door // lintel	Y // N	Y // N				Y // N	
122	225	45	4/6	5:02	AM/PM	4/8	45	Y // N	door // lintel	Y // N	Y // N				Y // N	
126	234	45	4/6	4:51	AM/PM	4/8	45	Y // N	door // lintel	Y // N	Y // N		4.2	12.8	Y // N	
130	243	45	4/6	2:28	AM/PM	4/8	45	Y // N	door // lintel	Y // N	Y // N				Y // N	
134	253	45	4/6	2:39	AM/PM	4/8	45	Y // N	door // lintel	Y // N	Y // N				Y // N	
138	305	45	4/6	2:50	AM/PM	4/8	45	Y // N	door // lintel	Y // N	Y // N				Y // N	
142	316	45	4/6	3:01	AM/PM	4/8	45	Y // N	door // lintel	Y // N	Y // N				Y // N	
146	329	45	4/6	3:12	AM/PM	4/8	45	Y // N	door // lintel	Y // N	Y // N				Y // N	
150	501	45	4/6	3:24	AM/PM	4/8	45	Y // N	door // lintel	Y // N	Y // N				Y // N	
154	512	45	4/6	3:36	AM/PM	4/8	45	Y // N	door // lintel	Y // N	Y // N				Y // N	
158	525	45	4/6	5:41	AM/PM	4/8	45	Y // N	door // lintel	Y // N	Y // N				Y // N	
162	548	45	4/6	7:17	AM/PM	4/8	45	Y // N	door // lintel	Y // N	Y // N				Y // N	
166	600	45	4/6	6:08	AM/PM	4/8	45	Y // N	door // lintel	Y // N	Y // N				Y // N	
170	612	45	4/6	6:21	AM/PM	4/8	45	Y // N	door // lintel	Y // N	Y // N				Y // N	
174	625	45	4/6	6:34	AM/PM	4/8	45	Y // N	door // lintel	Y // N	Y // N				Y // N	
178	638	45	4/6	8:11	AM/PM	4/8	45	Y // N	door // lintel	Y // N	Y // N				Y // N	
182	652	45	4/6	8:25	AM/PM	4/8	45	Y // N	door // lintel	Y // N	Y // N				Y // N	
186	706	45	4/6	6:48	AM/PM	4/8	45	Y // N	door // lintel	Y // N	Y // N				Y // N	
190	720	45	4/6	7:02	AM/PM	4/8	45	Y // N	door // lintel	Y // N	Y // N				Y // N	
194	733	45	4/6	8:39	AM/PM	4/8	45	Y // N	door // lintel	Y // N	Y // N				Y // N	
198	747	45	4/6	7:34	AM/PM	4/8	45	Y // N	door // lintel	Y // N	Y // N				Y // N	

				PCM	D/M	HOT CAR
1			Charged Fire Ext.	YES-NO	YES-NO	YES-NO
2			Hydraulic Oil Spill	YES-NO	YES-NO	YES-NO
3			Windows Good Condition.	YES-NO	YES-NO	YES-NO
4			Doors Good Condition.	YES-NO	YES-NO	YES-NO
5						

Door fire correction step list

1) Tighten door
2) Place K-Wool
3) Open uptake
4) Check blocks
5) Verify up take setting
6) Raise draft
7) Close SF 50%
8) Reduce door holes
9) Open EVS

PCM Pressure Readings

Must be in the required range of 3.0 to 12.0

If the reading isn't within the required range. Notify maintenance and the Turn Manager immediately. Write in the corrective actions taken t bring the pressure readings back into the EPA range.

Pressure Readings are to be recorded Once Per 8 Hour Shift / Every turn

Fan Amps are to be recorded Once Per 8 Hour Shift / Every Turn

Tons Charged:

NCC PUSHING REPORT SEVERSTAL OPERATORS INITIALS [illegible]

DATE: 04/9/09

OVEN	PREV TIME	PREV WEIGHT	DATE	CHG TIME	AM/PM CIRCLE	DATE	TONS GHG	OVEN INSP	DOOR/LINTEL DAMAGE	DOOR FIRE - PUSHER SIDE: DOOR OBS.	DOOR FIRE - PUSHER SIDE: DOOR FIRE	DOOR FIRE - PUSHER SIDE: Cor. Act. & Fire Out T.	PCM Pressure Readings: Pressure Reading	PCM Pressure Readings: Fan Amp Reading	PCM Pressure Readings: Corrective Action Required	Operator's / Maintenance Comments
101	238 pm	45	4/7	7:14	AM/PM	4/9	45	Y // N	door // lintel	Y // N	Y // N				Y // N	
105	537 AM	45	4/7	10:32	AM/PM	4/9	45	Y // N	door // lintel	Y // N	Y // N		4.6	130	Y // N	
109	316	45	4/7	16:44	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	Hot Car pressure Reading
113	324	45	4/7	16:53	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
117	333	45	4/7	17:03	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
121	343	45	4/7	17:14	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
125	354	45	4/7	17:24	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
129	403	45	4/7	17:35	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
133	414	45	4/7	5:52	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
137	426	45	4/7	6:02	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
[illegible]	435	45	4/7	6:13	AM/PM			Y // N	door // lintel	Y // N	Y // N				Y // N	
145	446	45	4/7	6:23	AM/PM			Y // N	door // lintel	Y // N	Y // N				Y // N	
149	458	45	4/7	6:34	AM/PM			Y // N	door // lintel	Y // N	Y // N				Y // N	
153	507	45	4/7	6:45	AM/PM			Y // N	door // lintel	Y // N	Y // N				Y // N	
157	518	45	4/7	6:57	AM/PM			Y // N	door // lintel	Y // N	Y // N				Y // N	
161	629 pm	45	4/7	9:51	AM/PM			Y // N	door // lintel	Y // N	Y // N				Y // N	Skip
165	604	45	4/7	7:43	AM/PM	4/9	45	Y // N	door // lintel	Y // N	Y // N				Y // N	
169	616	45	4/7	7:56	AM/PM			Y // N	door // lintel	Y // N	Y // N				Y // N	
173	628	45	4/7	8:07	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
177	641	45	4/7	8:24	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	Quench Clean-up
181	720 pm	45	4/7	8:49	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
185	655	45	4/7	9:01	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
189	707	45	4/7	9:15	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
193	721	45	4/7	9:30	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
197	835 pm	45	4/7	0	AM/PM			Y // N	door // lintel	Y // N	Y // N				Y // N	Skip

		Drag
1		
2		
3		
4		
5		

	PCM	D/M	HOT CAR
Charged Fire Ext.	YES-NO	YES-NO	YES-NO
Hydraulic Oil Spill	YES-NO	YES-NO	YES-NO
Windows Good Condition.	YES-NO	YES-NO	YES-NO
Doors Good Condition.	YES-NO	YES-NO	YES-NO

Door fire correction step list

1) Tighten door
2) Place K-Wool
3) Open uptake
4) Check blocks
5) Verify up take setting
6) Raise draft
7) Close SF 50%
8) Reduce door holes
9) Open EVS

PCM Pressure Readings

Must be in the required range of 3.0 to 12.0

If the reading isn't within the required range. Notify maintenance and the Turn Manager immediately. Write in the corrective actions taken t bring the pressure readings back into the EPA range.

Pressure Readings are to be recorded Once Per 8 Hour Shift / Every turn

Fan Amps are to be recorded Once Per 8 Hour Shift / Every Turn

Tons Charged: 45

HNCC PUSHING REPORT

DATE: 04/08/09

MITTAL

OPERATOR INITIALS DG/SP/BC

OVEN	PREV TIME	PREV Weight	DATE	CHG TIME	AM/PM CIRCLE	DATE	TONS GHG	OVEN INSP	DOOR/LINTEL DAMAGE	DOOR FIRE - PUSHER SIDE: DOOR OBS.	DOOR FIRE - PUSHER SIDE: DOOR FIRE	DOOR FIRE - PUSHER SIDE: Cor. Act. & Fire Out T.	PCM Pressure Readings: Pressure Reading	PCM Pressure Readings: Fan Amp Reading	PCM Pressure Readings: Corrective Action Required	Operator's / Maintenance Comments
104	1239 PM	45	4/6	3:16	AM/PM	4/9	45	Y // N	door // lintel	Y // N	Y // N				Y // N	
108	139	45	4/6	3:27	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N		4.3	128	Y // N	
112	148	45	4/6	3:37	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
116	200	45	4/6	3:47	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
120	231	45	4/6	3:57	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
124	211	45	4/6	5:05	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
128	221	45	4/6	5:16	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
132	243	45	4/6	5:27	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
136	255	45	4/6	5:39	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
140	305	45	4/6	5:53	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
144	316	45	4/6	6:04	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
148	327	45	4/6	6:15	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
152	338	45	4/6	6:28	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
156	349	45	4/6	6:39	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
160	403	45	4/6	6:53	AM/PM	"	"	Y // N	door // lintel	Y // N	Y // N				Y // N	
164 ✓	422	45	4/6	7:37	AM/PM			Y // N	door // lintel	Y // N	Y // N				Y // N	mach barricade from around new stationary pour area (fresh concrete pour)
168 ✓	434	45	4/6	7:50	AM/PM			Y // N	door // lintel	Y // N	Y // N				Y // N	
172	447	45	4/6	8:12	AM/PM			Y // N	door // lintel	Y // N	Y // N				Y // N	
176	500	45	4/6	8:25	AM/PM			Y // N	door // lintel	Y // N	Y // N				Y // N	
180	527	45	4/6	8:42	AM/PM			Y // N	door // lintel	Y // N	Y // N				Y // N	
184	513	45	4/6	8:56	AM/PM			Y // N	door // lintel	Y // N	Y // N				Y // N	
188	540	45	4/6	9:10	AM/PM			Y // N	door // lintel	Y // N	Y // N				Y // N	
192	555	45	4/6	9:24	AM/PM			Y // N	door // lintel	Y // N	Y // N				Y // N	
196	610	45	4/6	9:39	AM/PM			Y // N	door // lintel	Y // N	Y // N				Y // N	
200	624	45	4/6	9:54	AM/PM			Y // N	door // lintel	Y // N	Y // N				Y // N	

				PCM	D/M	HOT CAR
1			Charged Fire Ext.	YES-NO	YES-NO	YES-NO
2			Hydraulic Oil Spill	YES-NO	YES-NO	YES-NO
3			Windows Good Condition.	YES-NO	YES-NO	YES-NO
4			Doors Good Condition.	YES-NO	YES-NO	YES-NO
5						

Door fire correction step list

1) Tighten door
2) Place K-Wool
3) Open uptake
4) Check blocks
5) Verify up take setting
6) Raise draft
7) Close SF 50%
8) Reduce door holes
9) Open EVS

PCM Pressure Readings

Must be in the required range of 3.0 to 12.0

If the reading isn't within the required range. Notify maintenance and the Turn Manager Immediately. Write in the corrective actions taken t bring the pressure readings back into the EPA range.

Pressure Readings are to be recorded Once Per 8 Hour Shift / Every turn

Fan Amps are to be recorded Once Per 8 Hour Shift / Every Turn

Tons Charged:

Hot Car Pressure Readings
4/15-17/09

HOT C/ PRESSURE READINGS REPORT

Pressure Readings are to be recorded at any time during the push.

Multiclone Pressure Readings: The EPA permit limit is **2.0 to 5.8**

Corrective Action: Contact Maintenance and the Turn Manager immediately if the pressure reading is below 2.0 or above 5.8.

Fan Amps are to be recorded at least Once Per Shift. (Fan amps can be recorded more than once per shift)

Fan Amp Readings: Fan amp readings must be above **65.2 amps (average for the shift).**

Corrective Action: Contact Maintenance and the Turn Manager immediately if any reading is below 65.2 amps.

Door Fires - Contact the Product Technicians immediately if a door fire is observed. Record the duration of the door fire. Door fires must be extinguished within 15 minutes

Important - Buring coal or coke on the door sill is not considered a door fire.

Operator Name: W. GARNER / C. Collins

Date: 04/15/09

Machine: (Circle One) North Hot Car - South Hot Car

Turn: (Circle One) Midnights - Afternoon DAYS

OVEN	PRESSURE	FAN AMPS	OPERATOR CHECKED OVEN FOR DOOR FIRES CIRCLE Y OR N	DOOR FIRE SEEN ON THE OVEN CIRCLE Y OR N	NOTIFIED CONTROL ROOM ABOUT DOOR FIRES CIRCLE Y OR N	DURATION OF DOOR FIRE (MINUTES)	Operator's Comments	Maintenance comments and corrective actions
104	8.0	82.2	Y / N	Y / N	Y / N			
108	7.2	73.3	Y / N	Y / N	Y / N			Multiclone press adjusted up for compliance test
112	8.4	70.4	Y / N	Y / N	Y / N			
116	7.4	72.6	Y / N	Y / N	Y / N			
120	7.2	70.2	Y / N	Y / N	Y / N			
124	7.6	71.4	Y / N	Y / N	Y / N			
128	7.4	71.5	Y / N	Y / N	Y / N			
132	7.9	71.5	Y / N	Y / N	Y / N			
136	7.2	72.7	Y / N	Y / N	Y / N			
140	7.1	73.0	Y / N	Y / N	Y / N			
144	7.7	69.7	Y / N	Y / N	Y / N			
148	7.7	68.7	Y / N	Y / N	Y / N			
152	7.6	70.8	Y / N	Y / N	Y / N			
156	7.1	63.6	Y / N	Y / N	Y / N			
160	7.6	70.2	Y / N	Y / N	Y / N			
164	8.5	71.3	Y / N	Y / N	Y / N			
168	7.8	76.0	Y / N	Y / N	Y / N			
172	7.4	74.8	Y / N	Y / N	Y / N			
176	7.4	73.9	Y / N	Y / N	Y / N			
180	7.5	71.7	Y / N	Y / N	Y / N			
184	7.0	71.0	Y / N	Y / N	Y / N			
188	7.6	70.8	Y / N	Y / N	Y / N			
192	7.3	71.4	Y / N	Y / N	Y / N			
196	8.1	67.1	Y / N	Y / N	Y / N			
200	8.0	69.2	Y / N	Y / N	Y / N			

			Corrective Action
Charged Fire Ext.		Y / N	
Hydraulic Oil Spill		Y / N	
Windows Good Condition.		Y / N	
Doors Good Condition.		Y / N	

Rev Date 6-30-2008

HOT C/ PRESSURE READINGS REPORT

Pressure Readings are to be recorded at any time during the push.

Multiclone Pressure Readings: The EPA permit limit is **2.0 to 5.8**
Corrective Action: Contact Maintenance and the Turn Manager immediately if the pressure reading is below 2.0 or above 5.8.

Fan Amps are to be recorded at least Once Per Shift. (Fan amps can be recorded more than once per shift)
Fan Amp Readings: Fan amp readings must be above **65.2 amps (average for the shift).**
Corrective Action: Contact Maintenance and the Turn Manager immediately if any reading is below 65.2 amps.

Door Fires - Contact the Product Technicians immediately if a door fire is observed. Record the duration of the door fire. Door fires must be extinguished within 15 minutes
Important - Buring coal or coke on the door sill is not considered a door fire.

DAY Shift
Operator Name: J. SODERTH \ C. Collins
Date: 4-16-09
Machine: (Circle One) North Hot Car - South Hot Car
Turn: (Circle One) Midnights - Afternoon

OVEN	PRESSURE	FAN AMPS	OPERATOR CHECKED OVEN FOR DOOR FIRES CIRCLE Y OR N	DOOR FIRE SEEN ON THE OVEN CIRCLE Y OR N	NOTIFIED CONTROL ROOM ABOUT DOOR FIRES CIRCLE Y OR N	DURATION OF DOOR FIRE (MINUTES)	Operator's Comments	Maintenance comments and corrective actions
103	7.2	65.4	Y / N	Y / N	Y / N	7		
107	7.0	71.1	Y / N	Y / N	Y / N	5		
111	6.5	68.0	Y / N	Y / N	Y / N			
115	7.0	69.2	Y / N	Y / N	Y / N			
119	8.0	65.6	Y / N	Y / N	Y / N			
123	7.1	64.2	Y / N	Y / N	Y / N			
127	6.8	70.4	Y / N	Y / N	Y / N			
131	7.1	65.4	Y / N	Y / N	Y / N			
135	6.7	67.8	Y / N	Y / N	Y / N			
139	7.1	65.8	Y / N	Y / N	Y / N			
143	7.7	66.4	Y / N	Y / N	Y / N			
147	7.6	62.2	Y / N	Y / N	Y / N			
151	6.9	64.7	Y / N	Y / N	Y / N			
155	7.2	61.6	Y / N	Y / N	Y / N			
159	7.5	62.3	Y / N	Y / N	Y / N			
163			Y / N	Y / N	Y / N			
167			Y / N	Y / N	Y / N			
171			Y / N	Y / N	Y / N			
175			Y / N	Y / N	Y / N			
179			Y / N	Y / N	Y / N			
183			Y / N	Y / N	Y / N			
187			Y / N	Y / N	Y / N			
191			Y / N	Y / N	Y / N			
195			Y / N	Y / N	Y / N			
199			Y / N	Y / N	Y / N			

			Corrective Action
Charged Fire Ext.		Y / N	
Hydraulic Oil Spill		Y / N	
Windows Good Condition.		Y / N	
Doors Good Condition.		Y / N	

Rev Date 6-30-2008

HOT C/ PRESSURE READINGS REPORT

Pressure Readings are to be recorded at any time during the push.

Multiclone Pressure Readings: The EPA permit limit is **2.0 to 5.8**
Corrective Action: Contact Maintenance and the Turn Manager immediately if the pressure reading is below 2.0 or above 5.8.

Fan Amps are to be recorded at least Once Per Shift. (Fan amps can be recorded more than once per shift)
Fan Amp Readings: Fan amp readings must be above **65.2 amps (average for the shift).**
Corrective Action: Contact Maintenance and the Turn Manager immediately if any reading is below 65.2 amps.

Door Fires - Contact the Product Technicians immediately if a door fire is observed. Record the duration of the door fire. Door fires must be extinguished within 15 minutes
Important - Buring coal or coke on the door sill is not considered a door fire.

Operator Name: J. SUDDERTH / T. LEE / R. ABRAMS (midnight 4-18-09)
Date: 4-17-09
Machine: (Circle One) North Hot Car - South Hot Car
Turn: (Circle One) Midnights - Afternoon

OVEN	PRESSURE	FAN AMPS	OPERATOR CHECKED OVEN FOR DOOR FIRES CIRCLE Y OR N	DOOR FIRE SEEN ON THE OVEN CIRCLE Y OR N	NOTIFIED CONTROL ROOM ABOUT DOOR FIRES CIRCLE Y OR N	DURATION OF DOOR FIRE (MINUTES)	Operator's Comments	Maintenance comments and corrective actions
104	5.0	70.5	Y / N	Y / N	Y / N			
108	4.8	64.2	Y / N	Y / N	Y / N			
112	4.2	66.1	Y / N	Y / N	Y / N			
116	3.9	65.0	Y / N	Y / N	Y / N	10		
120	4.5	60.7	Y / N	Y / N	Y / N			
124	3.8	65.4	Y / N	Y / N	Y / N			
128	4.4	60.1	Y / N	Y / N	Y / N			
132	4.4	57.2	Y / N	Y / N	Y / N			
136	4.2	67.7	Y / N	Y / N	Y / N			
140	4.4	58.6	Y / N	Y / N	Y / N			
144	4.6	58.6	Y / N	Y / N	Y / N			
148	4.8	60.1	Y / N	Y / N	Y / N			
152	4.6	58.3	Y / N	Y / N	Y / N			
156	5.0	63.4	Y / N	Y / N	Y / N			
160	4.8	59.1	Y / N	Y / N	Y / N			
164	6.3	70.9	Y / N	Y / N	Y / N			
168	5.0	65.7	Y / N	Y / N	Y / N			
172	4.6	58.4	Y / N	Y / N	Y / N			
176	4.2	59.6	Y / N	Y / N	Y / N			
180	4.6	60.3	Y / N	Y / N	Y / N			
184	5.2	79.3	Y / N	Y / N	Y / N			
188	5.2	75.9	Y / N	Y / N	Y / N			
192	4.6	74.2	Y / N	Y / N	Y / N			
196	5.2	71.9	Y / N	Y / N	Y / N			
200	5.0	68.9	Y / N	Y / N	Y / N			

RUN #3

		Corrective Action
Charged Fire Ext.	Y / N	
Hydraulic Oil Sill	Y / N	
Windows Good Condition.	Y / N	
Doors Good Condition.	Y / N	

Rev Date 6-30-2008

HH2 FGD Turn Report
4/7-9/09

HH2 FGD Turn Report

Product Tech: Melvin | Date: 4-7-09 | Turn: 6A-6P

Lime Silo	56		
Lime Deliveries	✓		
Ash Silo	95.7		
Slurry Tank	68.3		
Pump psi A / (B)	148		
Slaker A	✓	✓	✓
Grit Screen	✓	✓	
Grit Conveyor	✓	✓	✓
Slaker B	✓	✓	✓
Grit Screen	✓	✓	
Grit Conveyor	✓	✓	✓
Grit Dumpster	✓	✓	
SDA DP	1.7		
SDA Gates	✓	✓	✓
CEMS	✓		
Fabric Filter DP	5.2	4.6	4.9
SO2 < 192	✓		
Bldg 2B	✓		
Settling Basin	✓		

A In / Out brg	101.6	93.3
A % Inlet	27.8	
A In / Out vib	1.6	1.7
A motor amps	176	
A In / Out Mtr brg	126.6	122.9
A In / Out Mtr vib	.7	.7
B In / Out brg	96.2	93
B % Inlet	28	
B In / Out vib	1.1	1.2
B motor amps	169.2	
B In / Out Mtr brg	120.9	129.7
B In / Out Mtr vib	.6	.5
C In / Out brg		
C % Inlet		
C In / Out vib		
C motor amps		
C In / Out Mtr brg		
C In / Out Mtr vib		
Vac blower	A	(B)
High Hoppers		

	A	B	C	D	E	F
CAB	A	B				
CAM	A	B	C	D	E	F
Tank PSI	2.5	2.5	2.5	2.5	2.5	2.5
Comp. DP	3.0	3.5	4.	4	3.5	4

	A	B
A slurry	13.1	15.4
A % open	63.7	61.1
A water	31	31.2
A % open	61.7	66.2
CW temp	57.9	60.3
Lower brg temp	164.8	129.2
Upper brg temp	138.6	95.9
Vibration	.4	.5
Vacuum	6.8	13.1
Air/Oil	14.3	12.8
Strainer		

	C
C slurry	14.0
C % open	70.5
C water	31.2
C % open	64.6
CW temp	59.4
Lower brg temp	145.6
Upper brg temp	102.1
Vibration	0
Vacuum	13.7
Air/Oil	14.8
Strainer	

PAC - 18

Turn Comments:

HH2 FGD Turn Report

Product Tech: LARNEY | Date: 4-7-9 | Turn: NIGHTS

Lime Silo	66		
Lime Deliveries			
Ash Silo	60.5		
Slurry Tank	71.7		
Pump psi A / B	140		
Slaker A	✓	✓	✓
Grit Screen	✓	✓	✓
Grit Conveyor	✓	✓	✓
Slaker B	✓	✓	✓
Grit Screen	✓	✓	✓
Grit Conveyor	✓	✓	✓
Grit Dumpster	✓	✓	
SDA DP	1.8		
SDA Gates	✓	✓	✓
CEMS			
Fabric Filter DP	5.0	5.4	5.3
SO2 < 192	127		
Bldg 2B	✓		
Settling Basin	OVERFLOWING		

A In / Out brg	100	92
A % Inlet	27.7	
A In / Out vib	1.4	1.5
A motor amps	175	
A In / Out Mtr brg	121	126
A In / Out Mtr vib	0.6	0.6
B In / Out brg	95.9	92.3
B % Inlet	28	
B In / Out vib	0.8	0.8
B motor amps	164	
B In / Out Mtr brg	124	134
B In / Out Mtr vib	0.6	0.6
C In / Out brg		
C % Inlet		
C In / Out vib		
C motor amps		
C In / Out Mtr brg		
C In / Out Mtr vib		
Vac blower	A	B X
High Hoppers	Ø	

CAB	A X	B				
CAM	A	B	C	D	E	F
Tank PSI	1.6					
Comp. DP	3.0	3.0	3.0	3.5	3.0	3.0

A slurry	13.8		
A % open	63		
A water	28.5		
A % open	57.5		
CW temp	57		
Lower brg temp	145		
Upper brg temp	139		
Vibration	0.3		
Vacuum	6.8		
Air/Oil	14.1		
Strainer			

B slurry	14.7		
B % open	60.5		
B water	28.5		
B % open	60.0		
CW temp	57.7		
Lower brg temp	128		
Upper brg temp	92		
Vibration	0.0		
Vacuum	12.7		
Air/Oil	13.0		
Strainer			

C slurry	14.9		
C % open	67.0		
C water	28.6		
C % open	58.3		
CW temp	58		
Lower brg temp	144		
Upper brg temp	106		
Vibration	0.0		
Vacuum	13.6		
Air/Oil	14.5		
Strainer			

30

Turn Comments:

HH2 FGD Turn Report

Product Tech: Melvin

Date: 4-8-09

Turn: 6A-6P

Lime Silo	77.4		
Lime Deliveries	✓		
Ash Silo	67.2		
Slurry Tank	67.1		
Pump psi A / B	150		
Slaker A	✓	✓	✓
Grit Screen	✓	✓	
Grit Conveyor	✓	✓	✓
Slaker B	✓	✓	✓
Grit Screen	✓	✓	
Grit Conveyor	✓	✓	✓
Grit Dumpster	✓	✓	
SDA DP	1.6		
SDA Gates	✓	✓	✓
CEMS	✓		
Fabric Filter DP	4.5	5.1	4.8
SO2 < 192	✓		
Bldg 2B	✓		
Settling Basin	✓		

A In / Out brg	99.5	91.2
A % Inlet	29.2	
A In / Out vib	1.4	1.5
A motor amps	179.3	
A In / Out Mtr brg	132.8	124.8
A In / Out Mtr vib	.6	.6
B In / Out brg	95.7	91.5
B % Inlet	29.7	
B In / Out vib	1.2	1.2
B motor amps	171.8	
B In / Out Mtr brg	124.7	135.3
B In / Out Mtr vib	.7	.6
C In / Out brg		
C % Inlet		
C In / Out vib		
C motor amps		
C In / Out Mtr brg		
C In / Out Mtr vib		
Vac blower	A	B
High Hoppers		

CAB	A	B				
CAM	A	B	C	D	E	F
Tank PSI	2.5	2.5	2.5	2.5	2.5	2.5
Comp. DP	3	3.5	3	4	3	3

A slurry	15.8		
A % open	67.6		
A water	31.7		
A % open	66.2		
CW temp	55.4		
Lower brg temp	126.3		
Upper brg temp	153.1		
Vibration	.3		
Vacuum	6.7		
Air/Oil	13.8		
Strainer			

B slurry	15.3		
B % open	64.4		
B water	32.3		
B % open	66.1		
CW temp	57.7		
Lower brg temp	127.6		
Upper brg temp	100.6		
Vibration	.3		
Vacuum	13		
Air/Oil	13.1		
Strainer			

C slurry	16.8		
C % open	79.3		
C water	31.9		
C % open	64.1		
CW temp	56.7		
Lower brg temp	140.4		
Upper brg temp	101.1		
Vibration	0		
Vacuum	13.6		
Air/Oil	14.3		
Strainer			

Turn Comments: Ash system down all day

HH2 FGD Turn Report

Product Tech: HARNEY | Date: 4-8-7 | Turn: NIGHTS

Lime Silo	61.9		
Lime Deliveries	1		
Ash Silo	24.9		
Slurry Tank	75		
Pump psi A / B	150		
Slaker A	/	/	/
Grit Screen	/	/	/
Grit Conveyor	/	/	/
Slaker B	/	/	/
Grit Screen	/	/	/
Grit Conveyor	/	/	/
Grit Dumpster	/	/	
SDA DP	1.1		
SDA Gates	/	/	/
CEMS			
Fabric Filter DP	5.2	5.4	4.7
SO2 < 192	126		
Bldg 2B	/		
Settling Basin	/	/	/ / /

A In / Out brg	99	91
A % Inlet	22	
A In / Out vib	1.6	1.6
A motor amps	164	
A In / Out Mtr brg	137	132
A In / Out Mtr vib	0.7	0.7
B In / Out brg	95	91
B % Inlet	23.2	
B In / Out vib	1.3	1.2
B motor amps	154	
B In / Out Mtr brg	131	144
B In / Out Mtr vib	0.6	0.7
C In / Out brg		
C % Inlet		
C In / Out vib		
C motor amps		
C In / Out Mtr brg		
C In / Out Mtr vib		
Vac blower	A	B
High Hoppers		

SYSTEM DOWN

CAB	A X	B				
CAM	A	B	C	D	E	F
Tank PSI	1.4					
Comp. DP	3.0	3.5	3.5	3.0	3.0	3.5

A slurry	14.7		
A % open	61.5		
A water	19.5		
A % open	48		
CW temp	56		
Lower brg temp	159		
Upper brg temp	155		
Vibration	0.2		
Vacuum	6.8		
Air/Oil	13.4		
Strainer			

B slurry	15.2		
B % open	60		
B water	19.6		
B % open	47.4		
CW temp	58		
Lower brg temp	126		
Upper brg temp	106		
Vibration	0.4		
Vacuum	12.7		
Air/Oil	12.7		
Strainer			

C slurry	14.4		
C % open	66.3		
C water	19.5		
C % open	46.4		
CW temp	57		
Lower brg temp	137		
Upper brg temp	100		
Vibration	0.0		
Vacuum	13.7		
Air/Oil	14		
Strainer			

Turn Comments:

HH2 FGD Turn Report

Product Tech: Gilmore | Date: 4-9-09 | Turn: 6A-6P A-Shift

Lime Silo	53.3		
Lime Deliveries	✓	✓	✓
Ash Silo	24.5		
Slurry Tank	74.7		
Pump psi A / (B)	165	GPM	
Slaker A	✓	✓	✓
Grit Screen	✓	✓	✓
Grit Conveyor	✓	✓	✓
Slaker B	✓	✓	✓
Grit Screen	✓	✓	✓
Grit Conveyor	✓	✓	✓
Grit Dumpster	✓	✓	✓
SDA DP	1.4		
SDA Gates	✓	✓	✓
CEMS		✓	
Fabric Filter DP	5.3	5.1	5.0
SO2 < 192	128		
Bldg 2B	✓	✓	✓
Settling Basin	✓	✓	✓
Frac tank level	✓	✓	✓

A In / Out brg	100	90
A % Inlet	24.4	
A In / Out vib	1.6	1.6
A motor amps	171	
A In / Out Mtr brg	132	124
A In / Out Mtr vib	.6	.5
B In / Out brg	95	91
B % Inlet	23.9	
B In / Out vib	1.1	1.2
B motor amps	160	
B In / Out Mtr brg	124	131
B In / Out Mtr vib	16	.5
C In / Out brg		
C % Inlet		
C In / Out vib		
C motor amps		
C In / Out Mtr brg		
C In / Out Mtr vib		
Vac blower	A	B
High Hoppers		

System down
Bad Bags & cages
IVS Vac. Hoppers

CAB	A	B				
CAM	A	B	C	D	E	F
Tank PSI						
Comp. DP						

A slurry	13.7		
A % open	60.6		
A water	22.9		
A % open	57.5		
CW temp	55.9		
Lower brg temp	160		
Upper brg temp	156		
Vibration	.3		
Vacuum	6.6		
Air/Oil	13.6		
Strainer			

B slurry	13.5		
B % open	58.7		
B water	230		
B % open	52.5		
CW temp	58.3		
Lower brg temp	126		
Upper brg temp	104		
Vibration	.2		
Vacuum	12.8		
Air/Oil	12.8		
Strainer			

C slurry	13.8		
C % open	61.9		
C water	22.9		
C % open	57.5		
CW temp	56.8		
Lower brg temp	135		
Upper brg temp	100		
Vibration	0		
Vacuum	13.7		
Air/Oil	14.0		
Strainer			

Change Grit Screen Daily

Turn Comments: Every square must be filled in.

Installed new fly pump on #8 Boiler. (A pump) Not wired up yet!

SEE LOG Book For daily Fan.

HH2 FGD Turn Report

Product Tech: Bentley | Date: 4-9-09 | Turn: 6P-6A

Lime Silo	69		
Lime Deliveries			
Ash Silo	15		
Slurry Tank	74		
Pump psi A / B	13 / 150		
Slaker A	✓	✓	✓
Grit Screen	✓	✓	
Grit Conveyor	✓	✓	✓
Slaker B	✓	✓	✓
Grit Screen	✓	✓	
Grit Conveyor	✓	✓	✓
Grit Dumpster	✓	✓	
SDA DP	1.4		
SDA Gates	✓	✓	✓
CEMS			
Fabric Filter DP	5.3	5.2	5.2
SO2 < 192	139		
Bldg 2B	✓		
Settling Basin	✓	✓	✓
Frac tank level	✓	✓	

A In / Out brg	100	93
A % Inlet	26	
A In / Out vib	1.6	1.6
A motor amps	174	
A In / Out Mtr brg	146	141
A In / Out Mtr vib	.7	.6
B In / Out brg	97	93
B % Inlet	26	
B In / Out vib	.9	.9
B motor amps	166	
B In / Out Mtr brg	136	151
B In / Out Mtr vib	.5	.5
C In / Out brg		
C % Inlet		
C In / Out vib		
C motor amps		
C In / Out Mtr brg		
C In / Out Mtr vib		
Vac blower	A	B ✓
High Hoppers		

CAB	A ✓	B				
CAM	A ✓	B ✓	C ✓	D ✓	E ✓	F ✓
Tank PSI	3	3	3	3	3	3
Comp. DP	3	3	3	3	3	3

A slurry	13.5	
A % open	57	
A water	28.8	
A % open	56	
CW temp	57	
Lower brg temp	161	
Upper brg temp	169	
Vibration	.3	
Vacuum	6.7	
Air/Oil	12.9	
Strainer		

B slurry	12.9	
B % open	60	
B water	28.6	
B % open	59	
CW temp	60	
Lower brg temp	129	
Upper brg temp	114	
Vibration	.3	
Vacuum	12.6	
Air/Oil	12.2	
Strainer		

C slurry	12.8	
C % open	66	
C water	28.8	
C % open	57	
CW temp	58	
Lower brg temp	137	
Upper brg temp	103	
Vibration	0	
Vacuum	13.4	
Air/Oil	13.6	
Strainer		

Change Grit Screen Daily

Turn Comments: Every square must be filled in.

HH2 FGD Data
4/7-10/09

Start Date	4/7/09
End Date	4/10/09

TIME	Main Baghouse Diff. Pressure	SDA Outlet Temp.
07-Apr-09 00:15:00	4.61	264.41
07-Apr-09 00:30:00	5.04	265.72
07-Apr-09 00:45:00	5.46	264.97
07-Apr-09 01:00:00	5.79	265.07
07-Apr-09 01:15:00	5.68	265.06
07-Apr-09 01:30:00	5.58	265.25
07-Apr-09 01:45:00	5.48	264.81
07-Apr-09 02:00:00	5.37	265.32
07-Apr-09 02:15:00	5.27	264.37
07-Apr-09 02:30:00	5.16	265.13
07-Apr-09 02:45:00	5.01	265.31
07-Apr-09 03:00:00	4.70	264.61
07-Apr-09 03:15:00	4.94	265.22
07-Apr-09 03:30:00	5.37	264.78
07-Apr-09 03:45:00	5.25	265.06
07-Apr-09 04:00:00	5.13	264.73
07-Apr-09 04:15:00	4.93	265.27
07-Apr-09 04:30:00	5.80	264.95
07-Apr-09 04:45:00	5.51	264.99
07-Apr-09 05:00:00	5.42	265.17
07-Apr-09 05:15:00	4.67	264.77
07-Apr-09 05:30:00	4.87	264.84
07-Apr-09 05:45:00	10.05	265.24
07-Apr-09 06:00:00	16.00	264.64
07-Apr-09 06:15:00	12.00	265.01
07-Apr-09 06:30:00	20.00	265.13
07-Apr-09 06:45:00	20.00	265.16
07-Apr-09 07:00:00	20.00	265.15
07-Apr-09 07:15:00	20.00	265.10
07-Apr-09 07:30:00	20.00	265.02
07-Apr-09 07:45:00	20.00	264.85
07-Apr-09 08:00:00	20.00	264.77
07-Apr-09 08:15:00	20.00	264.96
07-Apr-09 08:30:00	20.00	265.62
07-Apr-09 08:45:00	20.00	264.83
07-Apr-09 09:00:00	16.00	265.00
07-Apr-09 09:15:00	0.00	265.43
07-Apr-09 09:30:00	3.12	265.56
07-Apr-09 09:45:00	5.50	264.20
07-Apr-09 10:00:00	5.51	266.04
07-Apr-09 10:15:00	5.52	264.22
07-Apr-09 10:30:00	5.53	264.72
07-Apr-09 10:45:00	5.54	265.61

07-Apr-09 11:00:00	5.55	264.51
07-Apr-09 11:15:00	5.56	264.34
07-Apr-09 11:30:00	5.57	265.02
07-Apr-09 11:45:00	5.57	265.08
07-Apr-09 12:00:00	5.58	264.87
07-Apr-09 12:15:00	5.59	265.10
07-Apr-09 12:30:00	5.05	264.34
07-Apr-09 12:45:00	5.00	265.20
07-Apr-09 13:00:00	5.00	264.99
07-Apr-09 13:15:00	5.00	264.71
07-Apr-09 13:30:00	5.00	264.81
07-Apr-09 13:45:00	5.00	265.50
07-Apr-09 14:00:00	5.00	264.57
07-Apr-09 14:15:00	5.00	267.16
07-Apr-09 14:30:00	5.00	263.05
07-Apr-09 14:45:00	5.00	263.97
07-Apr-09 15:00:00	5.00	265.49
07-Apr-09 15:15:00	5.00	264.92
07-Apr-09 15:30:00	5.00	266.04
07-Apr-09 15:45:00	5.00	264.49
07-Apr-09 16:00:00	5.00	264.65
07-Apr-09 16:15:00	5.00	265.06
07-Apr-09 16:30:00	5.00	265.10
07-Apr-09 16:45:00	5.00	264.26
07-Apr-09 17:00:00	5.04	265.50
07-Apr-09 17:15:00	4.92	264.88
07-Apr-09 17:30:00	4.70	265.14
07-Apr-09 17:45:00	4.70	265.57
07-Apr-09 18:00:00	4.81	264.71
07-Apr-09 18:15:00	5.05	265.01
07-Apr-09 18:30:00	4.38	265.03
07-Apr-09 18:45:00	5.30	265.16
07-Apr-09 19:00:00	5.30	265.23
07-Apr-09 19:15:00	5.31	264.77
07-Apr-09 19:30:00	5.31	264.91
07-Apr-09 19:45:00	5.32	264.99
07-Apr-09 20:00:00	5.32	264.46
07-Apr-09 20:15:00	5.33	266.26
07-Apr-09 20:30:00	5.33	264.45
07-Apr-09 20:45:00	5.33	265.62
07-Apr-09 21:00:00	5.34	264.78
07-Apr-09 21:15:00	5.34	264.75
07-Apr-09 21:30:00	5.35	265.26
07-Apr-09 21:45:00	5.35	264.77
07-Apr-09 22:00:00	5.35	265.04
07-Apr-09 22:15:00	5.36	265.16
07-Apr-09 22:30:00	5.36	265.22

07-Apr-09 22:45:00	5.37	265.09
07-Apr-09 23:00:00	5.37	264.80
07-Apr-09 23:15:00	5.38	264.83
07-Apr-09 23:30:00	5.38	265.23
07-Apr-09 23:45:00	5.38	265.02
08-Apr-09 00:00:00	5.39	264.91
08-Apr-09 00:15:00	5.39	264.93
08-Apr-09 00:30:00	5.40	264.89
08-Apr-09 00:45:00	5.40	265.30
08-Apr-09 01:00:00	5.38	264.97
08-Apr-09 01:15:00	5.36	265.29
08-Apr-09 01:30:00	5.34	264.61
08-Apr-09 01:45:00	5.32	265.17
08-Apr-09 02:00:00	5.30	264.58
08-Apr-09 02:15:00	5.28	265.32
08-Apr-09 02:30:00	5.26	265.08
08-Apr-09 02:45:00	5.24	265.05
08-Apr-09 03:00:00	5.22	265.25
08-Apr-09 03:15:00	5.20	265.01
08-Apr-09 03:30:00	5.20	264.76
08-Apr-09 03:45:00	5.20	265.08
08-Apr-09 04:00:00	5.21	264.84
08-Apr-09 04:15:00	5.22	265.06
08-Apr-09 04:30:00	5.22	265.07
08-Apr-09 04:45:00	5.23	264.96
08-Apr-09 05:00:00	5.24	264.92
08-Apr-09 05:15:00	5.24	265.31
08-Apr-09 05:30:00	5.25	265.00
08-Apr-09 05:45:00	5.26	264.91
08-Apr-09 06:00:00	5.27	265.51
08-Apr-09 06:15:00	5.27	264.77
08-Apr-09 06:30:00	5.28	264.93
08-Apr-09 06:45:00	5.29	264.67
08-Apr-09 07:00:00	5.30	265.07
08-Apr-09 07:15:00	5.32	264.67
08-Apr-09 07:30:00	5.38	265.11
08-Apr-09 07:45:00	5.45	265.15
08-Apr-09 08:00:00	5.51	265.10
08-Apr-09 08:15:00	5.58	265.16
08-Apr-09 08:30:00	5.65	264.79
08-Apr-09 08:45:00	5.71	265.17
08-Apr-09 09:00:00	5.01	264.62
08-Apr-09 09:15:00	4.58	265.05
08-Apr-09 09:30:00	4.71	264.93
08-Apr-09 09:45:00	4.84	264.63
08-Apr-09 10:00:00	4.97	265.15
08-Apr-09 10:15:00	5.09	264.57

08-Apr-09 10:30:00	5.22	265.35
08-Apr-09 10:45:00	5.35	265.13
08-Apr-09 11:00:00	5.46	263.95
08-Apr-09 11:15:00	5.22	265.27
08-Apr-09 11:30:00	5.27	265.51
08-Apr-09 11:45:00	4.99	265.67
08-Apr-09 12:00:00	5.10	264.63
08-Apr-09 12:15:00	5.00	265.54
08-Apr-09 12:30:00	4.93	264.50
08-Apr-09 12:45:00	4.80	264.95
08-Apr-09 13:00:00	5.12	265.58
08-Apr-09 13:15:00	4.50	264.27
08-Apr-09 13:30:00	5.10	265.06
08-Apr-09 13:45:00	5.17	264.95
08-Apr-09 14:00:00	5.20	264.37
08-Apr-09 14:15:00	4.80	264.77
08-Apr-09 14:30:00	Bad	265.15
08-Apr-09 14:45:00	Bad	Bad
08-Apr-09 15:00:00	Bad	Bad
08-Apr-09 15:15:00	Bad	265.69
08-Apr-09 15:30:00	Bad	265.41
08-Apr-09 15:45:00	5.46	265.17
08-Apr-09 16:00:00	5.08	265.51
08-Apr-09 16:15:00	5.25	265.07
08-Apr-09 16:30:00	5.10	265.28
08-Apr-09 16:45:00	5.07	263.11
08-Apr-09 17:00:00	5.05	264.96
08-Apr-09 17:15:00	5.02	265.65
08-Apr-09 17:30:00	5.00	264.88
08-Apr-09 17:45:00	4.97	264.20
08-Apr-09 18:00:00	4.94	265.20
08-Apr-09 18:15:00	4.91	265.21
08-Apr-09 18:30:00	4.94	265.15
08-Apr-09 18:45:00	5.04	264.87
08-Apr-09 19:00:00	5.15	265.35
08-Apr-09 19:15:00	5.24	265.23
08-Apr-09 19:30:00	5.50	264.85
08-Apr-09 19:45:00	5.06	264.89
08-Apr-09 20:00:00	5.00	265.48
08-Apr-09 20:15:00	4.77	264.09
08-Apr-09 20:30:00	4.93	264.92
08-Apr-09 20:45:00	4.54	265.14
08-Apr-09 21:00:00	5.15	265.19
08-Apr-09 21:15:00	4.74	264.97
08-Apr-09 21:30:00	4.92	265.08
08-Apr-09 21:45:00	5.09	265.08
08-Apr-09 22:00:00	5.27	265.11

08-Apr-09 22:15:00	5.44	264.67
08-Apr-09 22:30:00	5.62	265.41
08-Apr-09 22:45:00	5.80	264.60
08-Apr-09 23:00:00	5.58	265.65
08-Apr-09 23:15:00	5.35	264.89
08-Apr-09 23:30:00	5.13	264.91
08-Apr-09 23:45:00	4.78	264.91
09-Apr-09 00:00:00	4.93	265.17
09-Apr-09 00:15:00	5.09	265.08
09-Apr-09 00:30:00	4.65	265.11
09-Apr-09 00:45:00	4.98	265.09
09-Apr-09 01:00:00	4.40	264.93
09-Apr-09 01:15:00	5.12	265.17
09-Apr-09 01:30:00	4.41	264.89
09-Apr-09 01:45:00	4.50	265.53
09-Apr-09 02:00:00	4.59	264.46
09-Apr-09 02:15:00	4.68	264.99
09-Apr-09 02:30:00	4.77	265.06
09-Apr-09 02:45:00	5.25	265.16
09-Apr-09 03:00:00	5.22	264.51
09-Apr-09 03:15:00	5.09	265.05
09-Apr-09 03:30:00	5.05	265.04
09-Apr-09 03:45:00	5.02	265.09
09-Apr-09 04:00:00	4.98	264.97
09-Apr-09 04:15:00	4.95	265.41
09-Apr-09 04:30:00	5.49	264.75
09-Apr-09 04:45:00	5.16	264.95
09-Apr-09 05:00:00	5.04	265.03
09-Apr-09 05:15:00	5.23	265.01
09-Apr-09 05:30:00	5.41	265.02
09-Apr-09 05:45:00	5.59	265.08
09-Apr-09 06:00:00	5.76	265.10
09-Apr-09 06:15:00	4.92	265.08
09-Apr-09 06:30:00	5.07	264.73
09-Apr-09 06:45:00	5.25	265.98
09-Apr-09 07:00:00	5.16	265.04
09-Apr-09 07:15:00	5.44	265.26
09-Apr-09 07:30:00	5.17	264.75
09-Apr-09 07:45:00	5.00	265.25
09-Apr-09 08:00:00	4.82	265.03
09-Apr-09 08:15:00	4.96	264.93
09-Apr-09 08:30:00	5.38	265.21
09-Apr-09 08:45:00	5.11	264.85
09-Apr-09 09:00:00	4.88	265.06
09-Apr-09 09:15:00	4.45	265.08
09-Apr-09 09:30:00	5.31	265.54
09-Apr-09 09:45:00	4.61	265.07

09-Apr-09 10:00:00	4.43	265.26
09-Apr-09 10:15:00	4.46	264.99
09-Apr-09 10:30:00	4.50	265.06
09-Apr-09 10:45:00	4.53	265.00
09-Apr-09 11:00:00	4.57	264.78
09-Apr-09 11:15:00	4.61	265.20
09-Apr-09 11:30:00	4.64	264.88
09-Apr-09 11:45:00	4.68	265.00
09-Apr-09 12:00:00	4.71	264.84
09-Apr-09 12:15:00	4.75	264.96
09-Apr-09 12:30:00	4.78	265.16
09-Apr-09 12:45:00	4.82	264.83
09-Apr-09 13:00:00	4.86	265.13
09-Apr-09 13:15:00	4.89	265.19
09-Apr-09 13:30:00	4.93	265.12
09-Apr-09 13:45:00	4.96	265.20
09-Apr-09 14:00:00	5.00	264.68
09-Apr-09 14:15:00	5.03	264.92
09-Apr-09 14:30:00	5.07	264.80
09-Apr-09 14:45:00	5.11	264.92
09-Apr-09 15:00:00	5.14	265.19
09-Apr-09 15:15:00	5.19	264.89
09-Apr-09 15:30:00	5.20	264.74
09-Apr-09 15:45:00	5.19	265.28
09-Apr-09 16:00:00	5.19	265.37
09-Apr-09 16:15:00	5.19	264.67
09-Apr-09 16:30:00	5.18	264.93
09-Apr-09 16:45:00	5.18	265.05
09-Apr-09 17:00:00	5.17	265.04
09-Apr-09 17:15:00	5.17	264.97
09-Apr-09 17:30:00	5.17	264.93
09-Apr-09 17:45:00	5.16	265.04
09-Apr-09 18:00:00	5.16	265.38
09-Apr-09 18:15:00	5.15	265.06
09-Apr-09 18:30:00	5.15	265.22
09-Apr-09 18:45:00	5.14	265.13
09-Apr-09 19:00:00	5.14	265.55
09-Apr-09 19:15:00	5.14	264.72
09-Apr-09 19:30:00	5.13	264.50
09-Apr-09 19:45:00	5.13	265.11
09-Apr-09 20:00:00	5.12	265.13
09-Apr-09 20:15:00	5.12	264.79
09-Apr-09 20:30:00	5.12	265.09
09-Apr-09 20:45:00	5.11	265.23
09-Apr-09 21:00:00	5.11	265.22
09-Apr-09 21:15:00	5.10	265.04
09-Apr-09 21:30:00	5.10	264.87

09-Apr-09 21:45:00	5.11	265.03
09-Apr-09 22:00:00	5.11	264.71
09-Apr-09 22:15:00	5.11	265.03
09-Apr-09 22:30:00	5.12	264.97
09-Apr-09 22:45:00	5.12	265.04
09-Apr-09 23:00:00	5.13	264.99
09-Apr-09 23:15:00	5.13	264.88
09-Apr-09 23:30:00	5.13	264.92
09-Apr-09 23:45:00	5.14	265.11
10-Apr-09 00:00:00	5.14	264.37

Plant Name: HNCC
General Average Report
Reporting Period: 04/07/2009 to 04/10/2009
Carbon Injection Rate
Site Name: UNIT2
Data Averaging Type: 15m

Date	Time	(lb/hr)		
4/7/2009	0:00	43.9		
4/7/2009	0:15	43.9		
4/7/2009	0:30	43.9		
4/7/2009	0:45	43.9		
4/7/2009	1:00	43.9		
4/7/2009	1:15	43.9		
4/7/2009	1:30	43.9		
4/7/2009	1:45	43.9		
4/7/2009	2:00	43.9		
4/7/2009	2:15	43.9		
4/7/2009	2:30	43.9		
4/7/2009	2:45	43.9		
4/7/2009	3:00	43.9		
4/7/2009	3:15	43.9		
4/7/2009	3:30	43.9		
4/7/2009	3:45	43.9		
4/7/2009	4:00	43.9		
4/7/2009	4:15	43.9		
4/7/2009	4:30	43.9		
4/7/2009	4:45	43.9		
4/7/2009	5:00	43.9		
4/7/2009	5:15	43.9		
4/7/2009	5:30	43.9		
4/7/2009	5:45	43.9		
4/7/2009	6:00	43.9		
4/7/2009	6:15	43.9		
4/7/2009	6:30	43.9		
4/7/2009	6:45	43.9		
4/7/2009	7:00	40.4		
4/7/2009	7:15	40.0		
4/7/2009	7:30	39.9		
4/7/2009	7:45	40.0		
4/7/2009	8:00	40.0		
4/7/2009	8:15	40.0		
4/7/2009	8:30	40.0		
4/7/2009	8:45	40.0		
4/7/2009	9:00	39.9		
4/7/2009	9:15	40.0		
4/7/2009	9:30	40.0		
4/7/2009	9:45	39.9	Start Pb & Hg Run 1 @ 9:54	
4/7/2009	10:00	40.0		
4/7/2009	10:15	40.0		
4/7/2009	10:30	39.9		
4/7/2009	10:45	39.9		
4/7/2009	11:00	39.9		
4/7/2009	11:15	39.9		
4/7/2009	11:30	39.9		
4/7/2009	11:45	39.9		
4/7/2009	12:00	39.9		
4/7/2009	12:15	39.9		
4/7/2009	12:30	39.9		
4/7/2009	12:45	39.9		
4/7/2009	13:00	39.9		
4/7/2009	13:15	40.0	End Pb & Hg Run 1 @ 13:15	
4/7/2009	13:30	39.9		
4/7/2009	13:45	40.0	Average for Run 1 =	39.9
4/7/2009	14:00	40.0		
4/7/2009	14:15	39.9		
4/7/2009	14:30	39.9	Start Pb & Hg Run 2 @ 14:41	
4/7/2009	14:45	39.9		
4/7/2009	15:00	39.9		
4/7/2009	15:15	39.9		
4/7/2009	15:30	39.9		
4/7/2009	15:45	39.9		
4/7/2009	16:00	39.9		
4/7/2009	16:15	39.9		
4/7/2009	16:30	39.9		
4/7/2009	16:45	39.9		
4/7/2009	17:00	39.9		
4/7/2009	17:15	39.9		
4/7/2009	17:30	39.9		
4/7/2009	17:45	39.9	End Pb & Hg Run 2 @ 17:54	
4/7/2009	18:00	39.9		
4/7/2009	18:15	39.9	Average for Run 2 =	39.9
4/7/2009	18:30	39.9		
4/7/2009	18:45	39.9		
4/7/2009	19:00	39.9		
4/7/2009	19:15	39.9		
4/7/2009	19:30	39.9		
4/7/2009	19:45	39.9		
4/7/2009	20:00	39.9		
4/7/2009	20:15	39.9		
4/7/2009	20:30	39.9		
4/7/2009	20:45	39.9		
4/7/2009	21:00	39.9		
4/7/2009	21:15	39.9		
4/7/2009	21:30	39.9		
4/7/2009	21:45	39.9		
4/7/2009	22:00	39.9		
4/7/2009	22:15	39.9		
4/7/2009	22:30	39.9		
4/7/2009	22:45	39.9		
4/7/2009	23:00	39.9		
4/7/2009	23:15	39.9		
4/7/2009	23:30	39.9		
4/7/2009	23:45	39.9		

4/8/2009	0:00	39.9
4/8/2009	0:15	39.9
4/8/2009	0:30	39.9
4/8/2009	0:45	39.9
4/8/2009	1:00	39.9
4/8/2009	1:15	39.9
4/8/2009	1:30	39.9
4/8/2009	1:45	39.9
4/8/2009	2:00	39.9
4/8/2009	2:15	39.9
4/8/2009	2:30	39.9
4/8/2009	2:45	39.9
4/8/2009	3:00	39.9
4/8/2009	3:15	39.9
4/8/2009	3:30	39.9
4/8/2009	3:45	39.9
4/8/2009	4:00	39.9
4/8/2009	4:15	39.9
4/8/2009	4:30	39.9
4/8/2009	4:45	39.9
4/8/2009	5:00	39.9
4/8/2009	5:15	39.9
4/8/2009	5:30	39.9
4/8/2009	5:45	39.9
4/8/2009	6:00	39.9
4/8/2009	6:15	39.9
4/8/2009	6:30	39.9
4/8/2009	6:45	39.9
4/8/2009	7:00	39.9
4/8/2009	7:15	39.9
4/8/2009	7:30	39.9
4/8/2009	7:45	39.9
4/8/2009	8:00	39.9
4/8/2009	8:15	39.9
4/8/2009	8:30	39.9
4/8/2009	8:45	39.9
4/8/2009	9:00	39.9
4/8/2009	9:15	39.9
4/8/2009	9:30	39.9
4/8/2009	9:45	39.9
4/8/2009	10:00	39.9
4/8/2009	10:15	39.9
4/8/2009	10:30	39.9
4/8/2009	10:45	39.9
4/8/2009	11:00	39.9
4/8/2009	11:15	39.9
4/8/2009	11:30	39.9
4/8/2009	11:45	39.9
4/8/2009	12:00	39.9
4/8/2009	12:15	39.9
4/8/2009	12:30	39.9
4/8/2009	12:45	39.9
4/8/2009	13:00	39.9
4/8/2009	13:15	39.9
4/8/2009	13:30	39.9
4/8/2009	13:45	39.9
4/8/2009	14:00	39.9
4/8/2009	14:15	39.9
4/8/2009	14:30	39.9
4/8/2009	14:45	39.9
4/8/2009	15:00	39.9
4/8/2009	15:15	39.9
4/8/2009	15:30	39.9
4/8/2009	15:45	39.9
4/8/2009	16:00	39.9
4/8/2009	16:15	39.9
4/8/2009	16:30	39.9
4/8/2009	16:45	39.9
4/8/2009	17:00	39.9
4/8/2009	17:15	39.9
4/8/2009	17:30	39.9
4/8/2009	17:45	39.9
4/8/2009	18:00	39.9
4/8/2009	18:15	39.9
4/8/2009	18:30	39.9
4/8/2009	18:45	39.9
4/8/2009	19:00	39.9
4/8/2009	19:15	39.9
4/8/2009	19:30	39.9
4/8/2009	19:45	39.9
4/8/2009	20:00	39.9
4/8/2009	20:15	39.9
4/8/2009	20:30	39.9
4/8/2009	20:45	39.9
4/8/2009	21:00	39.9
4/8/2009	21:15	39.9
4/8/2009	21:30	39.9
4/8/2009	21:45	39.9
4/8/2009	22:00	39.9
4/8/2009	22:15	39.9
4/8/2009	22:30	39.9
4/8/2009	22:45	39.9
4/8/2009	23:00	39.9
4/8/2009	23:15	39.9
4/8/2009	23:30	39.9
4/8/2009	23:45	39.9

4/9/2009	0:00	39.9		
4/9/2009	0:15	39.9		
4/9/2009	0:30	39.9		
4/9/2009	0:45	39.9		
4/9/2009	1:00	39.9		
4/9/2009	1:15	39.9		
4/9/2009	1:30	39.9		
4/9/2009	1:45	39.9		
4/9/2009	2:00	39.9		
4/9/2009	2:15	39.9		
4/9/2009	2:30	39.9		
4/9/2009	2:45	39.9		
4/9/2009	3:00	39.9		
4/9/2009	3:15	39.9		
4/9/2009	3:30	39.9		
4/9/2009	3:45	39.9		
4/9/2009	4:00	39.9		
4/9/2009	4:15	39.9		
4/9/2009	4:30	39.9		
4/9/2009	4:45	39.9		
4/9/2009	5:00	39.9		
4/9/2009	5:15	39.9		
4/9/2009	5:30	39.9		
4/9/2009	5:45	39.9		
4/9/2009	6:00	39.9		
4/9/2009	6:15	39.9		
4/9/2009	6:30	39.9		
4/9/2009	6:45	39.9		
4/9/2009	7:00	39.9		
4/9/2009	7:15	39.9		
4/9/2009	7:30	39.9		
4/9/2009	7:45	39.9		
4/9/2009	8:00	39.9		
4/9/2009	8:15	39.9	Start PM Run 1 @ 8:09	
4/9/2009	8:30	39.9		
4/9/2009	8:45	39.9		
4/9/2009	9:00	39.9		
4/9/2009	9:15	39.9	End PM Run 1 @ 9:17	
4/9/2009	9:30	39.9	Average for Run 1 =	39.9
4/9/2009	9:45	39.9		
4/9/2009	10:00	39.9	Start PM Run 2 @ 10:02	
4/9/2009	10:15	39.9		
4/9/2009	10:30	39.9		
4/9/2009	10:45	39.9		
4/9/2009	11:00	39.9	End PM Run 2 @ 11:08	
4/9/2009	11:15	39.9	Average for Run 2 =	39.9
4/9/2009	11:30	39.9		
4/9/2009	11:45	39.9	Start PM Run 3 @ 11:45	
4/9/2009	12:00	39.9		
4/9/2009	12:15	39.9		
4/9/2009	12:30	39.9		
4/9/2009	12:45	39.9	End PM Run 3 @ 12:52	
4/9/2009	13:00	39.9	Average for Run 3 =	39.9
4/9/2009	13:15	39.9		
4/9/2009	13:30	39.9		
4/9/2009	13:45	39.9		
4/9/2009	14:00	39.9		
4/9/2009	14:15	39.9		
4/9/2009	14:30	39.9		
4/9/2009	14:45	39.9		
4/9/2009	15:00	39.9		
4/9/2009	15:15	39.9	Start Pb & Hg Run 4 @ 15:24	
4/9/2009	15:30	39.9		
4/9/2009	15:45	39.9		
4/9/2009	16:00	39.9		
4/9/2009	16:15	39.9		
4/9/2009	16:30	39.9		
4/9/2009	16:45	39.9		
4/9/2009	17:00	39.9		
4/9/2009	17:15	39.9		
4/9/2009	17:30	39.9		
4/9/2009	17:45	39.9		
4/9/2009	18:00	39.9		
4/9/2009	18:15	39.9		
4/9/2009	18:30	39.9	End Pb & Hg Run 4 @ 18:36	
4/9/2009	18:45	39.9		
4/9/2009	19:00	39.9	Average for Run 4 =	39.9
4/9/2009	19:15	39.9		
4/9/2009	19:30	39.9		
4/9/2009	19:45	39.9		
4/9/2009	20:00	39.9		
4/9/2009	20:15	39.9		
4/9/2009	20:30	39.9		
4/9/2009	20:45	39.9		
4/9/2009	21:00	39.9		
4/9/2009	21:15	39.9		
4/9/2009	21:30	39.9		
4/9/2009	21:45	39.9		
4/9/2009	22:00	39.9		
4/9/2009	22:15	39.9		
4/9/2009	22:30	39.9		
4/9/2009	22:45	39.9		
4/9/2009	23:00	39.9		
4/9/2009	23:15	39.9		
4/9/2009	23:30	39.9		
4/9/2009	23:45	39.9		

4/10/2009	0:00	39.9
4/10/2009	0:15	39.9
4/10/2009	0:30	39.9
4/10/2009	0:45	39.9
4/10/2009	1:00	39.9
4/10/2009	1:15	39.9
4/10/2009	1:30	39.9
4/10/2009	1:45	39.9
4/10/2009	2:00	39.9
4/10/2009	2:15	39.9
4/10/2009	2:30	39.9
4/10/2009	2:45	39.9
4/10/2009	3:00	39.9
4/10/2009	3:15	39.9
4/10/2009	3:30	39.9
4/10/2009	3:45	39.9
4/10/2009	4:00	39.9
4/10/2009	4:15	39.9
4/10/2009	4:30	39.9
4/10/2009	4:45	39.9
4/10/2009	5:00	39.9
4/10/2009	5:15	39.9
4/10/2009	5:30	39.9
4/10/2009	5:45	39.9
4/10/2009	6:00	39.9
4/10/2009	6:15	39.9
4/10/2009	6:30	39.9
4/10/2009	6:45	39.9
4/10/2009	7:00	39.9
4/10/2009	7:15	39.9
4/10/2009	7:30	39.9
4/10/2009	7:45	39.9
4/10/2009	8:00	39.9
4/10/2009	8:15	39.9
4/10/2009	8:30	40.0
4/10/2009	8:45	40.0
4/10/2009	9:00	40.0
4/10/2009	9:15	40.0
4/10/2009	9:30	40.0
4/10/2009	9:45	40.0
4/10/2009	10:00	40.0
4/10/2009	10:15	40.0
4/10/2009	10:30	40.0
4/10/2009	10:45	39.9
4/10/2009	11:00	39.9
4/10/2009	11:15	39.9
4/10/2009	11:30	39.9
4/10/2009	11:45	39.9
4/10/2009	12:00	39.9
4/10/2009	12:15	39.9
4/10/2009	12:30	39.9
4/10/2009	12:45	39.9
4/10/2009	13:00	39.9
4/10/2009	13:15	39.9
4/10/2009	13:30	39.9
4/10/2009	13:45	39.9
4/10/2009	14:00	39.9
4/10/2009	14:15	39.9
4/10/2009	14:30	39.9
4/10/2009	14:45	39.9
4/10/2009	15:00	39.9
4/10/2009	15:15	40.0
4/10/2009	15:30	40.0
4/10/2009	15:45	40.0
4/10/2009	16:00	40.0
4/10/2009	16:15	40.0
4/10/2009	16:30	40.0
4/10/2009	16:45	40.0
4/10/2009	17:00	39.9
4/10/2009	17:15	39.9
4/10/2009	17:30	39.9
4/10/2009	17:45	40.0
4/10/2009	18:00	40.0
4/10/2009	18:15	40.0
4/10/2009	18:30	40.0
4/10/2009	18:45	40.0
4/10/2009	19:00	40.0
4/10/2009	19:15	40.0
4/10/2009	19:30	40.0
4/10/2009	19:45	40.0
4/10/2009	20:00	40.0
4/10/2009	20:15	40.0
4/10/2009	20:30	40.0
4/10/2009	20:45	40.0
4/10/2009	21:00	39.9
4/10/2009	21:15	39.9
4/10/2009	21:30	39.9
4/10/2009	21:45	39.9
4/10/2009	22:00	39.9
4/10/2009	22:15	39.9
4/10/2009	22:30	39.9
4/10/2009	22:45	39.9
4/10/2009	23:00	39.9
4/10/2009	23:15	39.9
4/10/2009	23:30	39.9
4/10/2009	23:45	39.9

Average =	40.2
Maximum =	43.9
Minimum =	39.9
Possible Values =	384

Appendix B

Main Stack
D/F DATA

URS

SUMMARY OF RESULTS	
Project Name:	Haverhill Compliance Test
Project Number:	39400492.520001
Site Location:	Unit #2
Test Location:	Main Stack
Test Train:	M23 Dioxin/Furans

Parameters	Run # 1	Run # 2	Run # 4	Average
Run Times	09:53-13:15	14:41-17:54	15:24-18:36	
Date	4/7/2009	4/7/2009	4/9/2009	
Sample Time	180	180	180	
Vol. Sampled @ STP (ft3)	138.034	133.893	135.287	135.738
Moisture Content (% Vol.)	19.3	19.6	19.7	19.5
O2 (%)	8.8	8.8	10.3	9.3
CO2 (%)	8.3	7.8	7.2	7.8
Stack Gas Temperature (°F)	257	260	261	260
Pitot Coef.	0.8200	0.8200	0.8200	0.8200
Stack Velocity (ft/min.)	2,853	2,798	2,749	2,800
Stack Velocity (ft/sec.)	47.54	46.63	45.81	46.66
Gas Flow Rate (ACFM)	378,639	371,378	364,849	371,622
Gas Flow Rate (SCFM)	271,530	265,273	260,864	265,889
Gas Flow Rate (DSCFM)	219,103	213,276	209,574	213,985
Percent Isokinetic	95.9	95.6	98.3	96.6
Total PCDD/Fs (TEQ), pg	0.115	0.067	0.061	0.081
Total TEQ Gas Conc. (gr/dscf)	1.29E-14	7.72E-15	6.96E-15	9.18E-15
Total TEQ Gas Conc. (ng/dscm)	0.0000	0.0000	0.0000	0.0000
Total TEQ Mass Rate (lb/hr)	2.41E-11	1.41E-11	1.25E-11	1.69E-11

Test Run 3 was started on 4/8/09, but was voided due to production interruption.

Project: Haverhill
Project No.: 39400492
Source: Unit # 2 Stack
Test Date: 4/7/2009
Test I.D. M23

Parameters	Run # 1	Run # 2	Run # 4	Average
Sample Time	180	180	180	180
Vol. Sampled @ STP (ft3)	138.034	133.893	135.287	135.738
Moisture Content (% Vol.)	19.3	19.6	19.7	19.5
O2 (%)	8.8	8.8	10.3	9.3
CO2 (%)	8.3	7.8	7.2	7.8
Stack Gas Temperature (°F)	257	260	261	260
Stack Velocity (ft/min.)	2,853	2,798	2,749	2,800
Gas Flow Rate (ACFM)	378,639	371,378	364,849	371,622
Gas Flow Rate (SCFM)	271,530	265,273	260,864	265,889
Gas Flow Rate (DSCFM)	219,103	213,276	209,574	213,985
Percent Isokinetic	95.9	95.6	98.3	96.6
Total PCDD/Fs (TEQ), pg	0.115	0.067	0.061	0.081
Total TEQ Gas Concentration, gr/d	1.28551E-14	7.72116E-15	6.95726E-15	9.1779E-15
- corrected to 7% O2	1.47675E-14	8.86976E-15	9.1232E-15	1.092E-14
Total TEQ Gas Concentration, ng/c	2.942E-05	1.767E-05	1.592E-05	2.100E-05
- corrected to 7% O2	0.0000338	2.030E-05	2.088E-05	2.499E-05
Grains/dscfm	1.286E-14	7.72234E-15	6.958E-15	
Grams	1.15E-13	6.7E-14	6.1E-14	
D/F TEQ, lb/hr	2.415E-11	1.41168E-11	1.25E-11	1.6921E-11

1E-12
1.54324E-11

Main Stack
D/F Run 1

URS

M23 - STACK TEST DATA SHEET

Project:	HNCC Unit #2 Compliance Test	Barom. Psr.:	29.20	Stack Dia.:	156"
Project No:	39400492.520001	Static Psr.:	-0.70	Stack Area:	
Source:	Main Stack	Meter Box I.D.:	URS 001	Port Length:	4"
Run No.:	1	Delta H @:	1.7232	Port Dia.:	4"
Date:	4-7-09	Gamma:	0.9710	Probe Liner:	glass
Operator:	M. Mowery	Pitot Coef.:	0.811 ARS-5004	Filter No.:	N/A

TRAVERSE POINT NUMBER	SAMPLING TIME Clock	SAMPLING TIME Sample	ΔP	ΔH	GAS SAMPLE VOLUME	DRY GAS METER TEMP.	STACK TEMP.	PROBE TEMP.	FILTER BOX TEMP.	XAD TEMP.	LAST IMPINGER TEMP.	TRAIN VACUUM
1	9:53	0	0.63	2.40	122.650	73	261	250	248	~~44~~ 32	41	5
2		7.5	0.62	2.35	128.980	74	260	248	242	33	42	5
3		15.0	0.58	2.25	135.65	76	260	250	253	35	49	5
4		22.5	0.53	2.05	141.750	78	258	248	252	36	49	5
5		30.0	0.45	1.75	148.000	79	257	250	252	37	50	4
6		37.5	0.51	1.95	153.750	80	258	238	253	37	43	4
7	10:43	45.0	0.52	2.00	159.825	82	261	257	257	36	36	5
8		52.5	0.55	2.15	165.800	83	260	255	241	37	44	5
9		1:00	0.57	2.20	173.00	84	260	256	243	38	45	5
10		7.5	0.49	1.90	179.210	85	258	254	238	38	44	5
11		15.0	0.50	1.95	184.950	85	258	253	238	39	44	5
12		22.5	0.52	2.00	190.500	85	258	256	257	39	45	5
13	11:36	30.0	0.55	2.15	197.160	84	260	243	253	38	42	5
14		37.5	0.56	2.20	203.400	85	261	246	230	39	45	5
15		45.0	0.53	2.05	210.050	85	260	247	231	41	50	5
16		52.5	0.50	1.95	216.50	86	260	251	275	39	46	5
17		2:00	0.53	2.05	223.00	86	261	248	221	38	45	5
18		7.5	0.37	1.45	230.00	86	253	251	258	38	45	5
19	12:30	15.0	0.56	2.20	234.790	85	262	257	253	37	40	5
20		22.5	0.56	2.20	240.40	85	261	256	253	39	40	5
21		30.0	0.57	2.20	247.90	86	261	256	255	41	46	5
22		37.5	0.56	2.20	254.10	86	261	255	251	39	45	5
23		45.0	0.45	1.75	260.45	87	258	255	253	39	44	4
24		52.5	0.45	1.75	266.12	87	247	252	246	38	42	4
	13:15	3:00			271.742							
AVERAGE					149.092							

LEAK CHECKS	
Pitot impact:	good
Pitot static:	good
Train initial:	0.0 @ 16"
Train Final:	0.0 @ 6"

NOZZLE MEASUREMENT	
I.D. No.:	M1
1	0.295
2	0.299
3	0.299
Avg.	0.298

STACK GAS ANALYSIS			
	CO2	O2	CO
1	8.1	9.0	
2	8.3	8.9	
3	8.5	8.6	
Avg.	8.3	8.8	

NOTES:

Operator Signature: Michael Mowery

URS

TEST LAB DATA SHEET

PROJECT: **HNCC Unit #2 Compliance** JOB NO.: **39400329.520001**

SOURCE: Main Stk DATE: 4-7-09

TRAIN I.D.: M23-1 TEST NO.: 1

COLLECTED BY: TJB CHKD. BY: TJB

CONDENSATION

IMPINGER NO.	INITIAL VOL., ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	373.0	1009.9	636.9
2	705.6	745.2	39.6
3	710.3	709.8	-.5
4	601.7	601.8	.1
5	888.4	914.0	25.6
6			
7			
8			
9			
TOTAL	3279.0	3980.7	701.7

STACK TEST CALCULATIONS

Project:	Haverhill	Barom. Psr.:	29.2		Calculated
Project No:	39400492	Static Psr.:	-0.7	Ps:	29.149
Source:	Unit # 2 Stack	Delta H @:	1.7232	As:	132.732
Run No.:	1	Gamma:	0.971	An:	0.000484
Date:	4/7/2009	Pitot Coef.:	0.811		
Sample Volume:	149.092	Stack Dia.:	156 ,in.		
Sample Time:	180	Nozzle Dia.:	0.298 ,in.		
O2 Conc.:	8.8	H2O Gain:	701.7 ,ml		
CO2 Conc.:	8.3	Part. Weight:	,g		

TRAVERSE POINT NUMBER	VELOCITY DELTA P Actual	Sq. Root	DELTA H	DRY GAS METER TEMPERATURE	STACK TEMP.
1	0.63	0.793725	2.40	73	261
2	0.62	0.787401	2.35	74	260
3	0.58	0.761577	2.25	76	260
4	0.53	0.728011	2.05	78	258
5	0.45	0.67082	1.75	79	257
6	0.51	0.714143	1.95	80	258
7	0.52	0.72111	2.00	82	261
8	0.55	0.74162	2.15	83	260
9	0.57	0.754983	2.20	84	260
10	0.49	0.7	1.90	85	258
11	0.50	0.707107	1.95	85	258
12	0.52	0.72111	2.00	85	258
13	0.55	0.74162	2.15	84	260
14	0.56	0.748331	2.20	85	261
15	0.53	0.728011	2.05	85	260
16	0.50	0.707107	1.95	86	260
17	0.53	0.728011	2.05	86	261
18	0.37	0.608276	1.45	86	253
19	0.56	0.748331	2.20	85	253
20	0.56	0.748331	2.20	85	253
21	0.57	0.754983	2.20	86	255
22	0.56	0.748331	2.20	86	251
23	0.45	0.67082	1.75	87	253
24	0.45	0.67082	1.75	87	246
AVERAGE	0.5275	0.725191	2.05	83	257.29167

URS

TEST LAB DATA SHEET

PROJECT:	Haverhill Pre-test	PROJECT NO.:	39400492.520001
SOURCE:	Unit # 2 Stack	TEST DATE:	4/7/2009
TRAIN I.D.	M23-1	TEST NO.:	1
COLLECTED BY:	TJB	CHKD BY:	MSM

CONDENSATION

IMPINGER NO.	INITIAL VOL.,ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	373	1,009.9	636.9
2	705.6	745.2	39.6
3	710.3	709.8	-0.5
4	601.7	601.8	0.1
5	888.4	914	25.6
6			0
7			0
TOTAL	3279	3980.7	701.7

PARTICULATE

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g
PROBE WASH			0
REAGENT BLANK			0
CORRECTED PROBE WASH *			0
FILTER # 1			0
FILTER # 2			0
IMPINGERS			0

* subtract reagent blank from probe wash

TOTAL PARTICULATED COLLECTED

PARTICULATE COLLECTED (excluding impinger catch)
PARTICULATE COLLECTED (including impinger catch)

QA PROBE WASH (as required)

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g

COMMENTS:

Project: Haverhill
Project No: 39400492
Source: Unit # 2 Stack
Run No.: 1

Stack Sampling Calculations

Volume of Water Collected

Vwstd = (VI0)(0.04707)

Vwstd = 33.03 cubic feet

Volume of Gas Metered, Standard Conditions

Vmstd = ((17.64) (Vm)(Pb + DeltaH/13.6)(gamma))/Tm

Vmstd = 138.034 cubic feet

Moisture Content

Bwo = Vwstd/(Vmstd + Vwstd)

Bwo = 0.19

Molecular Weight of the Dry Gas Stream

Md = (.44)(%CO2) + (.32)(%O2) + (.28)(%CO +%N2)

Md = 29.7

Molecular Weight of Stack Gas

Ms = (Md(1-Bwo) + 18(bwo)

Ms = 27.4

Velocity of Stack Gas

Vs = 174 Cp (DeltaP sq.rt.)((Ts+459.6) X 29.92 X 28.96/Ps/Ms)^.5

Vs = 2,852.7 ft/min

Total Flow of Stack Gas

Qa = As X Vs

Qa = 378,639.01 ACFM

Qs = Qa X 528/Ts X Ps/29.92

Qs = 271,530.46 SCFM

Qstd = Qs(1 - Bwo)

Qstd = 219,103.15 DSCFM

Vsstd = Qstd/As

Vsstd = 1650.72 ft/min

Percent Isokinetic

Is = Vmstd/(An X Time X Vsstd)

Is = 0.96

Particulate Concentration

Cs = (15.43)(Mn)/Vmstd

Cs = 0.0000

Particulate Mass Rate

Pmr = (Mn)(Qstd)(60)/(Vmstd)(453.6)

Pmr = 0.00

M23 TEQ DETERMINATION

Project: Haverhill
Project No: 39400492
Source: Unit # 2 Stack
Run No.: 1
Date: 4/7/2009

COMPOUND	I-TEF	Test Results (pg/sample)	TEQ[1]
2,3,7,8-TCDD	1.00	ND	-
1,2,3,7,8-PeCDD	0.50	ND	-
1,2,3,4,7,8-HxCDD	0.10	ND	-
1,2,3,6,7,8-HxCDD	0.10	ND	-
1,2,3,7,8,9-HxCDD	0.10	ND	-
1,2,3,4,6,7,8-HpCDD	0.01	6.3	0.063
OCDD	0.001	52	0.052
2,3,7,8-TCDF	0.10	ND	-
1,2,3,7,8-PeCDF	0.05	ND	-
2,3,4,7,8-PeCDF	0.50	ND	-
1,2,3,4,7,8-HxCDF	0.10	ND	-
1,2,3,6,7,8-HxCDF	0.10	ND	-
2,3,4,6,7,8-HxCDF	0.10	ND	-
1,2,3,7,8,9-HpCDF	0.10	ND	-
1,2,3,4,6,7,8-HpCDF	0.01	ND	-
1,2,3,4,7,8,9-HpCDF	0.01	ND	-
OCDF	0.001	ND	-
Total TEQ			**0.115**

[1] $TEQ_{(sample)} = Sum(concentration \times TEF)_{2,3,7,8\text{-substituted analyte}}$

Main Stack
D/F Run 2

URS

M23 - STACK TEST DATA SHEET

Project:	HNCC Unit #2 Compliance Test	Barom. Psr.:	29.20	Stack Dia.:	156"
Project No:	39400492.520001	Static Psr.:	-0.75	Stack Area:	
Source:	Main Stack	Meter Box I.D.:	URS 001	Port Length:	4"
Run No.:	2	Delta H @:	1.7232	Port Dia.:	4"
Date:	4-7-09	Gamma:	0.9710	Probe Liner:	glass
Operator:	M. Mowery	Pitot Coef.:	0.811 AQS-5001	Filter No.:	N/A

TRAVERSE POINT NUMBER	SAMPLING TIME Clock	SAMPLING TIME Sample	ΔP	ΔH	GAS SAMPLE VOLUME	DRY GAS METER TEMP.	STACK TEMP.	PROBE TEMP.	FILTER BOX TEMP.	XAD TEMP.	LAST IMPINGER TEMP.	TRAIN VACUUM
1	14:41	0	0.58	2.25	274.900	76	262	255	253	37	33	5
2		7.5	0.60	2.30	281.30	77	261	256	253	38	35	6
3		15.0	0.62	2.40	287.40	78	261	255	253	44	52	6
4		22.5	0.57	2.20	293.91	79	261	255	252	43	46	6
5		30.0	0.48	1.75	300.43	80	260	254	250	44	40	5
6		37.5	0.42	1.62	306.55	81	256	255	251	55	42	5
7	15:31	45.0	0.52	2.00	312.255	82	263	251	251	34	37	5
8		52.5	0.52	2.00	318.10	84	262	249	255	37	36	5
9		1:00	0.48	1.85	323.92	85	262	249	250	36	37	5
10		7.5	0.45	1.75	329.85	86	260	247	245	37	37	5
11		15.0	0.43	1.65	335.40	87	259	248	245	37	37	5
12		22.5	0.40	1.55	340.95	88	258	252	250	37	38	4
13	16:20	30.0	0.53	2.05	346.470	88	264	257	253	36	38	5
14		37.5	0.58	2.25	352.00	89	264	256	254	39	39	5
15		45.0	0.55	2.15	358.40	89	262	254	250	42	41	5
16		52.5	0.53	2.05	364.95	90	262	256	254	45	43	5
17		2:00	0.43	1.65	371.50	90	257	256	255	45	41	5
18		7.5	0.40	1.55	377.45	90	257	252	245	44	41	5
19	17:09	15.0	0.58	2.25	383.425	89	262	231	237	40	38	6
20		22.5	0.58	2.25	389.50	89	264	233	255	46	41	6
21		30.0	0.58	2.25	396.00	88	263	247	250	49	43	6
22		37.5	0.52	2.00	402.40	88	264	252	251	45	41	5
23		45.0	0.42	1.60	408.50	88	258	240	252	41	39	5
24		52.5	0.35	1.35	413.90	89	257	245	250	39	39	5
	17:54	3:00			420.210							
AVERAGE					145.310							

LEAK CHECKS	
Pitot impact:	good
Pitot static:	good
Train initial:	0.0@15" Hg
Train Final:	0.0@7"

NOZZLE MEASUREMENT	
I.D. No.:	M1
1	0.295
2	0.299
3	0.299
Avg.	0.298

STACK GAS ANALYSIS	CO2	O2	CO
1	8.2	9.2	
2	9.0	7.7	
3	6.3	39.6	
Avg.	7.8	8.8	

NOTES:

Operator Signature: Michael Mowery

URS

TEST LAB DATA SHEET

PROJECT: **HNCC Unit #2 Compliance** JOB NO.: **39400329.520001**

SOURCE: Main Stk DATE: 4-7-09

TRAIN I.D.: M23-2 TEST NO.: 2

COLLECTED BY: MSM CHKD. BY:

CONDENSATION

IMPINGER NO.	INITIAL VOL., ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	351.2	982.9	631.7
2	717.0	755.2	38.2
3	688.2	686.3	-1.9
4	608.8	607.8	-1.0
5	884.9	911.4	26.5
6			
7			
8			
9			
TOTAL	3250.1	3943.6	693.5

STACK TEST CALCULATIONS

Project:	Haverhill	Barom. Psr.:	29.2		Calculated
Project No:	39400492	Static Psr.:	-0.75	Ps:	29.145
Source:	Unit # 2 Stack	Delta H @:	1.7232	As:	132.732
Run No.:	2	Gamma:	0.971	An:	0.000484
Date:	4/7/2009	Pitot Coef.:	0.811		
Sample Volume:	145.31	Stack Dia.:	156 ,in.		
Sample Time:	180	Nozzle Dia.:	0.298 ,in.		
O2 Conc.:	8.8	H2O Gain:	693.5 ,ml		
CO2 Conc.:	7.8	Part. Weight:	,g		

TRAVERSE POINT NUMBER	VELOCITY DELTA P Actual	Sq. Root	DELTA H	DRY GAS METER TEMPERATURE	STACK TEMP.
1	0.58	0.761577	2.25	76	262
2	0.60	0.774597	2.30	77	261
3	0.62	0.787401	2.40	78	261
4	0.57	0.754983	2.20	79	261
5	0.48	0.69282	1.75	80	260
6	0.42	0.648074	1.62	81	256
7	0.52	0.72111	2.00	82	263
8	0.52	0.72111	2.00	84	262
9	0.48	0.69282	1.85	85	262
10	0.45	0.67082	1.75	86	260
11	0.43	0.655744	1.65	87	259
12	0.40	0.632456	1.55	88	258
13	0.53	0.728011	2.05	89	264
14	0.58	0.761577	2.25	89	264
15	0.55	0.74162	2.15	89	262
16	0.53	0.728011	2.05	90	262
17	0.43	0.655744	1.65	90	257
18	0.40	0.632456	1.55	90	257
19	0.58	0.761577	2.25	89	262
20	0.58	0.761577	2.25	89	261
21	0.58	0.761577	2.25	88	261
22	0.52	0.72111	2.00	88	261
23	0.42	0.648074	1.60	88	258
24	0.35	0.591608	1.35	89	247
AVERAGE	0.505	0.708602	1.9466667	85.45833	260.0417

URS

TEST LAB DATA SHEET

PROJECT:	Haverhill Pre-test	PROJECT NO.:	39400492.520001
SOURCE:	Unit # 2 Stack	TEST DATE:	4/7/2009
TRAIN I.D.	M23-2	TEST NO.:	2
COLLECTED BY:	MSM	CHKD BY:	TJB

CONDENSATION

IMPINGER NO.	INITIAL VOL.,ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	351.2	982.9	631.7
2	717.0	755.2	38.2
3	688.2	686.3	-1.9
4	608.8	607.8	-1.0
5	884.9	911.4	26.5
6			0.0
7			0.0
TOTAL	3250.10	3943.6	693.5

PARTICULATE

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g
PROBE WASH			0
REAGENT BLANK			0
CORRECTED PROBE WASH *			0
FILTER # 1			0
FILTER # 2			0
IMPINGERS			0

* subtract reagent blank from probe wash

TOTAL PARTICULATED COLLECTED

PARTICULATE COLLECTED (excluding impinger catch)
PARTICULATE COLLECTED (including impinger catch)

QA PROBE WASH (as required)

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g

COMMENTS:

Project: Haverhill
Project No: 39400492
Source: Unit # 2 Stack
Run No.: 2

Stack Sampling Calculations

Volume of Water Collected

Vwstd = (VI0)(0.04707)

Vwstd = 32.64 cubic feet

Volume of Gas Metered, Standard Conditions

Vmstd = ((17.64) (Vm)(Pb + DeltaH/13.6)(gamma))/Tm

Vmstd = 133.893 cubic feet

Moisture Content

Bwo = Vwstd/(Vmstd + Vwstd)

Bwo = 0.20

Molecular Weight of the Dry Gas Stream

Md = (.44)(%CO2) + (.32)(%O2) + (.28)(%CO +%N2)

Md = 29.6

Molecular Weight of Stack Gas

Ms = (Md(1-Bwo) + 18(bwo)

Ms = 27.3

Velocity of Stack Gas

Vs = 174 Cp (DeltaP sq.rt.)((Ts+459.6) X 29.92 X 28.96/Ps/Ms)^.5

Vs = 2,797.9 ft/min

Total Flow of Stack Gas

Qa = As X Vs

Qa = 371,377.90 ACFM

Qs = Qa X 528/Ts X Ps/29.92

Qs = 265,272.75 SCFM

Qstd = Qs(1 - Bwo)

Qstd = 213,276.17 DSCFM

Vsstd = Qstd/As

Vsstd = 1606.82 ft/min

Percent Isokinetic

Is = Vmstd/(An X Time X Vsstd)

Is = 0.96

Particulate Concentration

Cs = (15.43)(Mn)/Vmstd

Cs = 0.0000

Particulate Mass Rate

Pmr = (Mn)(Qstd)(60)/(Vmstd)(453.6)

Pmr = 0.00

M23 TEQ DETERMINATION

Project: Haverhill
Project No: 39400492
Source: Unit # 2 Stack
Run No.: 2
Date: 4/7/2009

COMPOUND	I-TEF	Test Results (pg/sample)	TEQ[1]
2,3,7,8-TCDD	1.00	ND	-
1,2,3,7,8-PeCDD	0.50	ND	-
1,2,3,4,7,8-HxCDD	0.10	ND	-
1,2,3,6,7,8-HxCDD	0.10	ND	-
1,2,3,7,8,9-HxCDD	0.10	ND	-
1,2,3,4,6,7,8-HpCDD	0.01	3.3	0.033
OCDD	0.001	34	0.034
2,3,7,8-TCDF	0.10	ND	-
1,2,3,7,8-PeCDF	0.05	ND	-
2,3,4,7,8-PeCDF	0.50	ND	-
1,2,3,4,7,8-HxCDF	0.10	ND	-
1,2,3,6,7,8-HxCDF	0.10	ND	-
2,3,4,6,7,8-HxCDF	0.10	ND	-
1,2,3,7,8,9-HpCDF	0.10	ND	-
1,2,3,4,6,7,8-HpCDF	0.01	ND	-
1,2,3,4,7,8,9-HpCDF	0.01	ND	-
OCDF	0.001	ND	-
Total TEQ			**0.067**

[1] $TEQ_{(sample)} = Sum(concentration \times TEF)_{2,3,7,8\text{-substituted analyte}}$

Main Stack
D/F Run 4

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M23 - STACK TEST DATA SHEET

Project: HNCC Unit #2 Compliance Test
Project No: 39400492.520001
Source: Main Stack
Run No.: 4
Date: 4-9-09
Operator: M. Mowery

Barom. Psr.: 29.28
Static Psr.: -0.14
Meter Box I.D.: URS ~~002~~ 001 MSM
Delta H @: ~~1.6984~~ 1.7232 MSM
Gamma: ~~0.9963~~ 0.9710 MSM
Pitot Coef.: 0.811 AQS-5001

Stack Dia.: 156"
Stack Area:
Port Length: 4"
Port Dia.: 4"
Probe Liner: glass
Filter No.: N/A

TRAVERSE POINT NUMBER	SAMPLING TIME Clock	SAMPLING TIME Sample	ΔP	ΔH	GAS SAMPLE VOLUME	DRY GAS METER TEMP.	STACK TEMP.	PROBE TEMP.	FILTER BOX TEMP.	XAD TEMP.	LAST IMPINGER TEMP.	TRAIN VACUUM
1	3:24	0	0.48	1.85	716.415	77	263	266	260	37	38	4
2	15:24	7.5	0.48	1.85	722.20	77	263	265	261	37	38	4
3		15.0	0.55	2.15	728.10	77	263	265	262	40	38	4
4		22.5	0.48	1.85	734.30	77	262	257	260	39	41	5
5		30.0	0.41	1.58	740.50	77	258	241	244	41	40	5
6		37.5	0.38	1.50	747.50	77	256	242	245	41	40	5
7	16:13	45.0	0.56	2.20	752.050	76	263	243	245	38	41	5
8		52.5	0.57	2.25	757.90	77	263	233	246	43	41	5
9		1:00	0.57	2.25	764.50	78	263	233	242	44	44	5
10		7.5	0.55	2.15	770.70	78	263	243	243	45	45	5
11		15.0	0.46	1.80	777.50	79	262	236	247	45	46	5
12		22.5	0.32	1.30	783.20	79	245	235	243	46	47	5
13	17:01	30.0	0.58	2.30	789.00	78	264	240	245	43	47	5
14		37.5	0.60	2.35	794.60	79	263	241	243	47	49	5
15		45.0	0.55	2.15	801.60	80	263	242	246	50	49	5
16		52.5	0.55	2.15	808.30	80	262	239	242	46	46	5
17		2:00	0.43	1.70	814.40	81	260	241	244	46	44	5
18		7.5	0.42	1.65	820.50	81	261	240	244	44	44	5
19	17:50	15.0	0.48	1.80	826.660	80	264	239	244	40	43	5
20		22.5	0.52	2.00	831.85	81	264	237	244	46	43	5
21		30.0	0.52	2.00	837.65	82	263	241	244	40	42	5
22		37.5	0.48	1.80	844.20	83	263	238	243	39	41	5
23		45.0	0.38	1.50	849.50	84	261	238	244	39	40	5
24		52.5	0.38	1.50	855.70	85	260	238	244	37	40	5
	18:36	3:00			861.200							
AVERAGE					144.785							

LEAK CHECKS	
Pitot impact:	good
Pitot static:	good
Train initial:	0.0 @ 15"
Train Final:	0.0 @ 7"

NOZZLE MEASUREMENT	
I.D. No.:	M1
1	0.295
2	0.299
3	0.299
Avg.	0.298

STACK GAS ANALYSIS	CO2	O2	CO
1	6.9	10.7	
2	7.2	10.4	
3	7.6	9.7	
Avg.	7.2	10.3	

NOTES:

Operator Signature: Michael Mowery

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TEST LAB DATA SHEET

PROJECT: **HNCC Unit #2 Compliance** JOB NO.: **39400492.520001**

SOURCE: Main Stack DATE: 4-9-09

TRAIN I.D.: M23-4 TEST NO.: 4

COLLECTED BY: JJB CHKD. BY:

CONDENSATION

IMPINGER NO.	INITIAL VOL., ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	376.0	989.7	613.7
2	716.4	773.4	57.0
3	703.0	702.6	-0.4
4	602.7	605.1	2.4
5	897.4	928.1	30.7
6			
7			
8			
9			
TOTAL	3295.5	3998.9	703.4

STACK TEST CALCULATIONS

Project:	Haverhill	Barom. Psr.:	29.28		Calculated
Project No:	39400492	Static Psr.:	-0.74	Ps:	29.226
Source:	Unit # 2 Stack	Delta H @:	1.7232	As:	132.732
Run No.:	4	Gamma:	0.971	An:	0.000484
Date:	4/9/2009	Pitot Coef.:	0.811		
Sample Volume:	144.785	Stack Dia.:	156 ,in.		
Sample Time:	180	Nozzle Dia.:	0.298 ,in.		
O2 Conc.:	10.3	H2O Gain:	703.4 ,ml		
CO2 Conc.:	7.2	Part. Weight:	,g		

TRAVERSE POINT NUMBER	VELOCITY DELTA P Actual	Sq. Root	DELTA H	DRY GAS METER TEMPERATURE	STACK TEMP.
1	0.48	0.69282	1.85	77	263
2	0.48	0.69282	1.85	77	263
3	0.55	0.74162	2.15	77	263
4	0.48	0.69282	1.85	77	262
5	0.41	0.640312	1.58	77	258
6	0.38	0.616441	1.50	77	256
7	0.56	0.748331	2.20	76	263
8	0.57	0.754983	2.25	77	263
9	0.57	0.754983	2.25	78	263
10	0.55	0.74162	2.15	78	263
11	0.46	0.678233	1.80	79	262
12	0.32	0.565685	1.30	79	245
13	0.58	0.761577	2.30	78	264
14	0.60	0.774597	2.35	79	263
15	0.55	0.74162	2.15	80	263
16	0.55	0.74162	2.15	80	262
17	0.43	0.655744	1.70	81	260
18	0.42	0.648074	1.65	81	261
19	0.48	0.69282	1.80	80	264
20	0.52	0.72111	2.00	81	264
21	0.52	0.72111	2.00	82	263
22	0.48	0.69282	1.80	83	263
23	0.38	0.616441	1.50	84	261
24	0.38	0.616441	1.50	85	260
AVERAGE	0.4875	0.696027	1.90125	79.29167	261.3333

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TEST LAB DATA SHEET

PROJECT:	Haverhill Pre-test	PROJECT NO.:	39400492.520001
SOURCE:	Unit # 2 Stack	TEST DATE:	4/9/2009
TRAIN I.D.	M23-4	TEST NO.:	4
COLLECTED BY:	TJB	CHKD BY:	MSM

CONDENSATION

IMPINGER NO.	INITIAL VOL.,ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	376.0	989.7	613.7
2	716.4	773.4	57.0
3	703.0	702.6	-0.4
4	602.7	605.1	2.4
5	897.4	928.1	30.7
6			0.0
7			0.0
TOTAL	3295.5	3998.9	703.4

PARTICULATE

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g
PROBE WASH			0
REAGENT BLANK			0
CORRECTED PROBE WASH *			0
FILTER # 1			0
FILTER # 2			0
IMPINGERS			0

* subtract reagent blank from probe wash

TOTAL PARTICULATED COLLECTED

PARTICULATE COLLECTED (excluding impinger catch)
PARTICULATE COLLECTED (including impinger catch)

QA PROBE WASH (as required)

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g

COMMENTS:

Project: Haverhill
Project No: 39400492
Source: Unit # 2 Stack
Run No.: 4

Stack Sampling Calculations

Volume of Water Collected

Vwstd = (VI0)(0.04707)

Vwstd = 33.11 cubic feet

Volume of Gas Metered, Standard Conditions

Vmstd = ((17.64) (Vm)(Pb + DeltaH/13.6)(gamma))/Tm

Vmstd = 135.287 cubic feet

Moisture Content

Bwo = Vwstd/(Vmstd + Vwstd)

Bwo = 0.20

Molecular Weight of the Dry Gas Stream

Md = (.44)(%CO2) + (.32)(%O2) + (.28)(%CO +%N2)

Md = 29.6

Molecular Weight of Stack Gas

Ms = (Md(1-Bwo) + 18(bwo)

Ms = 27.3

Velocity of Stack Gas

Vs = 174 Cp (DeltaP sq.rt.)((Ts+459.6) X 29.92 X 28.96/Ps/Ms)^.5

Vs = 2,748.8 ft/min

Total Flow of Stack Gas

Qa = As X Vs

Qa = 364,849.49 ACFM

Qs = Qa X 528/Ts X Ps/29.92

Qs = 260,863.51 SCFM

Qstd = Qs(1 - Bwo)

Qstd = 209,574.19 DSCFM

Vsstd = Qstd/As

Vsstd = 1578.93 ft/min

Percent Isokinetic

Is = Vmstd/(An X Time X Vsstd)

Is = 0.98

Particulate Concentration

Cs = (15.43)(Mn)/Vmstd

Cs = 0.0000

Particulate Mass Rate

Pmr = (Mn)(Qstd)(60)/(Vmstd)(453.6)

Pmr = 0.00

M23 TEQ DETERMINATION

Project:	Haverhill
Project No:	39400492
Source:	Unit # 2 Stack
Run No.:	4
Date:	4/9/2009

COMPOUND	I-TEF	Test Results (pg/sample)	TEQ[1]
2,3,7,8-TCDD	1.00	ND	-
1,2,3,7,8-PeCDD	0.50	ND	-
1,2,3,4,7,8-HxCDD	0.10	ND	-
1,2,3,6,7,8-HxCDD	0.10	ND	-
1,2,3,7,8,9-HxCDD	0.10	ND	-
1,2,3,4,6,7,8-HpCDD	0.01	3.2	0.032
OCDD	0.001	29	0.029
2,3,7,8-TCDF	0.10	ND	-
1,2,3,7,8-PeCDF	0.05	ND	-
2,3,4,7,8-PeCDF	0.50	ND	-
1,2,3,4,7,8-HxCDF	0.10	ND	-
1,2,3,6,7,8-HxCDF	0.10	ND	-
2,3,4,6,7,8-HxCDF	0.10	ND	-
1,2,3,7,8,9-HpCDF	0.10	ND	-
1,2,3,4,6,7,8-HpCDF	0.01	ND	-
1,2,3,4,7,8,9-HpCDF	0.01	ND	-
OCDF	0.001	ND	-
Total TEQ			**0.061**

[1] $TEQ_{(sample)} = Sum(concentration \times TEF)_{2,3,7,8\text{-substituted analyte}}$

Main Stack
D/F Lab Results

URS Corporation

Sample ID: M23 RUN 1

Trace Level Organic Compounds

Lot - Sample #....:	H9D140159 - 001	**Work Order #....:**	K93F61AA	**Matrix....:**	AIR
Date Sampled....:	04/07/09	**Date Received....:**	04/13/09	**Dilution Factor:**	1
Prep Date....:	04/28/09	**Analysis Date....:**	05/17/09		
Prep Batch # ....:	9118146				
Initial Wgt/Vol :	1 Sample	**Instrument ID....:**	M2A	**Method:**	CFR60A 23
Analyst ID....:	Melissa A. Davidson				

PARAMETER	RESULT		MINIMUM LEVEL	ESTIMATED DETECTION LIMIT	UNITS
2,3,7,8-TCDD	ND		10	4.0	pg/sample
Total TCDD	ND		10	4.0	pg/sample
1,2,3,7,8-PeCDD	ND		50	1.9	pg/sample
Total PeCDD	ND		50	1.9	pg/sample
1,2,3,4,7,8-HxCDD	ND		50	1.3	pg/sample
1,2,3,6,7,8-HxCDD	ND		50	1.3	pg/sample
1,2,3,7,8,9-HxCDD	ND		50	1.2	pg/sample
Total HxCDD	**5.3**	**Q J**	**50**	**1.2**	**pg/sample**
1,2,3,4,6,7,8-HpCDD	**6.3**	**J**	**50**	**1.7**	**pg/sample**
Total HpCDD	**14**	**J**	**50**	**1.7**	**pg/sample**
OCDD	**52**	**B J**	**100**	**2.6**	**pg/sample**
2,3,7,8-TCDF	ND		10	2.3	pg/sample
Total TCDF	**1.9**	**Q J**	**10**	**2.3**	**pg/sample**
1,2,3,7,8-PeCDF	ND		50	1.6	pg/sample
2,3,4,7,8-PeCDF	ND		50	1.5	pg/sample
Total PeCDF	ND		50	1.6	pg/sample
1,2,3,4,7,8-HxCDF	ND		50	0.64	pg/sample
1,2,3,6,7,8-HxCDF	ND		50	0.61	pg/sample
2,3,4,6,7,8-HxCDF	ND		50	0.70	pg/sample
1,2,3,7,8,9-HxCDF	ND		50	0.72	pg/sample
Total HxCDF	ND		50	0.67	pg/sample
1,2,3,4,6,7,8-HpCDF	ND		50	1.2	pg/sample
1,2,3,4,7,8,9-HpCDF	ND		50	1.4	pg/sample
Total HpCDF	ND		50	1.3	pg/sample
OCDF	ND		100	3.0	pg/sample

URS Corporation

Sample ID: M23 RUN 1

Trace Level Organic Compounds

Lot - Sample #....:	H9D140159 - 001	**Work Order #....:**	K93F61AA	**Matrix....:**	AIR
Date Sampled....:	04/07/09	**Date Received....:**	04/13/09	**Dilution Factor:**	1
Prep Date....:	04/28/09	**Analysis Date....:**	05/17/09		
Prep Batch # ....:	9118146				
Initial Wgt/Vol :	1 Sample	**Instrument ID....:**	M2A	**Method:**	CFR60A 23
Analyst ID....:	Melissa A. Davidson				

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	90	40 - 130
13C-1,2,3,7,8-PeCDD	95	40 - 130
13C-1,2,3,6,7,8-HxCDD	98	40 - 130
13C-1,2,3,4,6,7,8-HpCDD	85	25 - 130
13C-OCDD	70	25 - 130
13C-2,3,7,8-TCDF	90	40 - 130
13C-1,2,3,7,8-PeCDF	90	40 - 130
13C-1,2,3,6,7,8-HxCDF	103	40 - 130
13C-1,2,3,4,6,7,8-HpCDF	89	25 - 130

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
13C-1,2,3,4,7,8-HxCDD	91	70 - 130
13C-2,3,4,7,8-PeCDF	97	70 - 130
13C-1,2,3,4,7,8-HxCDF	72	70 - 130
13C-1,2,3,4,7,8,9-HpCDF	81	70 - 130
37Cl4-2,3,7,8-TCDD	86	70 - 130

QUALIFIERS

Results and reporting limits have been adjusted for dry weight.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated Result.

Q Estimated maximum possible concentration (EMPC).

URS Corporation

Sample ID: M23 RUN 2

Trace Level Organic Compounds

Lot - Sample #....:	H9D140159 - 002	**Work Order #....:**	K93GA1AA	**Matrix....:**	AIR
Date Sampled....:	04/07/09	**Date Received....:**	04/13/09	**Dilution Factor:**	1
Prep Date....:	04/28/09	**Analysis Date....:**	05/17/09		
Prep Batch # ....:	9118146				
Initial Wgt/Vol :	1 Sample	**Instrument ID....:**	M2A	**Method:**	CFR60A 23
Analyst ID....:	Melissa A. Davidson				

PARAMETER	RESULT		MINIMUM LEVEL	ESTIMATED DETECTION LIMIT	UNITS
2,3,7,8-TCDD	ND		10	4.0	pg/sample
Total TCDD	ND		10	4.0	pg/sample
1,2,3,7,8-PeCDD	ND		50	1.9	pg/sample
Total PeCDD	ND		50	1.9	pg/sample
1,2,3,4,7,8-HxCDD	ND		50	1.4	pg/sample
1,2,3,6,7,8-HxCDD	ND		50	1.4	pg/sample
1,2,3,7,8,9-HxCDD	ND		50	1.3	pg/sample
Total HxCDD	ND		50	1.4	pg/sample
1,2,3,4,6,7,8-HpCDD	**3.3**	**Q J**	**50**	**1.7**	**pg/sample**
Total HpCDD	**7.4**	**Q J**	**50**	**1.7**	**pg/sample**
OCDD	**34**	**B J**	**100**	**2.0**	**pg/sample**
2,3,7,8-TCDF	ND		10	2.8	pg/sample
Total TCDF	**3.8**	**Q J**	**10**	**2.8**	**pg/sample**
1,2,3,7,8-PeCDF	ND		50	1.6	pg/sample
2,3,4,7,8-PeCDF	ND		50	1.6	pg/sample
Total PeCDF	ND		50	1.6	pg/sample
1,2,3,4,7,8-HxCDF	ND		50	0.70	pg/sample
1,2,3,6,7,8-HxCDF	ND		50	0.67	pg/sample
2,3,4,6,7,8-HxCDF	ND		50	0.76	pg/sample
1,2,3,7,8,9-HxCDF	ND		50	0.79	pg/sample
Total HxCDF	ND		50	0.73	pg/sample
1,2,3,4,6,7,8-HpCDF	ND		50	1.3	pg/sample
1,2,3,4,7,8,9-HpCDF	ND		50	1.5	pg/sample
Total HpCDF	ND		50	1.4	pg/sample
OCDF	ND		100	2.4	pg/sample

URS Corporation

Sample ID: M23 RUN 2

Trace Level Organic Compounds

Lot - Sample #....:	H9D140159 - 002	**Work Order #....:**	K93GA1AA	**Matrix....:**	AIR
Date Sampled....:	04/07/09	**Date Received....:**	04/13/09	**Dilution Factor:**	1
Prep Date....:	04/28/09	**Analysis Date....:**	05/17/09		
Prep Batch # ....:	9118146				
Initial Wgt/Vol :	1 Sample	**Instrument ID....:**	M2A	**Method:**	CFR60A 23
Analyst ID....:	Melissa A. Davidson				

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	84	40 - 130
13C-1,2,3,7,8-PeCDD	95	40 - 130
13C-1,2,3,6,7,8-HxCDD	90	40 - 130
13C-1,2,3,4,6,7,8-HpCDD	83	25 - 130
13C-OCDD	76	25 - 130
13C-2,3,7,8-TCDF	83	40 - 130
13C-1,2,3,7,8-PeCDF	90	40 - 130
13C-1,2,3,6,7,8-HxCDF	92	40 - 130
13C-1,2,3,4,6,7,8-HpCDF	84	25 - 130

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
13C-1,2,3,4,7,8-HxCDD	87	70 - 130
13C-2,3,4,7,8-PeCDF	90	70 - 130
13C-1,2,3,4,7,8-HxCDF	70	70 - 130
13C-1,2,3,4,7,8,9-HpCDF	81	70 - 130
37Cl4-2,3,7,8-TCDD	83	70 - 130

QUALIFIERS

Results and reporting limits have been adjusted for dry weight.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated Result.

Q Estimated maximum possible concentration (EMPC).

URS Corporation

Sample ID: M23 RUN 4

Trace Level Organic Compounds

Lot - Sample #....:	H9D140159 - 003	**Work Order #....:**	K93GE1AA	**Matrix....:**	AIR
Date Sampled....:	04/09/09	**Date Received....:**	04/13/09	**Dilution Factor:**	1
Prep Date....:	04/28/09	**Analysis Date....:**	05/18/09		
Prep Batch # ....:	9118146				
Initial Wgt/Vol :	1 Sample	**Instrument ID....:**	M2A	**Method:**	CFR60A 23
Analyst ID....:	Jon M. Nordquist				

PARAMETER	RESULT		MINIMUM LEVEL	ESTIMATED DETECTION LIMIT	UNITS
2,3,7,8-TCDD	ND		10	4.0	pg/sample
Total TCDD	ND		10	4.0	pg/sample
1,2,3,7,8-PeCDD	ND		50	1.9	pg/sample
Total PeCDD	ND		50	1.9	pg/sample
1,2,3,4,7,8-HxCDD	ND		50	1.4	pg/sample
1,2,3,6,7,8-HxCDD	ND		50	1.4	pg/sample
1,2,3,7,8,9-HxCDD	ND		50	1.3	pg/sample
Total HxCDD	ND		50	1.3	pg/sample
1,2,3,4,6,7,8-HpCDD	**3.2**	**J**	**50**	**1.9**	**pg/sample**
Total HpCDD	**7.3**	**Q J**	**50**	**1.9**	**pg/sample**
OCDD	**29**	**Q B J**	**100**	**1.8**	**pg/sample**
2,3,7,8-TCDF	ND		10	2.4	pg/sample
Total TCDF	ND		10	2.4	pg/sample
1,2,3,7,8-PeCDF	ND		50	1.8	pg/sample
2,3,4,7,8-PeCDF	ND		50	1.7	pg/sample
Total PeCDF	ND		50	1.8	pg/sample
1,2,3,4,7,8-HxCDF	ND		50	0.78	pg/sample
1,2,3,6,7,8-HxCDF	ND		50	0.74	pg/sample
2,3,4,6,7,8-HxCDF	ND		50	0.84	pg/sample
1,2,3,7,8,9-HxCDF	ND		50	0.87	pg/sample
Total HxCDF	ND		50	0.80	pg/sample
1,2,3,4,6,7,8-HpCDF	ND		50	1.1	pg/sample
1,2,3,4,7,8,9-HpCDF	ND		50	1.3	pg/sample
Total HpCDF	ND		50	1.2	pg/sample
OCDF	ND		100	2.1	pg/sample

URS Corporation

Sample ID: M23 RUN 4

Trace Level Organic Compounds

Lot - Sample #....:	H9D140159 - 003	**Work Order #....:**	K93GE1AA	**Matrix....:**	AIR
Date Sampled....:	04/09/09	**Date Received....:**	04/13/09	**Dilution Factor:**	1
Prep Date....:	04/28/09	**Analysis Date....:**	05/18/09		
Prep Batch # ....:	9118146				
Initial Wgt/Vol :	1 Sample	**Instrument ID....:**	M2A	**Method:**	CFR60A 23
Analyst ID....:	Jon M. Nordquist				

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	89	40 - 130
13C-1,2,3,7,8-PeCDD	97	40 - 130
13C-1,2,3,6,7,8-HxCDD	96	40 - 130
13C-1,2,3,4,6,7,8-HpCDD	92	25 - 130
13C-OCDD	86	25 - 130
13C-2,3,7,8-TCDF	90	40 - 130
13C-1,2,3,7,8-PeCDF	88	40 - 130
13C-1,2,3,6,7,8-HxCDF	97	40 - 130
13C-1,2,3,4,6,7,8-HpCDF	100	25 - 130

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
13C-1,2,3,4,7,8-HxCDD	88	70 - 130
13C-2,3,4,7,8-PeCDF	95	70 - 130
13C-1,2,3,4,7,8-HxCDF	72	70 - 130
13C-1,2,3,4,7,8,9-HpCDF	82	70 - 130
37Cl4-2,3,7,8-TCDD	84	70 - 130

QUALIFIERS

Results and reporting limits have been adjusted for dry weight.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated Result.

Q Estimated maximum possible concentration (EMPC).

URS Corporation

Sample ID: A-6366,A-6367 MEDIA CHECK

Trace Level Organic Compounds

Lot - Sample #....:	H9D140159 - 004	**Work Order #....:**	K93GM1AA	**Matrix....:**	AIR
Date Sampled....:	04/07/09	**Date Received....:**	04/13/09	**Dilution Factor:**	1
Prep Date....:	04/28/09	**Analysis Date....:**	05/17/09		
Prep Batch # ....:	9118146				
Initial Wgt/Vol :	1 Sample	**Instrument ID....:**	M2A	**Method:**	CFR60A 23
Analyst ID....:	Melissa A. Davidson				

PARAMETER	RESULT		MINIMUM LEVEL	ESTIMATED DETECTION LIMIT	UNITS
2,3,7,8-TCDD	ND		10	2.5	pg/sample
Total TCDD	ND		10	2.5	pg/sample
1,2,3,7,8-PeCDD	ND		50	1.2	pg/sample
Total PeCDD	ND		50	1.2	pg/sample
1,2,3,4,7,8-HxCDD	ND		50	0.85	pg/sample
1,2,3,6,7,8-HxCDD	ND		50	0.84	pg/sample
1,2,3,7,8,9-HxCDD	ND		50	0.79	pg/sample
Total HxCDD	ND		50	0.82	pg/sample
1,2,3,4,6,7,8-HpCDD	**3.2**	**J**	**50**	**1.2**	**pg/sample**
Total HpCDD	**5.6**	**Q J**	**50**	**1.2**	**pg/sample**
OCDD	**23**	**B J**	**100**	**1.6**	**pg/sample**
2,3,7,8-TCDF	ND		10	1.6	pg/sample
Total TCDF	ND		10	1.6	pg/sample
1,2,3,7,8-PeCDF	ND		50	1.1	pg/sample
2,3,4,7,8-PeCDF	ND		50	1.1	pg/sample
Total PeCDF	ND		50	1.1	pg/sample
1,2,3,4,7,8-HxCDF	**1.8**	**Q J**	**50**	**0.59**	**pg/sample**
1,2,3,6,7,8-HxCDF	ND		50	0.57	pg/sample
2,3,4,6,7,8-HxCDF	ND		50	0.65	pg/sample
1,2,3,7,8,9-HxCDF	ND		50	0.67	pg/sample
Total HxCDF	**2.6**	**Q J**	**50**	**0.62**	**pg/sample**
1,2,3,4,6,7,8-HpCDF	**8.2**	**Q J**	**50**	**0.90**	**pg/sample**
1,2,3,4,7,8,9-HpCDF	ND		50	1.1	pg/sample
Total HpCDF	**8.2**	**Q J**	**50**	**0.98**	**pg/sample**
OCDF	**11**	**J**	**100**	**1.8**	**pg/sample**

URS Corporation

Sample ID: A-6366,A-6367 MEDIA CHECK

Trace Level Organic Compounds

Lot - Sample #....:	H9D140159 - 004	**Work Order #....:**	K93GM1AA	**Matrix....:**	AIR
Date Sampled....:	04/07/09	**Date Received....:**	04/13/09	**Dilution Factor:**	1
Prep Date....:	04/28/09	**Analysis Date....:**	05/17/09		
Prep Batch # ....:	9118146				
Initial Wgt/Vol :	1 Sample	**Instrument ID....:**	M2A	**Method:**	CFR60A 23
Analyst ID....:	Melissa A. Davidson				

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	86	40 - 130
13C-1,2,3,7,8-PeCDD	93	40 - 130
13C-1,2,3,6,7,8-HxCDD	93	40 - 130
13C-1,2,3,4,6,7,8-HpCDD	87	25 - 130
13C-OCDD	76	25 - 130
13C-2,3,7,8-TCDF	85	40 - 130
13C-1,2,3,7,8-PeCDF	88	40 - 130
13C-1,2,3,6,7,8-HxCDF	79	40 - 130
13C-1,2,3,4,6,7,8-HpCDF	85	25 - 130

QUALIFIERS

Results and reporting limits have been adjusted for dry weight.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated Result.

Q Estimated maximum possible concentration (EMPC).

Main Stack
CEM TEST DATA
4/9/2009

URS

SUMMARY OF RESULTS	
Project Name:	Haverhill Compliance Test
Project Number:	39400492.520001
Site Location:	Unit # 2
Test Location:	Main Stack
Test Train:	CEMs - NO_x, CO, SO_2, THC

Parameters	Run # 1	Run # 2	Run # 3	Average
Run Times	08:10 - 09:09	10:00 - 10:59	11:40 - 12:39	
Date	4/9/2009	4/9/2009	4/9/2009	
Sample Time	60	60	60	
Target Production Rate (wet tons coal charged / oven)	45	45	45	45
Daily Production for Unit 2 (avg. coking rate - wet tons coal/hr)	92.2	92.2	92.2	92.2
O2 (%)	9.38	9.64	10.18	9.73
CO2 (%)	7.83	7.53	7.33	7.56
CO (ppm)	1.88	1.16	1.52	1.52
SO_2 (ppm)	67.38	63.71	67.73	66.27
NO_x (ppm)	72.64	78.02	86.19	78.95
THC (ppm as methane)	<.01	0.08	0.15	0.08
M5/26A Gas Flow Rate (DSCFM)	210,270	215,649	214,004	213,308
OTM-28 Gas Flow Rate (DSCFM)	209,909	214,320	207,947	210,725
Average Gas Flow Rate (DSCFM)	210,090	214,985	210,976	212,017
CO (lb/hr)	1.73	1.09	1.40	1.41
SO_2 (lb/hr)	141.33	136.75	142.66	140.25
SO_2 (lb/ton coal charged)	1.53	1.48	1.55	1.52
NO_x (lb/hr)	109.40	120.25	130.36	120.00
NO_x (lb/ton coal charged)	1.19	1.30	1.41	1.30
THC (lb/hr)	<0.01	0.04	0.08	0.04

Date	Hour	O2 (%)	CO2 (%)	SO2 (ppm)	NOX (ppm)	CO (ppm)	THC (ppm)	O2 (%)	CO2 (%)	SO2 (ppm)	NOX (ppm)	CO (ppm)	THC (ppm)	Flow (dscfm)	SO2 (lb/hr)	NOX (lb/hr)	CO (lb/hr)	THC (lb/hr)
4/9/2009	7:00	10.10	7.61	68.00	67.20	0.16	0.18	10.10	7.51	68.20	65.85	0.15	0.15					
4/9/2009	7:01	10.11	7.60	65.33	67.01	0.18	0.17	10.11	7.50	65.53	65.66	0.17	0.14					
4/9/2009	7:02	10.15	7.59	64.97	66.66	0.30	0.15	10.15	7.49	65.17	65.31	0.29	0.12					
4/9/2009	7:03	10.12	7.59	63.92	66.70	0.28	0.18	10.12	7.49	64.12	65.35	0.27	0.15					
4/9/2009	7:04	10.12	7.61	58.31	66.31	0.36	0.18	10.12	7.51	58.51	64.96	0.35	0.15					
4/9/2009	7:05	10.16	7.57	58.16	65.58	0.38	0.18	10.16	7.47	58.36	64.23	0.37	0.15					
4/9/2009	7:06	10.20	7.52	60.08	65.78	0.38	0.17	10.20	7.42	60.28	64.43	0.37	0.14					
4/9/2009	7:07	10.42	7.36	48.71	67.11	0.30	0.16	10.42	7.26	48.91	65.76	0.29	0.13					
4/9/2009	7:08	10.18	7.53	42.35	64.83	0.25	0.17	10.18	7.43	42.55	63.48	0.24	0.14					
4/9/2009	7:09	10.31	7.45	54.35	65.17	0.28	0.18	10.31	7.35	54.55	63.82	0.27	0.15					
4/9/2009	7:10	10.28	7.48	54.26	67.30	0.41	0.17	10.28	7.38	54.46	65.95	0.40	0.14					
4/9/2009	7:11	10.26	7.48	54.25	66.87	0.31	0.17	10.26	7.38	54.45	65.52	0.30	0.14					
4/9/2009	7:12	10.31	7.43	59.98	66.54	0.32	0.17	10.31	7.33	60.18	65.19	0.31	0.14					
4/9/2009	7:13	10.26	7.53	57.19	68.16	0.37	0.16	10.26	7.43	57.39	66.81	0.36	0.13					
4/9/2009	7:14	10.17	7.64	54.10	67.17	0.44	0.17	10.17	7.54	54.30	65.82	0.43	0.14					
4/9/2009	7:15	10.28	7.49	56.07	66.34	0.45	0.18	10.28	7.39	56.27	64.99	0.44	0.15					
4/9/2009	7:16	10.26	7.48	54.65	67.92	0.43	0.17	10.26	7.38	54.85	66.57	0.42	0.14					
4/9/2009	7:17	10.25	7.49	54.96	68.41	0.45	0.15	10.25	7.39	55.16	67.06	0.44	0.12					
4/9/2009	7:18	10.20	7.50	54.79	68.56	0.44	0.18	10.20	7.40	54.99	67.21	0.43	0.15					
4/9/2009	7:19	10.22	7.51	54.33	68.22	0.32	0.17	10.22	7.41	54.53	66.87	0.31	0.14					
4/9/2009	7:20	10.20	7.54	54.20	68.09	0.52	0.17	10.20	7.44	54.40	66.74	0.51	0.14					
4/9/2009	7:21	9.77	6.85	59.44	68.69	0.59	0.01	9.77	6.75	59.64	67.34	0.58	-0.02					
4/9/2009	7:22	0.68	0.15	12.08	65.57	0.08	0.25	0.68	0.05	12.28	64.22	0.07	0.22					
4/9/2009	7:23	0.13	0.08	3.18	6.83	1.01	0.26											
4/9/2009	7:24	0.14	0.10	1.85	0.08	1.35	0.24	9.78	7.07	55.18	65.62	0.34	0.14					
4/9/2009	7:25	8.87	9.29	23.10	2.69	0.57	0.09											
4/9/2009	7:26	10.08	12.36	4.56	27.52	0.71	0.19											
4/9/2009	7:27	10.10	12.52	2.87	1.68	0.09	0.18											
4/9/2009	7:28	10.08	12.53	1.63	0.84	0.01	0.07											
4/9/2009	7:29	10.10	12.46	-0.11	0.11	0.04	0.03											
4/9/2009	7:30	7.19	8.24	0.32	0.24	0.00	0.00											
4/9/2009	7:31	0.30	0.15	1.28	10.71	0.74	0.04											
4/9/2009	7:32	0.17	0.10	0.25	43.94	1.84	0.05											
4/9/2009	7:33	0.09	0.08	-0.04	47.04	2.02	0.05											
4/9/2009	7:34	1.27	0.94	15.18	47.53	1.85	0.02											
4/9/2009	7:35	0.41	0.36	45.96	28.74	1.50	0.07											
4/9/2009	7:36	0.08	0.06	48.87	2.38	1.93	0.07											
4/9/2009	7:37	2.70	2.17	55.21	-1.66	2.11	0.01											
4/9/2009	7:38	2.10	1.40	24.00	12.20	30.78	0.04											
4/9/2009	7:39	1.63	1.24	13.07	18.94	40.24	0.04											
4/9/2009	7:40	1.57	1.21	11.47	11.40	40.42	0.04											
4/9/2009	7:41	0.28	0.33	5.86	10.69	44.50	0.05											
4/9/2009	7:42	0.33	0.31	1.53	2.02	53.13	0.05											
4/9/2009	7:43	0.29	0.30	0.46	0.55	50.29	0.05											
4/9/2009	7:44	3.17	2.82	9.58	0.53	41.68	0.01											
4/9/2009	7:45	9.91	7.02	51.47	20.85	4.32	21.83											
4/9/2009	7:46	20.18	0.15	9.40	68.44	2.40	75.21											
4/9/2009	7:47	20.43	0.07	0.27	5.99	2.26	87.27											
4/9/2009	7:48	20.47	0.06	-0.96	-1.89	2.44	85.46											
4/9/2009	7:49	20.04	0.38	-1.37	-1.99	2.45	57.23											

Date	Hour	O2 (%)	CO2 (%)	SO2 (ppm)	NOX (ppm)	CO (ppm)	THC (ppm)	O2 (%)	CO2 (%)	SO2 (ppm)	NOX (ppm)	CO (ppm)	THC (ppm)	Flow (dscfm)	SO2 (lb/hr)	NOX (lb/hr)	CO (lb/hr)	THC (lb/hr)
4/9/2009	7:50	20.05	0.35	0.45	-0.18	1.91	44.68											
4/9/2009	7:51	20.41	0.14	-0.72	2.30	2.07	44.91											
4/9/2009	7:52	20.42	0.16	-1.30	-1.27	2.20	38.76											
4/9/2009	7:53	20.53	0.05	-1.47	-1.01	2.29	30.46											
4/9/2009	7:54	17.97	2.04	4.93	-1.96	2.43	15.95											
4/9/2009	7:55	10.38	7.23	59.87	9.47	1.49	3.43											
4/9/2009	7:56	18.62	1.28	18.74	68.65	1.47	9.62											
4/9/2009	7:57	19.15	0.94	8.16	17.74	2.05	8.95											
4/9/2009	7:58	11.05	7.01	46.22	8.40	2.30	0.19											
4/9/2009	7:59	9.64	7.87	66.01	57.95	2.47	0.15											
4/9/2009	8:00	9.67	7.85	65.75	76.98	2.13	0.11	9.67	7.75	65.95	75.63	2.12	0.08	210,090	138.33	113.92	1.95	0.117
4/9/2009	8:01	9.68	7.84	67.22	76.04	1.75	0.10	9.68	7.74	67.42	74.69	1.74	0.07	210,090	141.42	112.50	1.60	0.102
4/9/2009	8:02	9.67	7.85	70.94	74.94	1.68	0.08	9.67	7.75	71.14	73.59	1.67	0.05	210,090	149.22	110.84	1.54	0.073
4/9/2009	8:03	9.69	7.82	73.61	75.23	1.69	0.07	9.69	7.72	73.81	73.88	1.68	0.04	210,090	154.82	111.28	1.55	0.059
4/9/2009	8:04	9.71	7.83	71.62	76.05	1.54	0.07	9.71	7.73	71.82	74.70	1.53	0.04	210,090	150.64	112.51	1.41	0.059
4/9/2009	8:05	9.67	7.82	69.85	75.88	1.41	0.06	9.67	7.72	70.05	74.53	1.40	0.03	210,090	146.93	112.26	1.29	0.044
4/9/2009	8:06	9.65	7.82	69.23	75.48	1.35	0.05	9.65	7.72	69.43	74.13	1.34	0.02	210,090	145.63	111.66	1.23	0.030
4/9/2009	8:07	9.64	7.83	68.18	76.21	1.27	0.06	9.64	7.73	68.38	74.86	1.26	0.03	210,090	143.43	112.76	1.16	0.044
4/9/2009	8:08	9.64	7.83	66.79	75.61	1.14	0.04	9.64	7.73	66.99	74.26	1.13	0.01	210,090	140.51	111.85	1.04	0.015
4/9/2009	8:09	9.65	7.80	68.42	74.85	1.07	0.06	9.65	7.70	68.62	73.50	1.06	0.03	210,090	143.93	110.71	0.98	0.044
4/9/2009	8:10	9.67	7.77	67.40	76.02	1.01	0.05	9.67	7.67	67.60	74.67	1.00	0.02	210,090	141.79	112.47	0.92	0.030
4/9/2009	8:11	9.70	7.77	67.25	75.39	1.01	0.04	9.70	7.67	67.45	74.04	1.00	0.01	210,090	141.48	111.52	0.92	0.015
4/9/2009	8:12	9.78	7.77	70.11	73.56	1.12	0.04	9.78	7.67	70.31	72.21	1.11	0.01	210,090	147.48	108.76	1.02	0.015
4/9/2009	8:13	9.68	8.35	69.91	74.54	1.28	0.05	9.68	8.25	70.11	73.19	1.27	0.02	210,090	147.06	110.24	1.17	0.030
4/9/2009	8:14	9.62	8.06	69.59	75.90	1.12	0.04	9.62	7.96	69.79	74.55	1.11	0.01	210,090	146.39	112.29	1.02	0.015
4/9/2009	8:15	9.58	7.95	69.25	75.84	1.06	0.04	9.58	7.85	69.45	74.49	1.05	0.01	210,090	145.67	112.20	0.97	0.015
4/9/2009	8:16	9.53	7.90	67.42	75.70	1.18	0.03	9.53	7.80	67.62	74.35	1.17	0.00	210,090	141.83	111.99	1.08	0.001
4/9/2009	8:17	9.42	8.19	67.16	76.81	2.16	0.05	9.42	8.09	67.36	75.46	2.15	0.02	210,090	141.29	113.66	1.98	0.030
4/9/2009	8:18	9.45	8.12	66.20	77.78	4.13	0.03	9.45	8.02	66.40	76.43	4.12	0.00	210,090	139.28	115.12	3.78	0.001
4/9/2009	8:19	9.45	8.02	65.44	77.89	4.17	0.04	9.45	7.92	65.64	76.54	4.16	0.01	210,090	137.68	115.29	3.82	0.015
4/9/2009	8:20	9.47	7.87	63.30	76.40	3.43	0.03	9.47	7.77	63.50	75.05	3.42	0.00	210,090	133.19	113.04	3.14	0.001
4/9/2009	8:21	9.46	7.87	62.64	74.24	3.15	0.04	9.46	7.77	62.84	72.89	3.14	0.01	210,090	131.81	109.79	2.88	0.015
4/9/2009	8:22	9.51	7.84	62.63	74.35	2.89	0.03	9.51	7.74	62.83	73.00	2.88	0.00	210,090	131.79	109.95	2.65	0.001
4/9/2009	8:23	9.55	7.81	63.76	74.42	2.61	0.03	9.55	7.71	63.96	73.07	2.60	0.00	210,090	134.16	110.06	2.39	0.001
4/9/2009	8:24	9.57	7.76	65.23	73.36	2.40	0.04	9.57	7.66	65.43	72.01	2.39	0.01	210,090	137.24	108.46	2.20	0.015
4/9/2009	8:25	9.59	7.77	65.94	72.89	2.38	0.03	9.59	7.67	66.14	71.54	2.37	0.00	210,090	138.73	107.76	2.18	0.001
4/9/2009	8:26	9.53	7.79	64.78	72.71	2.26	0.03	9.53	7.69	64.98	71.36	2.25	0.00	210,090	136.30	107.48	2.07	0.001
4/9/2009	8:27	9.57	7.80	64.76	72.56	2.09	0.03	9.57	7.70	64.96	71.21	2.08	0.00	210,090	136.26	107.26	1.91	0.001
4/9/2009	8:28	9.50	7.83	63.22	72.73	1.79	0.02	9.50	7.73	63.42	71.38	1.78	-0.01	210,090	133.03	107.51	1.64	-0.014
4/9/2009	8:29	9.46	7.87	62.83	72.76	1.65	0.02	9.46	7.77	63.03	71.41	1.64	-0.01	210,090	132.21	107.56	1.51	-0.014
4/9/2009	8:30	9.34	7.95	61.83	73.08	1.77	0.04	9.34	7.85	62.03	71.73	1.76	0.01	210,090	130.11	108.04	1.62	0.015
4/9/2009	8:31	9.29	7.98	60.94	74.64	1.87	0.02	9.29	7.88	61.14	73.29	1.86	-0.01	210,090	128.24	110.39	1.71	-0.014
4/9/2009	8:32	9.31	7.94	63.95	76.23	2.06	0.02	9.31	7.84	64.15	74.88	2.05	-0.01	210,090	134.56	112.79	1.88	-0.014
4/9/2009	8:33	9.40	7.86	64.76	75.74	1.89	0.03	9.40	7.76	64.96	74.39	1.88	0.00	210,090	136.26	112.05	1.73	0.001
4/9/2009	8:34	9.38	7.86	64.63	75.49	1.92	0.02	9.38	7.76	64.83	74.14	1.91	-0.01	210,090	135.98	111.67	1.76	-0.014
4/9/2009	8:35	9.41	7.87	64.87	75.25	1.97	0.04	9.41	7.77	65.07	73.90	1.96	0.01	210,090	136.49	111.31	1.80	0.015
4/9/2009	8:36	9.43	7.87	70.67	73.83	1.92	0.03	9.43	7.77	70.87	72.48	1.91	0.00	210,090	148.65	109.17	1.76	0.001
4/9/2009	8:37	9.48	7.86	75.95	74.17	1.59	0.03	9.48	7.76	76.15	72.82	1.58	0.00	210,090	159.73	109.68	1.45	0.001
4/9/2009	8:38	9.47	7.87	75.83	74.60	1.51	0.03	9.47	7.77	76.03	73.25	1.50	0.00	210,090	159.47	110.33	1.38	0.001
4/9/2009	8:39	9.45	7.88	73.92	73.81	1.60	0.04	9.45	7.78	74.12	72.46	1.59	0.01	210,090	155.47	109.14	1.46	0.015

Date	Hour	O2 (%)	CO2 (%)	SO2 (ppm)	NOX (ppm)	CO (ppm)	THC (ppm)	O2 (%)	CO2 (%)	SO2 (ppm)	NOX (ppm)	CO (ppm)	THC (ppm)	Flow (dscfm)	SO2 (lb/hr)	NOX (lb/hr)	CO (lb/hr)	THC (lb/hr)
4/9/2009	8:40	9.46	7.83	71.96	73.63	1.52	0.02	9.46	7.73	72.16	72.28	1.51	-0.01	210,090	151.36	108.87	1.39	-0.014
4/9/2009	8:41	9.47	7.85	68.21	72.44	1.48	0.02	9.47	7.75	68.41	71.09	1.47	-0.01	210,090	143.49	107.08	1.35	-0.014
4/9/2009	8:42	9.45	7.84	68.51	71.51	1.48	0.03	9.45	7.74	68.71	70.16	1.47	0.00	210,090	144.12	105.68	1.35	0.001
4/9/2009	8:43	9.37	7.88	67.19	71.58	1.36	0.02	9.37	7.78	67.39	70.23	1.35	-0.01	210,090	141.35	105.78	1.24	-0.014
4/9/2009	8:44	9.41	7.91	66.75	72.44	1.39	0.01	9.41	7.81	66.95	71.09	1.38	-0.02	210,090	140.43	107.08	1.27	-0.029
4/9/2009	8:45	9.31	7.95	67.80	71.78	1.30	0.03	9.31	7.85	68.00	70.43	1.29	0.00	210,090	142.63	106.08	1.19	0.001
4/9/2009	8:46	9.25	8.00	68.14	72.57	1.30	0.03	9.25	7.90	68.34	71.22	1.29	0.00	210,090	143.34	107.27	1.19	0.001
4/9/2009	8:47	9.20	8.04	66.38	73.46	1.47	0.02	9.20	7.94	66.58	72.11	1.46	-0.01	210,090	139.65	108.61	1.34	-0.014
4/9/2009	8:48	9.17	8.05	67.03	73.89	1.64	0.03	9.17	7.95	67.23	72.54	1.63	0.00	210,090	141.02	109.26	1.50	0.001
4/9/2009	8:49	9.25	8.01	68.83	74.25	1.56	0.03	9.25	7.91	69.03	72.90	1.55	0.00	210,090	144.79	109.80	1.43	0.001
4/9/2009	8:50	9.26	8.01	67.01	73.94	1.51	0.02	9.26	7.91	67.21	72.59	1.50	-0.01	210,090	140.97	109.34	1.38	-0.014
4/9/2009	8:51	9.21	7.99	67.76	72.56	1.39	0.03	9.21	7.89	67.96	71.21	1.38	0.00	210,090	142.55	107.26	1.27	0.001
4/9/2009	8:52	9.28	7.96	68.36	72.68	1.37	0.03	9.28	7.86	68.56	71.33	1.36	0.00	210,090	143.81	107.44	1.25	0.001
4/9/2009	8:53	9.30	7.97	65.28	73.74	1.29	0.04	9.30	7.87	65.48	72.39	1.28	0.01	210,090	137.35	109.04	1.18	0.015
4/9/2009	8:54	9.30	7.94	64.85	73.64	1.42	0.02	9.30	7.84	65.05	72.29	1.41	-0.01	210,090	136.44	108.89	1.30	-0.014
4/9/2009	8:55	9.35	7.90	65.94	72.94	1.35	0.02	9.35	7.80	66.14	71.59	1.34	-0.01	210,090	138.73	107.83	1.23	-0.014
4/9/2009	8:56	9.37	7.89	65.23	72.79	1.43	0.02	9.37	7.79	65.43	71.44	1.42	-0.01	210,090	137.24	107.60	1.31	-0.014
4/9/2009	8:57	9.32	7.92	63.87	72.83	1.32	0.02	9.32	7.82	64.07	71.48	1.31	-0.01	210,090	134.39	107.66	1.21	-0.014
4/9/2009	8:58	9.30	7.93	64.17	73.10	1.26	0.03	9.30	7.83	64.37	71.75	1.25	0.00	210,090	135.02	108.07	1.15	0.001
4/9/2009	8:59	9.22	8.00	64.27	73.68	1.46	0.03	9.22	7.90	64.47	72.33	1.45	0.00	210,090	135.23	108.95	1.33	0.001
4/9/2009	9:00	9.17	8.04	64.21	73.40	1.50	0.03	9.17	7.94	64.41	72.05	1.49	0.00	210,090	135.10	108.52	1.37	0.001
4/9/2009	9:01	9.08	8.10	65.02	73.46	1.60	0.03	9.08	8.00	65.22	72.11	1.59	0.00	210,090	136.80	108.61	1.46	0.001
4/9/2009	9:02	9.11	8.05	67.74	74.55	2.55	0.04	9.11	7.95	67.94	73.20	2.54	0.01	210,090	142.51	110.26	2.33	0.015
4/9/2009	9:03	9.17	8.03	67.10	74.27	3.00	0.04	9.17	7.93	67.30	72.92	2.99	0.01	210,090	141.16	109.83	2.75	0.015
4/9/2009	9:04	9.20	8.01	70.63	74.32	2.79	0.02	9.20	7.91	70.83	72.97	2.78	-0.01	210,090	148.57	109.91	2.55	-0.014
4/9/2009	9:05	9.15	8.01	73.38	73.89	2.77	0.03	9.15	7.91	73.58	72.54	2.76	0.00	210,090	154.34	109.26	2.54	0.001
4/9/2009	9:06	9.15	8.02	75.61	73.65	2.67	0.04	9.15	7.92	75.81	72.30	2.66	0.01	210,090	159.01	108.90	2.44	0.015
4/9/2009	9:07	9.15	8.01	75.17	73.08	2.54	0.03	9.15	7.91	75.37	71.73	2.53	0.00	210,090	158.09	108.04	2.32	0.001
4/9/2009	9:08	9.23	7.97	69.52	73.36	2.45	0.03	9.23	7.87	69.72	72.01	2.44	0.00	210,090	146.24	108.46	2.24	0.001
4/9/2009	9:09	9.26	7.96	68.63	72.99	2.20	0.03	9.26	7.86	68.83	71.64	2.19	0.00	210,090	144.37	107.91	2.01	0.001
4/9/2009	9:10	9.25	7.92	71.82	71.61	1.99	0.04	9.25	7.82	72.02	70.26	1.98	0.01	210,090	151.06	105.83	1.82	0.015
4/9/2009	9:11	9.36	7.91	71.47	71.48	1.76	0.03	9.36	7.81	71.67	70.13	1.75	0.00	210,090	150.33	105.63	1.61	0.001
4/9/2009	9:12	9.30	7.94	71.62	72.27	1.78	0.04	9.30	7.84	71.82	70.92	1.77	0.01	210,090	150.64	106.82	1.63	0.015
4/9/2009	9:13	9.21	7.98	72.14	72.21	1.79	0.04	9.21	7.88	72.34	70.86	1.78	0.01	210,090	151.73	106.73	1.64	0.015
4/9/2009	9:14	9.17	8.01	71.32	72.49	1.86	0.04	9.17	7.91	71.52	71.14	1.85	0.01	210,090	150.01	107.15	1.70	0.015
4/9/2009	9:15	9.13	8.04	70.45	73.15	2.38	0.05	9.13	7.94	70.65	71.80	2.37	0.02	210,090	148.19	108.15	2.18	0.030
4/9/2009	9:16	5.99	4.65	49.77	74.57	3.56	0.29											
4/9/2009	9:17	-0.13	0.12	3.67	49.53	3.31	0.03											
4/9/2009	9:18	2.60	4.00	0.30	-1.04	3.12	0.06											
4/9/2009	9:19	9.83	12.66	-0.66	-1.69	1.76	0.06											
4/9/2009	9:20	9.89	12.70	-0.46	-1.45	0.96	0.07											
4/9/2009	9:21	9.95	12.47	-0.30	-0.04	0.87	0.07											
4/9/2009	9:22	6.37	7.57	-0.21	-0.08	0.77	0.08											
4/9/2009	9:23	-0.11	0.15	1.18	15.39	0.36	0.04											
4/9/2009	9:24	-0.27	0.11	1.26	47.62	1.22	0.02											
4/9/2009	9:25	-0.28	0.09	1.23	47.59	1.34	0.02											
4/9/2009	9:26	0.29	0.75	22.35	47.60	0.98	0.05											
4/9/2009	9:27	-0.15	0.26	46.02	16.40	0.73	0.00											
4/9/2009	9:28	-0.23	0.23	48.19	2.25	0.07	0.01											
4/9/2009	9:29	-0.30	0.20	48.93	1.78	0.05	0.02											

RUN 1 AVERAGES										
9.38	7.83	67.38	72.64	1.88	0.001	210,090	141.33	109.40	1.73	0.001

THC reported as methane 0.002 0.001

Date	Hour	O2 (%)	CO2 (%)	SO2 (ppm)	NOX (ppm)	CO (ppm)	THC (ppm)	O2 (%)	CO2 (%)	SO2 (ppm)	NOX (ppm)	CO (ppm)	THC (ppm)	Flow (dscfm)	SO2 (lb/hr)	NOX (lb/hr)	CO (lb/hr)	THC (lb/hr)
4/9/2009	9:30	2.02	1.92	34.08	1.87	19.16	0.13											
4/9/2009	9:31	0.14	0.47	5.95	16.14	49.19	0.01											
4/9/2009	9:32	0.06	0.47	4.58	4.19	50.06	0.01											
4/9/2009	9:33	8.34	0.25	3.31	4.14	37.27	19.07											
4/9/2009	9:34	20.30	0.06	0.77	2.32	2.24	29.34											
4/9/2009	9:35	20.40	0.06	-0.13	-0.10	0.57	29.67											
4/9/2009	9:36	20.48	0.05	-0.44	-0.14	0.60	29.86											
4/9/2009	9:37	14.33	4.44	29.25	-0.15	0.45	5.69											
4/9/2009	9:38	9.55	7.60	66.56	35.26	0.25	0.16											
4/9/2009	9:39	9.49	7.65	65.36	74.59	0.43	0.13	9.73	7.54	65.67	72.99	0.36	0.12	214,985	140.95	112.51	0.34	0.178
4/9/2009	9:40	9.42	7.70	65.48	75.64	0.44	0.16	9.66	7.59	65.79	74.04	0.37	0.15	214,985	141.21	114.12	0.35	0.223
4/9/2009	9:41	9.41	7.72	67.11	76.44	0.60	0.09	9.65	7.61	67.42	74.84	0.53	0.08	214,985	144.71	115.36	0.50	0.119
4/9/2009	9:42	9.29	7.77	65.72	76.61	0.81	0.08	9.53	7.66	66.03	75.01	0.74	0.07	214,985	141.73	115.62	0.69	0.104
4/9/2009	9:43	9.19	7.84	66.85	77.06	0.90	0.07	9.43	7.73	67.16	75.46	0.83	0.06	214,985	144.15	116.31	0.78	0.089
4/9/2009	9:44	9.14	7.87	68.15	77.32	0.93	0.06	9.38	7.76	68.46	75.72	0.86	0.05	214,985	146.94	116.71	0.81	0.074
4/9/2009	9:45	9.12	7.88	66.77	79.29	0.57	0.06	9.36	7.77	67.08	77.69	0.50	0.05	214,985	143.98	119.75	0.47	0.074
4/9/2009	9:46	9.11	7.88	66.02	79.89	0.35	0.07	9.35	7.77	66.33	78.29	0.28	0.06	214,985	142.37	120.67	0.26	0.089
4/9/2009	9:47	9.14	7.87	64.01	79.62	0.56	0.05	9.38	7.76	64.32	78.02	0.49	0.04	214,985	138.06	120.26	0.46	0.059
4/9/2009	9:48	9.11	7.88	62.48	78.85	0.70	0.07	9.35	7.77	62.79	77.25	0.63	0.06	214,985	134.77	119.07	0.59	0.089
4/9/2009	9:49	9.14	7.88	62.97	76.54	0.78	0.06	9.38	7.77	63.28	74.94	0.71	0.05	214,985	135.83	115.51	0.67	0.074
4/9/2009	9:50	9.16	7.84	65.64	76.73	0.82	0.05	9.40	7.73	65.95	75.13	0.75	0.04	214,985	141.56	115.80	0.70	0.059
4/9/2009	9:51	9.19	7.80	66.04	77.35	0.75	0.05	9.43	7.69	66.35	75.75	0.68	0.04	214,985	142.41	116.76	0.64	0.059
4/9/2009	9:52	9.27	7.77	64.89	77.88	0.82	0.05	9.51	7.66	65.20	76.28	0.75	0.04	214,985	139.95	117.58	0.70	0.059
4/9/2009	9:53	9.30	7.72	64.88	76.54	0.75	0.06	9.54	7.61	65.19	74.94	0.68	0.05	214,985	139.92	115.51	0.64	0.074
4/9/2009	9:54	9.34	7.70	66.48	76.82	0.78	0.03	9.58	7.59	66.79	75.22	0.71	0.02	214,985	143.36	115.94	0.67	0.030
4/9/2009	9:55	9.26	7.73	64.25	77.79	0.93	0.04	9.50	7.62	64.56	76.19	0.86	0.03	214,985	138.57	117.44	0.81	0.045
4/9/2009	9:56	9.26	7.73	62.85	78.45	0.91	0.05	9.50	7.62	63.16	76.85	0.84	0.04	214,985	135.57	118.46	0.79	0.059
4/9/2009	9:57	9.19	7.75	65.18	78.20	0.94	0.04	9.43	7.64	65.49	76.60	0.87	0.03	214,985	140.57	118.07	0.82	0.045
4/9/2009	9:58	9.18	7.77	72.50	78.01	0.89	0.04	9.42	7.66	72.81	76.41	0.82	0.03	214,985	156.28	117.78	0.77	0.045
4/9/2009	9:59	9.11	7.82	75.59	77.79	1.01	0.04	9.35	7.71	75.90	76.19	0.94	0.03	214,985	162.91	117.44	0.88	0.045
4/9/2009	10:00	9.10	7.86	74.55	80.14	1.12	0.04	9.34	7.75	74.86	78.54	1.05	0.03	214,985	160.68	121.06	0.99	0.045
4/9/2009	10:01	9.07	7.85	72.53	80.44	0.92	0.04	9.31	7.74	72.84	78.84	0.85	0.03	214,985	156.34	121.52	0.80	0.045
4/9/2009	10:02	9.13	7.83	72.68	79.48	0.97	0.04	9.37	7.72	72.99	77.88	0.90	0.03	214,985	156.67	120.04	0.84	0.045
4/9/2009	10:03	9.12	7.82	70.76	79.36	0.98	0.05	9.36	7.71	71.07	77.76	0.91	0.04	214,985	152.54	119.86	0.85	0.059
4/9/2009	10:04	9.12	7.84	66.45	79.17	1.15	0.04	9.36	7.73	66.76	77.57	1.08	0.03	214,985	143.29	119.57	1.01	0.045
4/9/2009	10:05	9.20	7.81	67.24	78.25	1.10	0.04	9.44	7.70	67.55	76.65	1.03	0.03	214,985	144.99	118.15	0.97	0.045
4/9/2009	10:06	9.17	7.81	67.14	79.53	0.89	0.05	9.41	7.70	67.45	77.93	0.82	0.04	214,985	144.78	120.12	0.77	0.059
4/9/2009	10:07	9.20	7.81	64.45	79.28	0.84	0.04	9.44	7.70	64.76	77.68	0.77	0.03	214,985	139.00	119.73	0.72	0.045
4/9/2009	10:08	9.19	7.79	65.68	79.21	1.00	0.04	9.43	7.68	65.99	77.61	0.93	0.03	214,985	141.64	119.63	0.87	0.045
4/9/2009	10:09	9.19	7.79	66.25	79.57	0.95	0.05	9.43	7.68	66.56	77.97	0.88	0.04	214,985	142.87	120.18	0.83	0.059
4/9/2009	10:10	9.22	7.78	65.13	79.51	0.86	0.03	9.46	7.67	65.44	77.91	0.79	0.02	214,985	140.46	120.09	0.74	0.030
4/9/2009	10:11	9.19	7.77	65.44	79.31	0.89	0.03	9.43	7.66	65.75	77.71	0.82	0.02	214,985	141.13	119.78	0.77	0.030
4/9/2009	10:12	9.18	7.78	62.15	80.16	1.08	0.04	9.42	7.67	62.46	78.56	1.01	0.03	214,985	134.07	121.09	0.95	0.045
4/9/2009	10:13	9.20	7.76	62.32	79.65	1.13	0.03	9.44	7.65	62.63	78.05	1.06	0.02	214,985	134.43	120.30	0.99	0.030
4/9/2009	10:14	9.28	7.74	61.96	79.89	1.18	0.04	9.52	7.63	62.27	78.29	1.11	0.03	214,985	133.66	120.67	1.04	0.045
4/9/2009	10:15	9.24	7.74	61.43	80.35	1.17	0.03	9.48	7.63	61.74	78.75	1.10	0.02	214,985	132.52	121.38	1.03	0.030
4/9/2009	10:16	9.26	7.72	61.80	80.20	1.19	0.04	9.50	7.61	62.11	78.60	1.12	0.03	214,985	133.31	121.15	1.05	0.045
4/9/2009	10:17	9.29	7.70	63.82	79.75	1.24	0.03	9.53	7.59	64.13	78.15	1.17	0.02	214,985	137.65	120.46	1.10	0.030
4/9/2009	10:18	9.30	7.68	64.57	79.98	1.27	0.03	9.54	7.57	64.88	78.38	1.20	0.02	214,985	139.26	120.81	1.13	0.030
4/9/2009	10:19	9.30	7.69	64.66	80.24	1.31	0.03	9.54	7.58	64.97	78.64	1.24	0.02	214,985	139.45	121.21	1.16	0.030

Date	Hour	O2 (%)	CO2 (%)	SO2 (ppm)	NOX (ppm)	CO (ppm)	THC (ppm)	O2 (%)	CO2 (%)	SO2 (ppm)	NOX (ppm)	CO (ppm)	THC (ppm)	Flow (dscfm)	SO2 (lb/hr)	NOX (lb/hr)	CO (lb/hr)	THC (lb/hr)
4/9/2009	10:20	9.31	7.68	63.81	80.67	1.27	0.03	9.55	7.57	64.12	79.07	1.20	0.02	214,985	137.63	121.88	1.13	0.030
4/9/2009	10:21	9.31	7.69	61.32	80.58	1.36	0.04	9.55	7.58	61.63	78.98	1.29	0.03	214,985	132.28	121.74	1.21	0.045
4/9/2009	10:22	9.35	7.67	60.81	79.57	1.35	0.04	9.59	7.56	61.12	77.97	1.28	0.03	214,985	131.19	120.18	1.20	0.045
4/9/2009	10:23	9.35	7.65	61.71	79.81	1.20	0.03	9.59	7.54	62.02	78.21	1.13	0.02	214,985	133.12	120.55	1.06	0.030
4/9/2009	10:24	9.39	7.65	59.71	80.18	1.34	0.04	9.63	7.54	60.02	78.58	1.27	0.03	214,985	128.83	121.12	1.19	0.045
4/9/2009	10:25	9.33	7.68	57.89	79.46	1.43	0.04	9.57	7.57	58.20	77.86	1.36	0.03	214,985	124.92	120.01	1.28	0.045
4/9/2009	10:26	9.36	7.65	58.19	78.69	1.42	0.05	9.60	7.54	58.50	77.09	1.35	0.04	214,985	125.57	118.83	1.27	0.059
4/9/2009	10:27	9.44	7.59	65.92	78.16	1.33	0.04	9.68	7.48	66.23	76.56	1.26	0.03	214,985	142.16	118.01	1.18	0.045
4/9/2009	10:28	9.44	7.60	72.09	79.83	1.39	0.04	9.68	7.49	72.40	78.23	1.32	0.03	214,985	155.40	120.58	1.24	0.045
4/9/2009	10:29	9.42	7.61	70.27	80.63	1.11	0.04	9.66	7.50	70.58	79.03	1.04	0.03	214,985	151.49	121.82	0.98	0.045
4/9/2009	10:30	9.46	7.59	70.13	79.87	1.17	0.04	9.70	7.48	70.44	78.27	1.10	0.03	214,985	151.19	120.64	1.03	0.045
4/9/2009	10:31	9.46	7.55	69.18	80.98	1.26	0.05	9.70	7.44	69.49	79.38	1.19	0.04	214,985	149.15	122.35	1.12	0.059
4/9/2009	10:32	9.34	7.62	63.87	81.29	1.04	0.03	9.58	7.51	64.18	79.69	0.97	0.02	214,985	137.76	122.83	0.91	0.030
4/9/2009	10:33	9.40	7.61	63.33	78.97	1.18	0.03	9.64	7.50	63.64	77.37	1.11	0.02	214,985	136.60	119.26	1.04	0.030
4/9/2009	10:34	9.46	7.54	65.61	79.42	1.25	0.04	9.70	7.43	65.92	77.82	1.18	0.03	214,985	141.49	119.95	1.11	0.045
4/9/2009	10:35	9.44	7.59	60.88	81.35	1.19	0.06	9.68	7.48	61.19	79.75	1.12	0.05	214,985	131.34	122.93	1.05	0.074
4/9/2009	10:36	9.43	7.61	58.40	80.02	1.35	0.04	9.67	7.50	58.71	78.42	1.28	0.03	214,985	126.02	120.88	1.20	0.045
4/9/2009	10:37	9.54	7.53	62.06	78.81	1.42	0.04	9.78	7.42	62.37	77.21	1.35	0.03	214,985	133.87	119.01	1.27	0.045
4/9/2009	10:38	9.49	7.55	62.12	80.23	1.27	0.05	9.73	7.44	62.43	78.63	1.20	0.04	214,985	134.00	121.20	1.13	0.059
4/9/2009	10:39	9.57	7.54	62.40	80.15	1.42	0.04	9.81	7.43	62.71	78.55	1.35	0.03	214,985	134.60	121.08	1.27	0.045
4/9/2009	10:40	9.53	7.52	63.09	79.91	1.50	0.03	9.77	7.41	63.40	78.31	1.43	0.02	214,985	136.08	120.71	1.34	0.030
4/9/2009	10:41	9.56	7.52	62.83	80.65	1.42	0.04	9.80	7.41	63.14	79.05	1.35	0.03	214,985	135.52	121.85	1.27	0.045
4/9/2009	10:42	9.57	7.53	62.24	80.75	1.41	0.05	9.81	7.42	62.55	79.15	1.34	0.04	214,985	134.26	122.00	1.26	0.059
4/9/2009	10:43	9.54	7.54	60.59	79.71	1.40	0.03	9.78	7.43	60.90	78.11	1.33	0.02	214,985	130.72	120.40	1.25	0.030
4/9/2009	10:44	9.54	7.51	61.34	80.13	1.24	0.04	9.78	7.40	61.65	78.53	1.17	0.03	214,985	132.33	121.04	1.10	0.045
4/9/2009	10:45	9.57	7.51	62.02	79.95	1.11	0.02	9.81	7.40	62.33	78.35	1.04	0.01	214,985	133.79	120.77	0.98	0.015
4/9/2009	10:46	9.56	7.50	60.89	79.34	1.17	0.03	9.80	7.39	61.20	77.74	1.10	0.02	214,985	131.36	119.83	1.03	0.030
4/9/2009	10:47	9.54	7.49	61.65	80.48	1.35	0.04	9.78	7.38	61.96	78.88	1.28	0.03	214,985	132.99	121.58	1.20	0.045
4/9/2009	10:48	9.52	7.52	59.67	80.43	1.43	0.02	9.76	7.41	59.98	78.83	1.36	0.01	214,985	128.74	121.51	1.28	0.015
4/9/2009	10:49	9.56	7.52	60.75	79.21	1.56	0.03	9.80	7.41	61.06	77.61	1.49	0.02	214,985	131.06	119.63	1.40	0.030
4/9/2009	10:50	9.57	7.50	59.89	79.37	1.55	0.06	9.81	7.39	60.20	77.77	1.48	0.05	214,985	129.21	119.87	1.39	0.074
4/9/2009	10:51	9.61	7.48	61.10	78.73	1.61	0.03	9.85	7.37	61.41	77.13	1.54	0.02	214,985	131.81	118.89	1.45	0.030
4/9/2009	10:52	9.59	7.49	61.04	78.96	1.38	0.02	9.83	7.38	61.35	77.36	1.31	0.01	214,985	131.68	119.24	1.23	0.015
4/9/2009	10:53	9.62	7.50	60.42	78.55	1.32	0.03	9.86	7.39	60.73	76.95	1.25	0.02	214,985	130.35	118.61	1.17	0.030
4/9/2009	10:54	9.64	7.49	59.30	78.44	1.32	0.04	9.88	7.38	59.61	76.84	1.25	0.03	214,985	127.95	118.44	1.17	0.045
4/9/2009	10:55	9.59	7.52	57.53	78.77	1.30	0.03	9.83	7.41	57.84	77.17	1.23	0.02	214,985	124.15	118.95	1.15	0.030
4/9/2009	10:56	9.57	7.54	57.95	78.04	1.17	0.03	9.81	7.43	58.26	76.44	1.10	0.02	214,985	125.05	117.82	1.03	0.030
4/9/2009	10:57	9.57	7.52	61.37	77.42	1.15	0.03	9.81	7.41	61.68	75.82	1.08	0.02	214,985	132.39	116.87	1.01	0.030
4/9/2009	10:58	9.51	7.52	61.81	78.00	1.31	0.04	9.75	7.41	62.12	76.40	1.24	0.03	214,985	133.34	117.76	1.16	0.045
4/9/2009	10:59	9.48	7.56	57.73	78.01	1.15	0.06	9.72	7.45	58.04	76.41	1.08	0.05	214,985	124.58	117.78	1.01	0.074
4/9/2009	11:00	9.49	7.56	57.54	76.16	1.17	0.02	9.73	7.45	57.85	74.56	1.10	0.01	214,985	124.17	114.93	1.03	0.015
4/9/2009	11:01	9.55	7.49	61.98	76.76	1.30	0.02	9.79	7.38	62.29	75.16	1.23	0.01	214,985	133.70	115.85	1.15	0.015
4/9/2009	11:02	9.60	7.48	68.80	77.95	1.29	0.04	9.84	7.37	69.11	76.35	1.22	0.03	214,985	148.34	117.68	1.15	0.045
4/9/2009	11:03	9.62	7.49	72.49	76.93	1.31	0.03	9.86	7.38	72.80	75.33	1.24	0.02	214,985	156.26	116.11	1.16	0.030
4/9/2009	11:04	9.60	7.44	76.97	77.34	1.42	0.03	9.84	7.33	77.28	75.74	1.35	0.02	214,985	165.87	116.74	1.27	0.030
4/9/2009	11:05	9.63	7.44	73.38	79.98	1.52	0.03	9.87	7.33	73.69	78.38	1.45	0.02	214,985	158.17	120.81	1.36	0.030
4/9/2009	11:06	9.56	7.49	68.33	80.43	1.50	0.03	9.80	7.38	68.64	78.83	1.43	0.02	214,985	147.33	121.51	1.34	0.030
4/9/2009	11:07	7.03	5.09	53.98	78.60	1.45	0.18	RUN 2 AVERAGES										
4/9/2009	11:08	-0.23	0.12	5.48	58.03	0.47	0.01	9.64	7.53	63.71	78.02	1.16	0.03	214985.00	136.75	120.25	1.09	0.041
4/9/2009	11:09	-0.37	0.09	1.28	1.34	0.09	0.01											

Date	Hour	O2 (%)	CO2 (%)	SO2 (ppm)	NOX (ppm)	CO (ppm)	THC (ppm)	O2 (%)	CO2 (%)	SO2 (ppm)	NOX (ppm)	CO (ppm)	THC (ppm)	Flow (dscfm)	SO2 (lb/hr)	NOX (lb/hr)	CO (lb/hr)	THC (lb/hr)
										THC reported as methane			0.077					0.041
4/9/2009	11:10	2.69	4.25	0.31	0.12	0.19	0.01											
4/9/2009	11:11	9.83	12.40	-0.10	0.00	1.48	0.02											
4/9/2009	11:12	9.95	12.43	-0.33	-0.08	2.01	0.03											
4/9/2009	11:13	8.24	9.89	-0.38	-0.12	2.02	0.04											
4/9/2009	11:14	-0.06	0.17	0.90	6.32	1.41	0.02											
4/9/2009	11:15	-0.22	0.11	1.23	48.16	0.20	0.02											
4/9/2009	11:16	-0.33	0.09	1.15	50.14	0.21	0.01											
4/9/2009	11:17	-0.24	0.16	20.51	50.36	0.33	0.02											
4/9/2009	11:18	-0.15	0.24	46.13	19.72	0.19	0.00											
4/9/2009	11:19	-0.14	0.21	48.36	2.18	0.11	0.00											
4/9/2009	11:20	-0.26	0.20	39.76	1.78	8.93	0.01											
4/9/2009	11:21	-0.01	0.34	6.79	1.51	48.33	0.00											
4/9/2009	11:22	-0.08	0.34	3.19	3.12	50.81	0.00											
4/9/2009	11:23	10.24	0.18	1.76	3.10	33.36	22.08											
4/9/2009	11:24	20.27	0.06	0.28	1.56	2.06	29.59											
4/9/2009	11:25	14.96	3.31	19.22	-0.15	1.85	8.33											
4/9/2009	11:26	9.94	7.31	58.24	29.07	1.09	0.14											
4/9/2009	11:27	9.88	7.35	60.68	84.43	0.90	0.11	10.23	7.26	61.05	83.45	0.81	0.14	210,976	128.59	126.23	0.74	0.204
4/9/2009	11:28	9.90	7.35	60.68	84.42	1.03	0.09	10.25	7.26	61.05	83.44	0.94	0.12	210,976	128.59	126.21	0.86	0.175
4/9/2009	11:29	9.86	7.36	62.20	84.45	1.27	0.13	10.21	7.27	62.57	83.47	1.18	0.16	210,976	131.79	126.26	1.08	0.234
4/9/2009	11:30	9.91	7.32	68.41	83.75	1.26	0.07	10.26	7.23	68.78	82.77	1.17	0.10	210,976	144.87	125.20	1.07	0.146
4/9/2009	11:31	9.98	7.28	77.19	83.86	1.36	0.05	10.33	7.19	77.56	82.88	1.27	0.08	210,976	163.36	125.36	1.17	0.117
4/9/2009	11:32	9.94	7.28	80.37	85.26	1.32	0.04	10.29	7.19	80.74	84.28	1.23	0.07	210,976	170.06	127.48	1.13	0.102
4/9/2009	11:33	9.91	7.30	75.06	86.50	1.48	0.04	10.26	7.21	75.43	85.52	1.39	0.07	210,976	158.88	129.36	1.28	0.102
4/9/2009	11:34	9.86	7.35	72.61	86.40	1.66	0.04	10.21	7.26	72.98	85.42	1.57	0.07	210,976	153.71	129.21	1.44	0.102
4/9/2009	11:35	9.87	7.38	70.50	84.97	1.73	0.03	10.22	7.29	70.87	83.99	1.64	0.06	210,976	149.27	127.04	1.51	0.088
4/9/2009	11:36	9.90	7.36	69.39	84.19	1.69	0.05	10.25	7.27	69.76	83.21	1.60	0.08	210,976	146.93	125.86	1.47	0.117
4/9/2009	11:37	9.90	7.36	68.78	84.64	1.72	0.05	10.25	7.27	69.15	83.66	1.63	0.08	210,976	145.65	126.54	1.50	0.117
4/9/2009	11:38	9.92	7.34	70.53	84.58	1.65	0.02	10.27	7.25	70.90	83.60	1.56	0.05	210,976	149.33	126.45	1.43	0.073
4/9/2009	11:39	9.96	7.32	72.17	86.21	1.56	0.04	10.31	7.23	72.54	85.23	1.47	0.07	210,976	152.79	128.92	1.35	0.102
4/9/2009	11:40	9.91	7.36	69.96	87.82	1.69	0.02	10.26	7.27	70.33	86.84	1.60	0.05	210,976	148.13	131.35	1.47	0.073
4/9/2009	11:41	9.85	7.41	67.16	88.59	1.57	0.03	10.20	7.32	67.53	87.61	1.48	0.06	210,976	142.24	132.52	1.36	0.088
4/9/2009	11:42	9.81	7.44	65.34	88.46	1.49	0.04	10.16	7.35	65.71	87.48	1.40	0.07	210,976	138.40	132.32	1.29	0.102
4/9/2009	11:43	9.76	7.49	63.36	88.13	1.38	0.03	10.11	7.40	63.73	87.15	1.29	0.06	210,976	134.23	131.82	1.18	0.088
4/9/2009	11:44	9.72	7.52	62.31	87.06	1.48	0.02	10.07	7.43	62.68	86.08	1.39	0.05	210,976	132.02	130.20	1.28	0.073
4/9/2009	11:45	9.68	7.53	63.88	86.17	1.44	0.03	10.03	7.44	64.25	85.19	1.35	0.06	210,976	135.33	128.86	1.24	0.088
4/9/2009	11:46	9.70	7.50	65.99	87.05	1.27	0.02	10.05	7.41	66.36	86.07	1.18	0.05	210,976	139.77	130.19	1.08	0.073
4/9/2009	11:47	9.73	7.48	67.72	87.06	1.34	0.04	10.08	7.39	68.09	86.08	1.25	0.07	210,976	143.42	130.20	1.15	0.102
4/9/2009	11:48	9.77	7.46	67.07	86.65	1.22	0.03	10.12	7.37	67.44	85.67	1.13	0.06	210,976	142.05	129.58	1.04	0.088
4/9/2009	11:49	9.75	7.47	66.11	87.80	1.50	0.02	10.10	7.38	66.48	86.82	1.41	0.05	210,976	140.02	131.32	1.29	0.073
4/9/2009	11:50	9.77	7.47	66.70	87.51	1.59	0.03	10.12	7.38	67.07	86.53	1.50	0.06	210,976	141.27	130.88	1.38	0.088
4/9/2009	11:51	10.32	7.00	42.71	87.37	1.59	0.07	10.67	6.91	43.08	86.39	1.50	0.10	210,976	90.74	130.67	1.38	0.146
4/9/2009	11:52	9.68	7.50	62.10	82.98	1.51	0.05	10.03	7.41	62.47	82.00	1.42	0.08	210,976	131.58	124.03	1.30	0.117
4/9/2009	11:53	9.82	7.40	77.69	84.07	1.51	0.04	10.17	7.31	78.06	83.09	1.42	0.07	210,976	164.41	125.68	1.30	0.102
4/9/2009	11:54	9.81	7.41	79.54	86.78	1.78	0.01	10.16	7.32	79.91	85.80	1.69	0.04	210,976	168.31	129.78	1.55	0.058
4/9/2009	11:55	9.75	7.47	76.57	87.82	1.67	0.01	10.10	7.38	76.94	86.84	1.58	0.04	210,976	162.06	131.35	1.45	0.058
4/9/2009	11:56	9.68	7.49	73.47	86.77	1.62	0.02	10.03	7.40	73.84	85.79	1.53	0.05	210,976	155.53	129.77	1.41	0.073
4/9/2009	11:57	9.68	7.50	71.72	86.38	1.65	0.02	10.03	7.41	72.09	85.40	1.56	0.05	210,976	151.84	129.18	1.43	0.073
4/9/2009	11:58	9.69	7.50	71.55	85.68	1.59	0.04	10.04	7.41	71.92	84.70	1.50	0.07	210,976	151.48	128.12	1.38	0.102
4/9/2009	11:59	9.69	7.50	67.95	85.04	1.60	0.05	10.04	7.41	68.32	84.06	1.51	0.08	210,976	143.90	127.15	1.39	0.117

Date	Hour	O2 (%)	CO2 (%)	SO2 (ppm)	NOX (ppm)	CO (ppm)	THC (ppm)	O2 (%)	CO2 (%)	SO2 (ppm)	NOX (ppm)	CO (ppm)	THC (ppm)	Flow (dscfm)	SO2 (lb/hr)	NOX (lb/hr)	CO (lb/hr)	THC (lb/hr)
4/9/2009	12:00	9.70	7.51	66.16	85.53	1.51	0.02	10.05	7.42	66.53	84.55	1.42	0.05	210,976	140.13	127.89	1.30	0.073
4/9/2009	12:01	9.72	7.50	64.80	86.01	1.53	0.01	10.07	7.41	65.17	85.03	1.44	0.04	210,976	137.26	128.62	1.32	0.058
4/9/2009	12:02	9.67	7.50	66.56	85.69	1.64	0.02	10.02	7.41	66.93	84.71	1.55	0.05	210,976	140.97	128.13	1.42	0.073
4/9/2009	12:03	9.72	7.48	67.08	85.65	1.62	0.04	10.07	7.39	67.45	84.67	1.53	0.07	210,976	142.07	128.07	1.41	0.102
4/9/2009	12:04	9.72	7.48	66.68	85.53	1.59	0.01	10.07	7.39	67.05	84.55	1.50	0.04	210,976	141.22	127.89	1.38	0.058
4/9/2009	12:05	9.74	7.50	68.41	85.26	1.92	0.01	10.09	7.41	68.78	84.28	1.83	0.04	210,976	144.87	127.48	1.68	0.058
4/9/2009	12:06	9.73	7.48	70.72	85.22	1.79	0.01	10.08	7.39	71.09	84.24	1.70	0.04	210,976	149.73	127.42	1.56	0.058
4/9/2009	12:07	9.74	7.46	70.46	85.85	1.63	0.03	10.09	7.37	70.83	84.87	1.54	0.06	210,976	149.19	128.37	1.41	0.088
4/9/2009	12:08	9.74	7.47	66.63	86.48	1.75	0.04	10.09	7.38	67.00	85.50	1.66	0.07	210,976	141.12	129.33	1.53	0.102
4/9/2009	12:09	9.75	7.46	64.59	86.31	1.71	0.02	10.10	7.37	64.96	85.33	1.62	0.05	210,976	136.82	129.07	1.49	0.073
4/9/2009	12:10	9.74	7.44	65.99	87.68	1.83	0.01	10.09	7.35	66.36	86.70	1.74	0.04	210,976	139.77	131.14	1.60	0.058
4/9/2009	12:11	9.80	7.42	66.32	87.25	1.97	0.04	10.15	7.33	66.69	86.27	1.88	0.07	210,976	140.47	130.49	1.73	0.102
4/9/2009	12:12	9.79	7.43	64.92	87.13	1.92	0.01	10.14	7.34	65.29	86.15	1.83	0.04	210,976	137.52	130.31	1.68	0.058
4/9/2009	12:13	9.84	7.42	63.42	86.78	1.78	0.02	10.19	7.33	63.79	85.80	1.69	0.05	210,976	134.36	129.78	1.55	0.073
4/9/2009	12:14	9.80	7.43	63.93	86.96	1.58	0.04	10.15	7.34	64.30	85.98	1.49	0.07	210,976	135.43	130.05	1.37	0.102
4/9/2009	12:15	9.82	7.44	63.80	86.48	1.46	0.01	10.17	7.35	64.17	85.50	1.37	0.04	210,976	135.16	129.33	1.26	0.058
4/9/2009	12:16	9.84	7.43	63.98	86.80	1.51	0.02	10.19	7.34	64.35	85.82	1.42	0.05	210,976	135.54	129.81	1.30	0.073
4/9/2009	12:17	9.80	7.43	62.97	86.96	1.56	0.04	10.15	7.34	63.34	85.98	1.47	0.07	210,976	133.41	130.05	1.35	0.102
4/9/2009	12:18	9.84	7.43	63.53	87.38	1.57	0.05	10.19	7.34	63.90	86.40	1.48	0.08	210,976	134.59	130.69	1.36	0.117
4/9/2009	12:19	9.84	7.42	64.39	88.03	1.60	0.00	10.19	7.33	64.76	87.05	1.51	0.03	210,976	136.40	131.67	1.39	0.044
4/9/2009	12:20	9.89	7.39	64.94	87.73	1.67	0.00	10.24	7.30	65.31	86.75	1.58	0.03	210,976	137.56	131.22	1.45	0.044
4/9/2009	12:21	9.91	7.38	63.63	88.13	1.74	0.01	10.26	7.29	64.00	87.15	1.65	0.04	210,976	134.80	131.82	1.52	0.058
4/9/2009	12:22	9.92	7.38	64.15	88.18	1.75	0.00	10.27	7.29	64.52	87.20	1.66	0.03	210,976	135.90	131.90	1.53	0.044
4/9/2009	12:23	9.89	7.38	63.13	87.81	1.66	0.02	10.24	7.29	63.50	86.83	1.57	0.05	210,976	133.75	131.34	1.44	0.073
4/9/2009	12:24	9.86	7.40	61.43	87.72	1.64	0.02	10.21	7.31	61.80	86.74	1.55	0.05	210,976	130.17	131.20	1.42	0.073
4/9/2009	12:25	9.84	7.40	62.43	87.28	1.73	0.02	10.19	7.31	62.80	86.30	1.64	0.05	210,976	132.27	130.54	1.51	0.073
4/9/2009	12:26	9.89	7.38	70.78	86.22	1.74	0.01	10.24	7.29	71.15	85.24	1.65	0.04	210,976	149.86	128.93	1.52	0.058
4/9/2009	12:27	9.88	7.34	78.23	87.00	1.74	0.01	10.23	7.25	78.60	86.02	1.65	0.04	210,976	165.55	130.11	1.52	0.058
4/9/2009	12:28	9.93	7.33	80.38	88.37	1.62	0.02	10.28	7.24	80.75	87.39	1.53	0.05	210,976	170.08	132.19	1.41	0.073
4/9/2009	12:29	9.93	7.34	76.17	89.90	1.79	0.03	10.28	7.25	76.54	88.92	1.70	0.06	210,976	161.21	134.50	1.56	0.088
4/9/2009	12:30	9.90	7.37	73.28	89.60	1.69	0.02	10.25	7.28	73.65	88.62	1.60	0.05	210,976	155.13	134.05	1.47	0.073
4/9/2009	12:31	9.97	7.35	74.02	88.80	1.66	0.01	10.32	7.26	74.39	87.82	1.57	0.04	210,976	156.68	132.84	1.44	0.058
4/9/2009	12:32	9.99	7.33	72.82	88.84	1.55	0.02	10.34	7.24	73.19	87.86	1.46	0.05	210,976	154.16	132.90	1.34	0.073
4/9/2009	12:33	10.03	7.32	69.32	89.29	1.69	0.04	10.38	7.23	69.69	88.31	1.60	0.07	210,976	146.79	133.58	1.47	0.102
4/9/2009	12:34	9.98	7.33	66.73	89.05	1.65	0.04	10.33	7.24	67.10	88.07	1.56	0.07	210,976	141.33	133.21	1.43	0.102
4/9/2009	12:35	10.00	7.35	66.31	89.02	1.42	0.00	10.35	7.26	66.68	88.04	1.33	0.03	210,976	140.45	133.17	1.22	0.044
4/9/2009	12:36	10.01	7.34	66.48	88.36	1.34	0.00	10.36	7.25	66.85	87.38	1.25	0.03	210,976	140.80	132.17	1.15	0.044
4/9/2009	12:37	9.99	7.33	68.02	88.66	1.36	0.01	10.34	7.24	68.39	87.68	1.27	0.04	210,976	144.05	132.62	1.17	0.058
4/9/2009	12:38	9.99	7.33	68.07	88.35	1.56	0.02	10.34	7.24	68.44	87.37	1.47	0.05	210,976	144.15	132.16	1.35	0.073
4/9/2009	12:39	9.96	7.36	67.03	87.47	1.70	0.01	10.31	7.27	67.40	86.49	1.61	0.04	210,976	141.96	130.82	1.48	0.058
4/9/2009	12:40	9.86	7.39	65.47	87.67	1.56	0.02	10.21	7.30	65.84	86.69	1.47	0.05	210,976	138.68	131.13	1.35	0.073
4/9/2009	12:41	9.85	7.44	61.58	88.47	1.49	0.02	10.20	7.35	61.95	87.49	1.40	0.05	210,976	130.48	132.34	1.29	0.073
4/9/2009	12:42	9.92	7.39	61.57	86.94	1.35	0.01	10.27	7.30	61.94	85.96	1.26	0.04	210,976	130.46	130.02	1.16	0.058
4/9/2009	12:43	10.01	7.32	67.36	86.13	1.60	0.01	10.36	7.23	67.73	85.15	1.51	0.04	210,976	142.66	128.80	1.39	0.058
4/9/2009	12:44	9.99	7.34	65.51	88.16	1.47	0.03	10.34	7.25	65.88	87.18	1.38	0.06	210,976	138.76	131.87	1.27	0.088
4/9/2009	12:45	10.03	7.31	63.93	89.71	1.49	0.02	10.38	7.22	64.30	88.73	1.40	0.05	210,976	135.43	134.21	1.29	0.073
4/9/2009	12:46	10.11	7.24	67.49	89.29	1.52	0.00	10.46	7.15	67.86	88.31	1.43	0.03	210,976	142.93	133.58	1.31	0.044
4/9/2009	12:47	10.14	7.24	63.32	89.39	1.49	0.03	10.49	7.15	63.69	88.41	1.40	0.06	210,976	134.15	133.73	1.29	0.088
4/9/2009	12:48	10.08	7.28	59.78	89.56	1.43	0.01	10.43	7.19	60.15	88.58	1.34	0.04	210,976	126.69	133.99	1.23	0.058
4/9/2009	12:49	10.11	7.24	59.42	87.64	1.41	0.02	10.46	7.15	59.79	86.66	1.32	0.05	210,976	125.93	131.08	1.21	0.073

Date	Hour	O2 (%)	CO2 (%)	SO2 (ppm)	NOX (ppm)	CO (ppm)	THC (ppm)
4/9/2009	12:50	10.10	7.26	59.69	88.49	1.39	0.05
4/9/2009	12:51	5.58	3.75	38.81	89.67	1.15	0.04
4/9/2009	12:52	-0.24	0.11	4.11	55.09	0.17	0.05
4/9/2009	12:53	-0.36	0.09	1.09	0.64	0.63	0.05
4/9/2009	12:54	3.00	4.57	0.22	0.13	0.54	0.01
4/9/2009	12:55	9.91	12.39	-0.18	0.00	1.17	0.00
4/9/2009	12:56	10.02	12.44	-0.41	-0.07	1.91	0.00
4/9/2009	12:57	3.33	3.77	0.10	-0.16	1.62	0.01
4/9/2009	12:58	-0.14	0.12	1.14	31.30	0.52	0.01
4/9/2009	12:59	-0.21	0.09	1.11	49.69	0.10	0.01
4/9/2009	13:00	-0.27	0.10	14.70	49.95	0.07	0.01
4/9/2009	13:01	-0.20	0.16	44.96	27.75	0.14	0.02
4/9/2009	13:02	-0.19	0.14	48.05	1.46	0.29	0.03
4/9/2009	13:03	-0.22	0.13	48.48	1.10	0.16	0.01
4/9/2009	13:04	-0.05	0.26	12.91	0.86	39.51	0.02
4/9/2009	13:05	0.03	0.30	3.86	2.23	50.83	0.01
4/9/2009	13:06	7.06	0.20	2.16	2.95	40.15	17.60
4/9/2009	13:07	20.30	0.06	0.47	1.85	2.10	29.84
4/9/2009	13:08	19.17	0.90	3.88	-0.14	0.21	19.30
4/9/2009	13:09	10.46	7.07	58.87	6.66	0.16	0.15
4/9/2009	13:10	10.45	7.13	67.19	84.41	1.44	0.10
4/9/2009	13:11	10.42	7.15	67.58	91.49	1.52	0.08
4/9/2009	13:12	10.39	7.17	66.79	91.54	1.57	0.10
4/9/2009	13:13	10.38	7.17	66.01	91.25	1.65	0.04
4/9/2009	13:14	10.35	7.18	65.48	91.57	1.55	0.04
4/9/2009	13:15	10.30	7.20	64.06	91.57	1.73	0.04

O2 (%)	CO2 (%)	SO2 (ppm)	NOX (ppm)	CO (ppm)	THC (ppm)	Flow (dscfm)	SO2 (lb/hr)	NOX (lb/hr)	CO (lb/hr)	THC (lb/hr)
10.45	7.17	60.06	87.51	1.30	0.08	210,976	126.50	132.37	1.19	0.117
RUN 3 AVERAGES										
10.18	7.33	67.73	86.19	1.52	0.05	210,976	142.66	130.36	1.40	0.077
		THC reported as methane			0.146					0.077
Three Run Averages										
9.73	7.56	66.27	78.95	1.52	0.03	***lb/hr***	140.24	120.01	1.40	0.040

Note - The DSCFM flow data is based on the average of the OTM-28 and PM/HCl test runs.

THC calibrated with propane

THC reported as methane	0.075		0.040

CEM CALIBRATIONS

PROJECT NAME	Haverhill Unit 2 Compliance
PROJECT NUMBER	39400492.520001
DATE	April 9, 2009
RUN NUMBER	1
START TIME	8:09 AM
STOP TIME	9:17 AM

ANALYZER SPAN	
CO	99.28
CO_2	18.97
O_2	20.95
NO_x	89.00
SO_2	92.04
THC	85.65

		CALIBRATION ERROR			SYSTEM BIAS CHECK								
					PRETEST		POST TEST						
	GAS CYLINDER NUMBER	CAL. GAS VALUE (% or PPM)	ANALYZER RESPONSE (% or PPM)	CAL ERROR (% SPAN)	SYSTEM RESP.	SYS. BIAS (% SPAN)	SYSTEM RESP.	SYS. BIAS (% SPAN)	DRIFT (% SPAN)	IS CAL ERROR CHECK OK? (YES/NO)	IS PRETEST BIAS OK? (YES/NO)	IS POSTEST BIAS OK? (YES/NO)	IS SYSTEM DRIFT OK? (YES/NO)
CO zero	n/a	0.00	0.06	-0.06	-0.04	0.10	0.05	0.01	-0.09	YES	YES	YES	YES
CO mid	XC021847B	50.21	50.02	0.19	50.29	-0.27	50.06	-0.04	0.23	YES	YES	YES	YES
CO hi	CC203335	99.28	97.41	1.88									
CO_2 zero	n/a	0.00	0.05	-0.26	0.08	-0.16	0.12	-0.37	-0.21	YES	YES	YES	YES
CO_2 mid	CC2603	12.43	12.37	0.32	12.46	-0.47	12.47	-0.53	-0.05	YES	YES	YES	YES
CO_2 hi	CC144573	18.97	18.88	0.47									
O_2 zero	n/a	0.00	-0.25	1.19	0.13	-1.81	-0.13	-0.57	1.24	YES	YES	YES	YES
O_2 mid	CC2603	9.98	9.90	0.38	10.10	-0.95	9.95	-0.24	0.72	YES	YES	YES	YES
O_2 hi	CC144573	20.95	20.68	1.29									
NO_x zero	n/a	0.00	-0.03	0.03	0.84	-0.98	1.78	-2.03	-1.06	YES	YES	YES	YES
NO_x mid	CC232136	47.40	47.52	-0.13	47.04	0.54	47.59	-0.08	-0.62	YES	YES	YES	YES
NO_x hi	CC7488	89.00	88.50	0.56									
SO_2 zero	n/a	0.00	-0.06	0.07	-0.11	0.05	-0.30	0.26	0.21	YES	YES	YES	YES
SO_2 mid	SA12660	48.80	48.70	0.11	48.87	-0.18	48.93	-0.25	-0.07	YES	YES	YES	YES
SO_2 hi	CC42997	92.04	91.58	0.50									
THC zero	n/a	0.00	0.03	-0.04	0.03	0.00	0.03	0.00	0.00	YES	YES	YES	YES
THC mid	CC15456	45.10	44.91	0.22									
THC low	CC146169	29.75	30.46	-0.83	30.46	0.00	29.86	0.70	0.70	YES	YES	YES	YES
THC hi	XC0159798	85.65	85.46	0.22									

Correction factors

CO	Avg. Conc -	0.005	*	1.0007774
CO_2	Avg. Conc -	0.1	*	1.0052568
O_2	Avg. Conc -	0	*	0.9955112
NO_x	Avg. Conc -	1.31	*	1.0303228
SO_2	Avg. Conc -	-0.205	*	0.9937888
THC	Avg. Conc -	0.03	*	0.987388

Calibration error = ((cal. gas value - analyzer resp) / analyzer span) * 100: allowable error ± 2 % , ± 5 % for THC

System Bias = ((analyzer resp - system resp) / analyzer span) * 100: allowable error ± 5 %

Drift = ((pretest sys resp - post test sys resp) / analyzer span) * 100: allowable error ± 3 %

Sys Bias (pre and post) must be performed on each run: To determine Drift.
Use zero gas and either mid or hi cal gas, choose cal gas closest to measured stack concentration.

Drift must be performed every hour on THC

Calibration Error is performed only at start, unless allowable error parameters are exceeded.

CEM CALIBRATIONS

PROJECT NAME	Haverhill Unit 2 Compliance
PROJECT NUMBER	39400492.520001
DATE	April 9, 2009
RUN NUMBER	2
START TIME	10:02 AM
STOP TIME	11:18 AM

ANALYZER	SPAN
CO	99.28
CO_2	18.97
O_2	20.95
NO_x	89.00
SO_2	92.04
THC	85.65

		CALIBRATION ERROR			SYSTEM BIAS CHECK								
					PRETEST		POST TEST						
	GAS CYLINDER NUMBER	CAL. GAS VALUE (% or PPM)	ANALYZER RESPONSE (% or PPM)	CAL ERROR (% SPAN)	SYSTEM RESP.	SYS. BIAS (% SPAN)	SYSTEM RESP.	SYS. BIAS (% SPAN)	DRIFT (% SPAN)	IS CAL ERROR CHECK OK? (YES/NO)	IS PRETEST BIAS OK? (YES/NO)	IS POSTEST BIAS OK? (YES/NO)	IS SYSTEM DRIFT OK? (YES/NO)
CO zero	n/a	0.00	0.06	-0.06	0.05	0.01	0.09	-0.03	-0.04	YES	YES	YES	YES
CO mid	XC021847B	50.21	50.02	0.19	50.06	-0.04	50.81	-0.80	-0.76	YES	YES	YES	YES
CO hi	CC203335	99.28	97.41	1.88									
CO_2 zero	n/a	0.00	0.05	-0.26	0.12	-0.37	0.09	-0.21	0.16	YES	YES	YES	YES
CO_2 mid	CC2603	12.43	12.37	0.32	12.47	-0.53	12.43	-0.32	0.21	YES	YES	YES	YES
CO_2 hi	CC144573	18.97	18.88	0.47									
O_2 zero	n/a	0.00	-0.25	1.19	-0.13	-0.57	-0.37	0.57	1.15	YES	YES	YES	YES
O_2 mid	CC2603	9.98	9.90	0.38	9.95	-0.24	9.95	-0.24	0.00	YES	YES	YES	YES
O_2 hi	CC144573	20.95	20.68	1.29									
NO_x zero	n/a	0.00	-0.03	0.03	1.78	-2.03	1.34	-1.54	0.49	YES	YES	YES	YES
NO_x mid	CC232136	47.40	47.52	-0.13	47.59	-0.08	48.16	-0.72	-0.64	YES	YES	YES	YES
NO_x hi	CC7488	89.00	88.50	0.56									
SO_2 zero	n/a	0.00	-0.06	0.07	-0.30	0.26	-0.33	0.29	0.03	YES	YES	YES	YES
SO_2 mid	SA12660	48.80	48.70	0.11	48.93	-0.25	48.36	0.37	0.62	YES	YES	YES	YES
SO_2 hi	CC42997	92.04	91.58	0.50									
THC zero	n/a	0.00	0.03	-0.04	0.03	0.00	-0.01	0.05	0.05	YES	YES	YES	YES
THC mid	CC15456	45.10	44.91	0.22									
THC low	CC146169	29.75	30.46	-0.83	29.86	0.70	29.59	1.02	0.32	YES	YES	YES	YES
THC hi	XC0159798	85.65	85.46	0.22									

Correction factors

CO	Avg. Conc -	0.07	*	0.9969026
CO_2	Avg. Conc -	0.105	*	1.0068854
O_2	Avg. Conc -	-0.25	*	0.9784314
NO_x	Avg. Conc -	1.56	*	1.0234265
SO_2	Avg. Conc -	-0.315	*	0.996732
THC	Avg. Conc -	0.01	*	1.0011779

Calibration error = ((cal. gas value - analyzer resp) / analyzer span) * 100: allowable error ± 2 %, ± 5 % for THC

System Bias = ((analyzer resp - system resp) / analyzer span) * 100: allowable error ± 5 %

Drift = ((pretest sys resp - post test sys resp) / analyzer span) * 100: allowable error ± 3 %

Sys Bias (pre and post) must be performed on each run: To determine Drift.
Use zero gas and either mid or hi cal gas, choose cal gas closest to measured stack concentration.

Drift must be performed every hour on THC

Calibration Error is performed only at start, unless allowable error parameters are exceeded.

CEM CALIBRATIONS

PROJECT NAME	Haverhill Unit 2 Compliance
PROJECT NUMBER	39400492.520001
DATE	April 9, 2009
RUN NUMBER	3
START TIME	11:45 AM
STOP TIME	12:52 PM

ANALYZER	SPAN
CO	99
CO_2	19
O_2	21
NO_x	89
SO_2	92
THC	86

		CALIBRATION ERROR			SYSTEM BIAS CHECK								
					PRETEST		POST TEST						
	GAS CYLINDER NUMBER	CAL. GAS VALUE (% or PPM)	ANALYZER RESPONSE (% or PPM)	CAL ERROR (% SPAN)	SYSTEM RESP.	SYS. BIAS (% SPAN)	SYSTEM RESP.	SYS. BIAS (% SPAN)	DRIFT (% SPAN)	IS CAL ERROR CHECK OK? (YES/NO)	IS PRETEST BIAS OK? (YES/NO)	IS POSTEST BIAS OK? (YES/NO)	IS SYSTEM DRIFT OK? (YES/NO)
CO zero	n/a	0.00	0.06	-0.06	0.09	-0.03	0.10	-0.04	-0.01	YES	YES	YES	YES
CO mid	XC021847B	50.21	50.02	0.19	50.81	-0.80	50.83	-0.82	-0.02	YES	YES	YES	YES
CO hi	CC203335	99.28	97.41	1.88									
CO_2 zero	n/a	0.00	0.05	-0.26	0.09	-0.21	0.09	-0.21	0.00	YES	YES	YES	YES
CO_2 mid	CC2603	12.43	12.37	0.32	12.43	-0.32	12.44	-0.37	-0.05	YES	YES	YES	YES
CO_2 hi	CC144573	18.97	18.88	0.47									
O_2 zero	n/a	0.00	-0.25	1.19	-0.37	0.57	-0.36	0.53	-0.05	YES	YES	YES	YES
O_2 mid	CC2603	9.98	9.90	0.38	9.95	-0.24	10.02	-0.57	-0.33	YES	YES	YES	YES
O_2 hi	CC144573	20.95	20.68	1.29									
NO_x zero	n/a	0.00	-0.03	0.03	1.34	-1.54	0.64	-0.75	0.79	YES	YES	YES	YES
NO_x mid	CC232136	47.40	47.52	-0.13	48.16	-0.72	49.70	-2.45	-1.73	YES	YES	YES	YES
NO_x hi	CC7488	89.00	88.50	0.56									
SO_2 zero	n/a	0.00	-0.06	0.07	-0.33	0.29	-0.41	0.38	0.09	YES	YES	YES	YES
SO_2 mid	SA12660	48.80	48.70	0.11	48.36	0.37	48.48	0.24	-0.13	YES	YES	YES	YES
SO_2 hi	CC42997	92.04	91.58	0.50									
THC zero	n/a	0.00	0.03	-0.04	-0.01	0.05	-0.05	0.09	0.05	YES	YES	YES	YES
THC mid	CC15456	45.10	44.91	0.22									
THC low	CC146169	29.75	30.46	-0.83	29.59	1.02	29.84	0.72	-0.29	YES	YES	YES	YES
THC hi	XC0159798	85.65	85.46	0.22									

Correction factors

CO	Avg. Conc	-	0.095	*	0.9898275
CO_2	Avg. Conc	-	0.09	*	1.0068854
O_2	Avg. Conc	-	-0.365	*	0.9642512
NO_x	Avg. Conc	-	0.99	*	0.9887359
SO.	Avg. Conc	-	-0.37	*	1.000205
THC	Avg. Conc	-	-0.03	*	1.0001681

Calibration error = ((cal. gas value - analyzer resp) / analyzer span) * 100; allowable error ± 2 % , ± 5 % for THC

System Bias = ((analyzer resp - system resp) / analyzer span) * 100: allowable error ± 5 %

Drift = ((pretest sys resp - post test sys resp) / analyzer span) * 100: allowable error ± 3 %

Sys Bias (pre and post) must be performed on each run: To determine Drift:
Use zero gas and either mid or hi cal gas, choose cal gas closest to measured stack concentration.

Drift must be performed every hour on THC

Calibration Error is performed only at start, unless allowable error parameters are exceeded.

Method 25A Calibration

	Cal. Gas Value	Analyzer Response
High check	85.65	85.46
Zero check	0	0.03

Slope	0.99742
y-Intercept	0.03
Predicted	29.703
	45.014
Analyzer Response	30.46
	44.91
difference	0.7568
	0.1036
Cal ok?	**Yes**
	Yes

	Cal Gas Value	5%
TRUE	29.75	1.4875
	45.10	2.255

Main Stack
HCl TEST DATA

URS

SUMMARY OF RESULTS	
Project Name:	Haverhill Compliance Test
Project Number:	39400492.520001
Site Location:	Unit # 2
Test Location:	Main Stack
Test Train:	HCl

Parameters	Run # 1	Run # 2	Run # 3	Average
Run Times	08:09-09:17	10:02-11:18	11:45-12:52	
Date	4/9/2009	4/9/2009	4/9/2009	
Sample Time	60	60	60	
Target Production Rate (wet tons/coal charged/oven)	45	45	45	45
Daily Production for Unit 2 (avg. coking rate - wet tons coal/hr)	92.2	92.2	92.2	92.2
Vol. Sampled @ STP (ft3)	42.942	43.718	44.772	43.811
Moisture Content (% Vol.)	20.5	19.7	20.1	20.1
O2 (%)	9.4	9.4	9.6	9.5
CO2 (%)	7.9	7.6	7.5	7.7
Stack Gas Temperature (°F)	267	268	268	267
Stack Velocity (ft/min.)	2,809	2,853	2,848	2,837
Stack Velocity (ft/sec.)	46.82	47.55	47.47	47.28
Gas Flow Rate (ACFM)	372,870	378,676	378,018	376,521
Gas Flow Rate (SCFM)	264,548	268,448	267,799	266,932
Gas Flow Rate (DSCFM)	210,270	215,649	214,004	213,308
Percent Isokinetic	97.1	96.4	99.5	97.7
Chlorine Concentration (ppm)	ND	ND	ND	ND
Fluoride Concentration (ppm)	ND	ND	ND	ND
HCl Concentration (ppm)[1]	<0.5	<0.5	<0.5	<0.5
HCl Mass Rate (lb/hr)	0.102	0.062	0.094	0.086
HCl Mass Rate (lb/ton coal charged)	0.0011	0.0007	0.0010	0.0009

[1] *HCl was detected and estimated, but below the MDL.*

HCl Mass Emission Calculations

Project Name: Haverhill Unit 2 Compliance
Project No. 39400492
Test Date: 4/9/2009

Test I.D.: **Main Stack**

INPUT PARAMETERS

Run No.	Total ug	grams/sample	Vmstd (cu. ft.)	Qstd (dscfm)	Mass Rate (lbs/hr)	Estimated Concentration[1] (ppm)
1	157.0	0.000157	42.942	210,270	0.1017	0.085
2	95.5	0.000096	43.718	215,649	0.0623	0.051
3	148.0	0.000148	44.772	214,004	0.0936	0.077

[1] Below detection limit

Mass Rate (lb/hr)

MR= (Mn)(Qstd)(60)/(Vmstd)(453.6)

Mn= grams/sample
Qstd= stack gas flow rate (dscfm)
Vmstd= volume of air sample (@ stp)

HCl constant= 9.481E-08

Main Stack
HCl Run 1

URS STACK TEST DATA SHEET Method used: M5/HCL

Project:	HNCC Unit #2 Compliance Test	Barom. Psr.:	29.28	Stack Dia.:	156"
Project No:	39400492.520001	Static Psr.:	-0.72	Stack Area:	
Source:	Unit #2 Main Stack	Meter Box I.D.:	V	Port Length:	4.0"
Run No.:	#1	Delta H @:	1.8317	Port Dia.:	4.0"
Date:	4/9/09	Gamma:	0.9441	Probe Liner:	glass
Operator:	TG	Pitot Coef.:	0.811 AQS-5004	Filter No.:	09-039

TRAVERSE POINT NUMBER	SAMPLING TIME Clock	SAMPLING TIME Sample	VELOCITY DELTA P	SAMPLE DELTA H	GAS SAMPLE VOLUME	DGM TEMP.	STACK TEMP.	PROBE TEMP.	FILTER BOX TEMP.	FILTER OUTLET TEMP.	LAST IMPINGER TEMP.	TRAIN VACUUM
1	08:09	0	0.62	2.30	78.400	66	268	259	265	230	41	1.0
2		2.5	0.60	2.20	80.80	66	270	256	261	235	41	1.0
3		5.0	0.57	2.10	83.10	66	268	254	269	253	41	1.0
4		7.5	0.57	2.10	85.10	67	268	256	261	259	40	1.0
5		10.0	0.46	1.7	86.80	68	268	256	253	262	41	1.0
6		12.5	0.52	1.95	88.40	69	267	257	254	264	41	1.0
1	8:27	15.0	0.54	2.0	90.90	70	268	252	249	251	42	1.0
2		17.5	0.57	2.10	92.80	71	268	255	251	268	41	1.0
3		20.0	0.56	2.07	94.80	72	268	255	251	270	41	1.0
4		22.5	0.54	2.0	96.60	73	267	250	246	273	41	1.0
5		25.0	0.45	1.65	98.85	75	264	250	244	246	41	1.0
6		27.5	0.46	1.70	101.10	75	263	251	250	241	42	1.0
1	08:45	30.0	0.50	1.85	102.490	76	267	256	255	230	44	1.0
2		32.5	0.48	1.78	104.60	77	267	256	255	248	44	1.0
3		35.0	0.48	1.78	106.50	78	267	252	255	253	45	1.0
4		37.5	0.45	1.67	108.60	79	267	252	256	257	46	1.0
5		40.0	0.38	1.40	110.20	80	265	252	256	249	47	1.0
6		42.5	0.36	1.32	112.30	80	263	253	255	248	48	1.0
1	09:02	45.0	0.50	1.85	113.570	81	268	252	255	226	50	1.0
2		47.5	0.50	1.85	115.70	82	268	252	255	248	47	1.0
3		50.0	0.52	1.95	117.60	83	267	252	255	253	45	1.0
4		52.5	0.49	1.80	119.70	84	267	252	252	257	45	1.0
5		55.0	0.46	1.70	121.40	84	267	253	255	259	45	1.0
6		57.5	0.50	1.85	123.30	85	267	252	257	261	45	1.0
	9:17	60.0			125.320							
AVERAGE					46.920							

LEAK CHECKS	
Pitot impact:	good
Pitot static:	good
Train initial:	0.00 @ 15" Hg
Train Final:	0.0 @ 4"

NOZZLE MEASUREMENT	
I.D. No.:	M-5
1	0.292
2	0.292
3	0.291
Avg.	0.292

STACK GAS ANALYSIS	CO2	O2		
1	7.7	9.5		
2	8.0	9.5		
3	8.0	9.2		
Avg.	7.9	9.54		

NOTES:

URS

PARTICULATE TEST LAB DATA SHEET

PROJECT:	HNCC Unit #2 Compliance Test	JOB NO.:	39400492.520001
SOURCE:	Main Stack	DATE:	4-9-09
TRAIN I.D.:	M5/26-1	TEST NO.:	1
COLLECTED BY:	MSM/TJB	CHKD. BY:	BP MSM

CONDENSATION

IMPINGER NO.	INITIAL VOL., ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	714.1	905.1	191.0
2	704.0	735.7	31.7
3	712.6	716.5	3.9
4	713.3	713.8	0.5
5	877.7	886.1	8.4
6			
7			
TOTAL	3721.7	3957.2	235.5

PARTICULATE

SAMPLE I.D. NO.	INITIAL WT., g	FINAL WT., g	NET WT., g
PROBE WASH			
REAGENT BLANK			
CORRECTED PROBE WASH*			
#1 FILTER			
#2 FILTER			
IMPINGERS			

*subtract reagent blank from probe wash

TOTAL PARTICULATED COLLECTED

PARTICULATE COLLECTED (excluding impinger catch)

PARTICULATE COLLECTED (including impinger catch)

STACK TEST CALCULATIONS

Project:	Haverhill	Barom. Psr.:	29.28		Calculated
Project No:	39400492	Static Psr.:	-0.72	Ps:	29.227
Source:	Unit # 2	Delta H @:	1.8317	As:	132.732
Run No.:	1	Gamma:	0.9441	An:	0.000465
Date:	4/9/2009	Pitot Coef.:	0.811		
Sample Volume:	46.92	Stack Dia.:	156 ,in.		
Sample Time:	60	Nozzle Dia.:	0.292 ,in.		
O2 Conc.:	9.4	H2O Gain:	235.5 ,ml		
CO2 Conc.:	7.9	Part. Weight:	0.0076 ,g		

TRAVERSE POINT NUMBER	VELOCITY DELTA P Actual	Sq. Root	DELTA H	DRY GAS METER TEMPERATURE	STACK TEMP.
1	0.62	0.787401	2.30	66	268
2	0.60	0.774597	2.20	66	270
3	0.57	0.754983	2.10	66	268
4	0.57	0.754983	2.10	67	268
5	0.46	0.678233	1.70	68	268
6	0.52	0.72111	1.95	69	267
7	0.54	0.734847	2.00	70	268
8	0.57	0.754983	2.10	71	268
9	0.56	0.748331	2.07	72	268
10	0.54	0.734847	2.00	73	267
11	0.45	0.67082	1.65	75	264
12	0.46	0.678233	1.70	75	263
13	0.50	0.707107	1.85	76	267
14	0.48	0.69282	1.78	77	267
15	0.48	0.69282	1.78	78	267
16	0.45	0.67082	1.67	79	267
17	0.38	0.616441	1.40	80	265
18	0.36	0.6	1.32	80	263
19	0.50	0.707107	1.85	81	268
20	0.50	0.707107	1.85	82	268
21	0.52	0.72111	1.95	83	267
22	0.49	0.7	1.80	84	267
23	0.46	0.678233	1.70	84	267
24	0.50	0.707107	1.85	85	267
AVERAGE	0.5033333	0.708085	1.86125	75.29167	266.95833

Project: Haverhill
Project No: 39400492
Source: Unit # 2
Run No.: 1

Stack Sampling Calculations

Volume of Water Collected

Vwstd = (VI0)(0.04707)

Vwstd = 11.08 cubic feet

Volume of Gas Metered, Standard Conditions

Vmstd = ((17.64) (Vm)(Pb + DeltaH/13.6)(gamma))/Tm

Vmstd = 42.942 cubic feet

Moisture Content

Bwo = Vwstd/(Vmstd + Vwstd)

Bwo = 0.21

Molecular Weight of the Dry Gas Stream

Md = (.44)(%CO2) + (.32)(%O2) + (.28)(%CO +%N2)

Md = 29.6

Molecular Weight of Stack Gas

Ms = (Md(1-Bwo) + 18(bwo)

Ms = 27.3

Velocity of Stack Gas

Vs = 174 Cp (DeltaP sq.rt.)((Ts+459.6) X 29.92 X 28.96/Ps/Ms)^.5

Vs = 2,809.2 ft/min

Total Flow of Stack Gas

Qa = As X Vs

Qa = 372,869.88 ACFM

Qs = Qa X 528/Ts X Ps/29.92

Qs = 264,548.46 SCFM

Qstd = Qs(1 - Bwo)

Qstd = 210,269.55 DSCFM

Vsstd = Qstd/As

Vsstd = 1584.16 ft/min

Percent Isokinetic

Is = Vmstd/(An X Time X Vsstd)

Is = 0.97

Particulate Concentration

Cs = (15.43)(Mn)/Vmstd

Cs = 0.0027

Particulate Mass Rate

Pmr = (Mn)(Qstd)(60)/(Vmstd)(453.6)

Pmr = 4.92

URS

TEST LAB DATA SHEET

PROJECT:	Haverhill Compliance	PROJECT NO.:	39400492.520001
SOURCE:	Unit # 2	TEST DATE:	4/9/2009
TRAIN I.D.	M5/26A-1	TEST NO.:	1
COLLECTED BY:	TJB	CHKD BY:	MSM

CONDENSATION

IMPINGER NO.	INITIAL VOL.,ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	714.1	905.1	191.0
2	704	735.7	31.7
3	712.6	716.5	3.9
4	713.3	713.8	0.5
5	877.7	886.1	8.4
6			0
7			0
TOTAL	3721.7	3957.2	235.5

PARTICULATE

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g
PROBE WASH	12.7673	12.7722	0.0049
REAGENT BLANK	12.6160	12.6161	0.0001
CORRECTED PROBE WASH *			0.0048
FILTER # 1 09-039	0.3466	0.3494	0.0028

* subtract reagent blank from probe wash

TOTAL PARTICULATED COLLECTED

PARTICULATE COLLECTED (excluding impinger catch)	0.0076
PARTICULATE COLLECTED (including impinger catch)	

QA PROBE WASH (as required)

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g

COMMENTS:

Main Stack
HCl Run 2

URS STACK TEST DATA SHEET Method used: M5/HCl

Project:	HNCC Unit #2 Compliance Test	Barom. Psr.:	29.28	Stack Dia.:	156"
Project No:	39400492.520001	Static Psr.:	-0.75	Stack Area:	
Source:	Unit 2 Main Stack	Meter Box I.D.:	V	Port Length:	4.0"
Run No.:	#2	Delta H @:	1.8317	Port Dia.:	4.0"
Date:	4/9/09	Gamma:	0.9941	Probe Liner:	glass
Operator:	TG	Pitot Coef.:	0.811 AQS-S004	Filter No.:	09-040

TRAVERSE POINT NUMBER	SAMPLING TIME Clock	SAMPLING TIME Sample	VELOCITY DELTA P	SAMPLE DELTA H	GAS SAMPLE VOLUME	DGM TEMP.	STACK TEMP.	PROBE TEMP.	FILTER BOX TEMP.	FILTER OUTLET TEMP.	LAST IMPINGER TEMP.	TRAIN VACUUM
1	10:02	0	0.52	1.95	125.600	80	269	245	248	223	61	1.0
2		2.5	0.54	2.0	127.60	80	269	252	257	225	55	1.0
3		5.0	0.54	2.0	129.70	81	269	263	260	230	53	1.0
4		7.5	0.50	1.85	131.70	82	268	266	267	235	51	1.0
5		10.0	0.50	1.85	133.50	82	267	266	270	241	49	1.0
6		12.5	0.48	1.80	135.70	83	267	264	260	240	48	1.0
1	10:19	15.0	0.46	1.70	137.525	83	267	256	252	229	51	1.0
2		17.5	0.54	2.0	139.40	84	269	257	253	254	51	1.0
3		20.0	0.50	1.85	141.70	85	268	255	254	261	52	1.0
4		22.5	0.49	1.82	143.50	86	268	253	255	263	53	1.0
5		25.0	0.42	1.55	145.60	86	266	252	251	264	53	1.0
6		27.5	0.40	1.50	147.30	86	265	251	250	263	55	1.0
1	10:36	30.0	0.54	2.0	149.110	87	268	249	250	247	57	1.0
2		32.5	0.60	2.2	151.30	87	268	249	248	252	53	1.0
3		35.0	0.58	2.15	154.10	88	268	249	246	255	50	1.0
4		37.5	0.55	2.05	155.90	88	267	249	253	257	50	1.0
5		40.0	0.48	1.80	157.80	89	265	253	252	257	50	1.0
6		42.5	0.48	1.80	159.90	89	263	249	251	255	49	1.0
1	10:53	45.0	0.58	2.15	161.565	89	268	253	251	231	51	1.0
2		47.5	0.60	2.2	164.20	89	269	251	252	260	51	1.0
3		50.0	0.60	2.2	165.90	89	268	249	250	264	51	1.0
4		52.5	0.54	2.0	168.30	90	268	251	254	264	52	1.0
5		55.0	0.52	1.95	170.60	91	268	253	251	263	53	1.0
6		57.5	0.50	1.85	172.40	91	268	249	251	262	54	1.0
	11:18	60.0			174.320							
AVERAGE					48.720							

LEAK CHECKS	
Pitot impact:	good
Pitot static:	good
Train initial:	0.00 @ 15" Hg
Train Final:	0.0 @ 5"

NOZZLE MEASUREMENT	
I.D. No.:	M-5
1	0.292
2	0.292
3	0.291
Avg.	0.292

STACK GAS ANALYSIS				
	CO2	O2		
1	7.8	9.1		
2	7.4	9.6		
3	7.5	9.5		
Avg.	7.6	9.4		

NOTES:

URS

PARTICULATE TEST LAB DATA SHEET

PROJECT:	HNCC Unit #2 Compliance Test	JOB NO.:	39400492.520001
SOURCE:	Main Stack	DATE:	4-9-09
TRAIN I.D.:	M5/26-2	TEST NO.:	2
COLLECTED BY:	MSM/TJB	CHKD. BY:	MSM

CONDENSATION

IMPINGER NO.	INITIAL VOL., ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	703.0	883.8	180.8
2	701.2	727.8	26.6
3	701.8	705.5	3.7
4	709.4	709.9	0.5
5	893.0	908.8	15.8
6			
7			
TOTAL	3708.4	3935.8	227.4

PARTICULATE

SAMPLE I.D. NO.	INITIAL WT., g	FINAL WT., g	NET WT., g
PROBE WASH			
REAGENT BLANK			
CORRECTED PROBE WASH*			
#1 FILTER			
#2 FILTER			
IMPINGERS			

*subtract reagent blank from probe wash

TOTAL PARTICULATED COLLECTED

PARTICULATE COLLECTED (excluding impinger catch)

PARTICULATE COLLECTED (including impinger catch)

STACK TEST CALCULATIONS

Project:	Haverhill	Barom. Psr.:	29.28		Calculated
Project No:	39400492	Static Psr.:	-0.75	Ps:	29.225
Source:	Unit # 2	Delta H @:	1.8317	As:	132.732
Run No.:	2	Gamma:	0.9441	An:	0.000465
Date:	4/9/2009	Pitot Coef.:	0.811		
Sample Volume:	48.720	Stack Dia.:	156 ,in.		
Sample Time:	60	Nozzle Dia.:	0.292 ,in.		
O2 Conc.:	9.4	H2O Gain:	227.4 ,ml		
CO2 Conc.:	7.6	Part. Weight:	0.0080 ,g		

TRAVERSE POINT NUMBER	VELOCITY DELTA P Actual	Sq. Root	DELTA H	DRY GAS METER TEMPERATURE	STACK TEMP.
1	0.52	0.72111	1.95	80	269
2	0.54	0.734847	2.00	80	269
3	0.54	0.734847	2.00	81	269
4	0.50	0.707107	1.85	82	268
5	0.50	0.707107	1.85	82	267
6	0.48	0.69282	1.80	83	267
7	0.46	0.678233	1.70	83	267
8	0.54	0.734847	2.00	84	269
9	0.50	0.707107	1.85	85	268
10	0.49	0.7	1.82	86	268
11	0.42	0.648074	1.55	86	266
12	0.40	0.632456	1.50	86	265
13	0.54	0.734847	2.00	87	268
14	0.60	0.774597	2.20	87	268
15	0.58	0.761577	2.15	88	268
16	0.55	0.74162	2.05	88	267
17	0.48	0.69282	1.80	89	265
18	0.48	0.69282	1.80	89	263
19	0.58	0.761577	2.15	89	268
20	0.60	0.774597	2.20	89	269
21	0.60	0.774597	2.20	89	268
22	0.54	0.734847	2.00	90	268
23	0.52	0.72111	1.95	91	268
24	0.50	0.707107	1.85	91	268
AVERAGE	0.5191667	0.719611	1.9258333	86.04167	267.5

Project: Haverhill
Project No: 39400492
Source: Unit # 2
Run No.: 2

Stack Sampling Calculations

Volume of Water Collected

Vwstd = (VI0)(0.04707)

Vwstd = 10.70 cubic feet

Volume of Gas Metered, Standard Conditions

Vmstd = ((17.64) (Vm)(Pb + DeltaH/13.6)(gamma))/Tm

Vmstd = 43.718 cubic feet

Moisture Content

Bwo = Vwstd/(Vmstd + Vwstd)

Bwo = 0.20

Molecular Weight of the Dry Gas Stream

Md = (.44)(%CO2) + (.32)(%O2) + (.28)(%CO +%N2)

Md = 29.6

Molecular Weight of Stack Gas

Ms = (Md(1-Bwo) + 18(bwo)

Ms = 27.3

Velocity of Stack Gas

Vs = 174 Cp (DeltaP sq.rt.)((Ts+459.6) X 29.92 X 28.96/Ps/Ms)^.5

Vs = 2,852.9 ft/min

Total Flow of Stack Gas

Qa = As X Vs

Qa = 378,675.99 ACFM

Qs = Qa X 528/Ts X Ps/29.92

Qs = 268,447.55 SCFM

Qstd = Qs(1 - Bwo)

Qstd = 215,649.42 DSCFM

Vsstd = Qstd/As

Vsstd = 1624.70 ft/min

Percent Isokinetic

Is = Vmstd/(An X Time X Vsstd)

Is = 0.96

Particulate Concentration

Cs = (15.43)(Mn)/Vmstd

Cs = 0.0028

Particulate Mass Rate

Pmr = (Mn)(Qstd)(60)/(Vmstd)(453.6)

Pmr = 5.22

URS

TEST LAB DATA SHEET

PROJECT:	Haverhill Compliance	PROJECT NO.:	39400492.520001
SOURCE:	Unit # 2	TEST DATE:	4/9/2009
TRAIN I.D.	M5/26A-2	TEST NO.:	2
COLLECTED BY:	TJB	CHKD BY:	MSM

CONDENSATION

IMPINGER NO.	INITIAL VOL.,ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	703.0	883.8	180.8
2	701.2	727.8	26.6
3	701.8	705.5	3.7
4	709.4	709.9	0.5
5	893	908.8	15.8
6			0.0
7			0.0
TOTAL	3708.40	3935.8	227.4

PARTICULATE

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g
PROBE WASH	12.6048	12.6087	0.0039
REAGENT BLANK	12.6160	12.6161	0.0001
CORRECTED PROBE WASH *			0.0038
FILTER # 1 09-040	0.3552	0.3594	0.0042

* subtract reagent blank from probe wash

TOTAL PARTICULATED COLLECTED

PARTICULATE COLLECTED (excluding impinger catch)	0.0080
PARTICULATE COLLECTED (including impinger catch)	

QA PROBE WASH (as required)

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g

COMMENTS:

Main Stack
HCl Run 3

URS STACK TEST DATA SHEET Method used: M5/HCl

Project:	HNCC Unit #2 Compliance Test	Barom. Psr.:	29.28	Stack Dia.:	156"
Project No:	39400492.520001	Static Psr.:	-0.77	Stack Area:	
Source:	Unit 2 Main Stack	Meter Box I.D.:	V	Port Length:	4.0"
Run No.:	#3	Delta H @:	1.8317	Port Dia.:	4.0"
Date:	4/9/09	Gamma:	0.9941	Probe Liner:	glass
Operator:	TG	Pitot Coef.:	0.811 (S004)	Filter No.:	

TRAVERSE POINT NUMBER	SAMPLING TIME Clock	SAMPLING TIME Sample	VELOCITY DELTA P	SAMPLE DELTA H	GAS SAMPLE VOLUME	DGM TEMP.	STACK TEMP.	PROBE TEMP.	FILTER BOX TEMP.	FILTER OUTLET TEMP.	LAST IMPINGER TEMP.	TRAIN VACUUM
1	11:45	0	0.64	2.35	175.070	82	270	265	267	224	57	2.0
2		2.5	0.60	2.2	177.60	82	269	270	269	224	53	2.0
3		5.0	0.60	2.2	179.60	83	269	270	270	223	52	2.0
4		7.5	0.59	2.18	182.30	83	269	273	269	223	51	2.0
5		10.0	0.52	1.92	184.40	84	270	269	270	225	51	2.0
6		12.5	0.50	1.85	186.50	85	267	263	255	234	51	2.0
1	12:02	15.0	0.58	2.15	188.275	84	269	258	251	229	54	2.0
2		17.5	0.60	2.2	190.40	85	269	257	250	245	53	2.0
3		20.0	0.58	2.15	192.70	85	269	254	251	257	53	2.0
4		22.5	0.54	2.0	194.80	85	268	257	253	265	53	2.0
5		25.0	0.42	1.65	197.10	86	266	253	245	268	53	2.0
6		27.5	0.42	1.65	198.90	86	262	251	248	270	54	2.0
1	12:18	30.0	0.50	1.90	200.705	86	269	252	250	257	57	2.0
2		32.5	0.54	2.05	202.90	86	269	251	249	265	56	2.0
3		35.0	0.52	1.92	205.10	87	269	245	249	265	55	2.0
4		37.5	0.46	1.72	207.30	87	269	250	250	265	56	2.0
5		40.0	0.38	1.45	209.20	87	267	249	249	265	57	2.0
6		42.5	0.38	1.45	211.10	87	261	246	253	264	58	2.0
1	12:37	45.0	0.54	2.0	212.770	86	269	247	250	240	57	2.5
2		47.5	0.52	1.92	215.00	87	269	245	250	261	51	2.5
3		50.0	0.54	2.0	216.90	87	268	251	248	266	51	2.5
4		52.5	0.50	1.90	219.20	88	269	246	251	267	51	2.5
5		55.0	0.46	1.72	221.40	88	268	248	249	268	50	2.0
6		57.5	0.48	1.80	223.20	88	267	249	250	269	51	2.0
	12:52	60.0			224.922							
AVERAGE					49.852							

LEAK CHECKS	
Pitot impact:	good
Pitot static:	good
Train initial:	0.00 @ 15"
Train Final:	0.0 @ 5"

NOZZLE MEASUREMENT	
I.D. No.:	M-5
1	0.292
2	0.292
3	0.291
Avg.	0.292

STACK GAS ANALYSIS				
	CO2	O2		
1	7.5	9.8		
2	7.5	9.7		
3	7.5	9.6		
Avg.	7.5	9.6		

NOTES:

URS

PARTICULATE TEST LAB DATA SHEET

PROJECT: HNCC Unit #2 Compliance Test
JOB NO.: 39400492.520001
SOURCE: Main Stack
DATE: 4-9-09
TRAIN I.D.: M5/26-3
TEST NO.: 3
COLLECTED BY: MSM/TJB
CHKD. BY: TJB/MSM

CONDENSATION

IMPINGER NO.	INITIAL VOL., ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	710.0	895.1	185.1
2	683.4	712.6	29.2
3	708.6	712.5	3.9
4	702.0	702.6	0.6
5	896.6	916.9	20.3
6			
7			
TOTAL	3700.6	3939.7	239.1

PARTICULATE

SAMPLE I.D. NO.	INITIAL WT., g	FINAL WT., g	NET WT., g
PROBE WASH			
REAGENT BLANK			
CORRECTED PROBE WASH*			
#1 FILTER			
#2 FILTER			
IMPINGERS			

*subtract reagent blank from probe wash

TOTAL PARTICULATED COLLECTED

PARTICULATE COLLECTED (excluding impinger catch)

PARTICULATE COLLECTED (including impinger catch)

STACK TEST CALCULATIONS

Project:	Haverhill	Barom. Psr.:	29.28		Calculated
Project No:	39400492	Static Psr.:	-0.77	Ps:	29.223
Source:	Unit # 2	Delta H @:	1.8317	As:	132.732
Run No.:	3	Gamma:	0.9441	An:	0.000465
Date:	4/9/2009	Pitot Coef.:	0.811		
Sample Volume:	49.852	Stack Dia.:	156 ,in.		
Sample Time:	60	Nozzle Dia.:	0.292 ,in.		
O2 Conc.:	9.6	H2O Gain:	239.1 ,ml		
CO2 Conc.:	7.5	Part. Weight:	0.0069 ,g		

TRAVERSE POINT NUMBER	VELOCITY DELTA P Actual	Sq. Root	DELTA H	DRY GAS METER TEMPERATURE	STACK TEMP.
1	0.64	0.8	2.35	82	270
2	0.60	0.774597	2.20	82	269
3	0.60	0.774597	2.20	83	269
4	0.59	0.768115	2.18	83	269
5	0.52	0.72111	1.92	84	270
6	0.50	0.707107	1.85	85	267
7	0.58	0.761577	2.15	84	269
8	0.60	0.774597	2.20	85	269
9	0.58	0.761577	2.15	85	269
10	0.54	0.734847	2.00	85	268
11	0.42	0.648074	1.65	86	266
12	0.42	0.648074	1.65	86	262
13	0.50	0.707107	1.90	86	269
14	0.54	0.734847	2.05	86	269
15	0.52	0.72111	1.92	87	269
16	0.46	0.678233	1.72	87	269
17	0.38	0.616441	1.45	87	267
18	0.38	0.616441	1.45	87	261
19	0.54	0.734847	2.00	86	269
20	0.52	0.72111	1.92	87	269
21	0.54	0.734847	2.00	87	268
22	0.50	0.707107	1.90	88	269
23	0.46	0.678233	1.72	88	268
24	0.48	0.69282	1.80	88	267
AVERAGE	0.5170833	0.717392	1.9304167	85.58333	267.9583

Project: Haverhill
Project No: 39400492
Source: Unit # 2
Run No.: 3

Stack Sampling Calculations

Volume of Water Collected

Vwstd = (VI0)(0.04707)

Vwstd = 11.25 cubic feet

Volume of Gas Metered, Standard Conditions

Vmstd = ((17.64) (Vm)(Pb + DeltaH/13.6)(gamma))/Tm

Vmstd = 44.772 cubic feet

Moisture Content

Bwo = Vwstd/(Vmstd + Vwstd)

Bwo = 0.20

Molecular Weight of the Dry Gas Stream

Md = (.44)(%CO2) + (.32)(%O2) + (.28)(%CO +%N2)

Md = 29.6

Molecular Weight of Stack Gas

Ms = (Md(1-Bwo) + 18(bwo)

Ms = 27.3

Velocity of Stack Gas

Vs = 174 Cp (DeltaP sq.rt.)((Ts+459.6) X 29.92 X 28.96/Ps/Ms)^.5

Vs = 2,848.0 ft/min

Total Flow of Stack Gas

Qa = As X Vs

Qa = 378,017.89 ACFM

Qs = Qa X 528/Ts X Ps/29.92

Qs = 267,798.81 SCFM

Qstd = Qs(1 - Bwo)

Qstd = 214,004.41 DSCFM

Vsstd = Qstd/As

Vsstd = 1612.30 ft/min

Percent Isokinetic

Is = Vmstd/(An X Time X Vsstd)

Is = 1.00

Particulate Concentration

Cs = (15.43)(Mn)/Vmstd

Cs = 0.0024

Particulate Mass Rate

Pmr = (Mn)(Qstd)(60)/(Vmstd)(453.6)

Pmr = 4.36

URS

TEST LAB DATA SHEET

PROJECT:	Haverhill Compliance	PROJECT NO.:	39400492.520001
SOURCE:	Unit # 2	TEST DATE:	4/9/2009
TRAIN I.D.	M5/26A	TEST NO.:	3
COLLECTED BY:	TJB	CHKD BY:	MSM

CONDENSATION

IMPINGER NO.	INITIAL VOL.,ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	710.0	895.1	185.1
2	683.4	712.6	29.2
3	708.6	712.5	3.9
4	702.0	702.6	0.6
5	896.6	916.9	15.3
6			0.0
7			0.0
TOTAL	3700.6	3939.7	239.1

PARTICULATE

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g
PROBE WASH	12.4506	12.4540	0.0034
REAGENT BLANK	12.6160	12.6161	0.0001
CORRECTED PROBE WASH *			0.0033
FILTER # 1 09-043	0.3539	0.3575	0.0036

* subtract reagent blank from probe wash

TOTAL PARTICULATED COLLECTED

PARTICULATE COLLECTED (excluding impinger catch)	0.0069
PARTICULATE COLLECTED (including impinger catch)	

QA PROBE WASH (as required)

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g

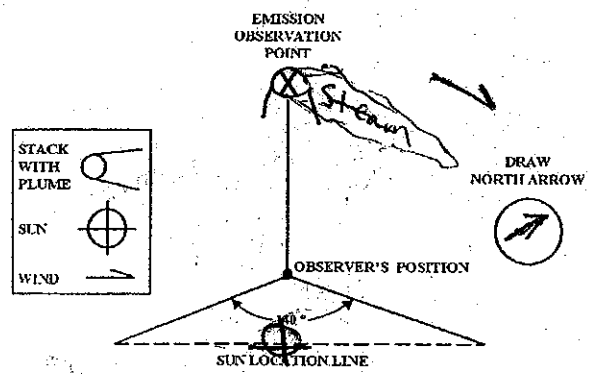
COMMENTS:

Main Stack
VE Data

VISIBLE EMISSION OBSERVATION FORM

Company Name	HNCC
Location	Phase 11 Stack
City	Franklin Furnace
State	OH
Zip	
Process Equipment	
Operating Mode	Normal
Control Equipment	Spray dryer
Operating Mode	Normal
Describe Emission Point	13' Stainless Steel Stack Phase 11
Height of Emission Point	200'
Height Relative to Observer	Start 200' End Same
Distance to Emission Point	Start 600' End 600'
Direction to Emission Point	Start SW End W
Vertical Angle to Observation Pt.	Start 40° End 30°
Direction to Observation Point	Start W End WNW
Describe Emissions	Start Attached Steam Plume End Same
Emission Color	Start White End
If Water Droplet Plume (Circle)	(Attached) Detached N/A
Point In The Plume At Which Opacity Was Determined	Start 20' after water droplet dropout End Same
Describe Plume Background	Start Blue Clear Sky End Same
Background Color	Start Blue End Blue
Sky Condition	Start Clear End Clear
Wind Speed	Start 0-3 End Same
Wind Direction	Start SSW End WSW
Ambient Temp	Start End
Wet Bulb Temp	
RH Percent	

SOURCE LAYOUT SKETCH



Additional Information

Observation Date	Start Time	End Time
	0842	0842

Min \ Sec	0	15	30	45	Comments
1	0	0	0	0	
2	0	0	0	0	
3	0	0	0	0	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	
7	0	0	0	0	
8	0	0	0	0	
9	0	0	0	0	
10	0	0	0	0	
11	0	0	0	0	
12	0	0	0	0	
13	0	0	0	0	
14	0	0	0	0	
15	0	0	0	0	
16	0	0	0	0	
17	0	0	0	0	
18	0	0	0	0	
19	0	0	0	0	
20	0	0	0	0	
21	0	0	0	0	
22	0	0	0	0	
23	0	0	0	0	
24	0	0	0	0	
25	0	0	0	0	
26	0	0	0	0	
27	0	0	0	0	
28	0	0	0	0	
29	0	0	0	0	
30	0	0	0	0	

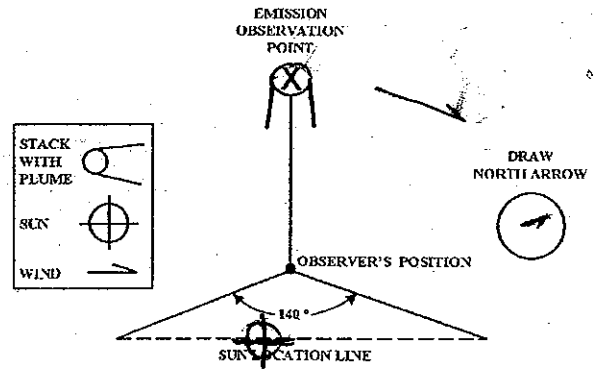
Observer's Name (Print)	Robert Raymond
Observer's Signature	[signature]
Date	4-9-09
Organization	URS
Certified by	Carl Koontz
Date	4-6-09

Continue on reverse side

VISIBLE EMISSION OBSERVATION FORM

Company Name: HNCC		
Location: Phase II Stack		
City: Franklin Furnace	State: OH	Zip:
Process Equipment: Spray dryer		Operating Mode: Normal
Control Equipment:		Operating Mode: Normal
Describe Emission Point: 13' stainless steel stack		
Height of Emission Point: 200'	Height Relative to Observer: Start 200' End	
Distance to Emission Point: Start 600' End same	Direction to Emission Point: Start West End West	
Vertical Angle to Observation Pt.: Start 30° End Same	Direction to Observation Point: Start NW End West	
Describe Emissions: Start Attached steam plume End no plume		
Emission Color: Start white End	If Water Droplet Plume (Circle): (Attached) Detached N/A	
Point In The Plume At Which Opacity Was Determined: Start 20' after water droplet dropout End 20' after stack		
Describe Plume Background: Start Blue sky End Same		
Background Color: Start Blue End same	Sky Condition: Start clear End Same	
Wind Speed: Start 0-3 End Same	Wind Direction: Start SW End Same	
Ambient Temp: Start End	Wet Bulb Temp:	RH Percent:

SOURCE LAYOUT SKETCH



Additional Information:

Observation Date	Start Time	End Time
	1005	1035

Min \ Sec	0	15	30	45	Comments
1	0	0	0	0	
2	0	0	0	0	
3	0	0	0	0	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	
7	0	0	0	0	
8	0	0	0	0	
9	0	0	0	0	
10	0	0	0	0	
11	0	0	0	0	
12	0	0	0	0	
13	0	0	0	0	
14	0	0	0	0	
15	0	0	0	0	
16	0	0	0	0	
17	0	0	0	0	
18	0	0	0	0	
19	0	0	0	0	
20	0	0	0	0	
21	0	0	0	0	
22	0	0	0	0	
23	0	0	0	0	
24	0	0	0	0	
25	0	0	0	0	
26	0	0	0	0	
27	0	0	0	0	
28	0	0	0	0	
29	0	0	0	0	
30	0	0	0	0	

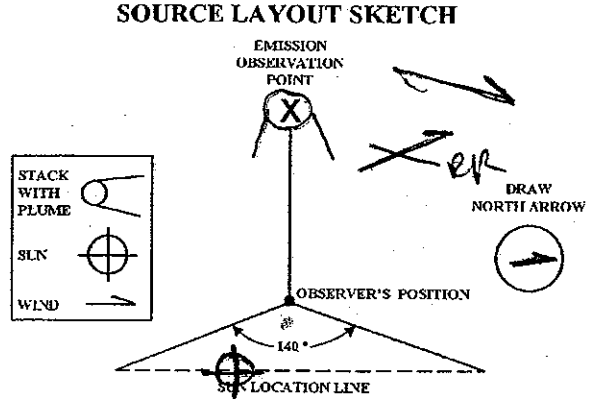
Observer's Name (Print): Robert Raymond	
Observer's Signature: [signature]	Date: 4-9-09
Organization: URS	
Certified by: Carl Kroontz	Date: 4-6-09

Continue on reverse side

VISIBLE EMISSION OBSERVATION FORM

Company Name: HMCC		
Location: Phase II stack		
City: Franklinfurnace	State: OH	Zip:
Process Equipment:	Operating Mode: Normal	
Control Equipment: Spray Dryer	Operating Mode: Normal	
Describe Emission Point: 13' dia Stainless Steel stack		
Height of Emission Point: 200'	Height Relative to Observer: Start 200' End Same	
Distance to Emission Point: Start 400' End Same	Direction to Emission Point: Start WNW End Same	
Vertical Angle to Observation Pt. Start 35° End Same	Direction to Observation Point: Start WNW End Same	
Describe Emissions: Start no plume End Same		
Emission Color: Start Clear End Same	If Water Droplet Plume (Circle): Attached Detached (N/A)	
Point In The Plume At Which Opacity Was Determined: Start 20' after stack End		
Describe Plume Background: Start Blue Sky End Same		
Background Color: Start Blue End Same	Sky Condition: Start Partly Cloudy End Same	
Wind Speed: Start 0-5 End ~~Same~~ 5-10	Wind Direction: Start SW End Same	
Ambient Temp: Start End	Wet Bulb Temp:	RH Percent:

SOURCE LAYOUT SKETCH



Additional Information:

Observation Date	Start Time 1150 ~~1052~~	End Time 1220

Min \ Sec	0	15	30	45	Comments
1	0	0	0	0	
2	0	0	0	0	
3	0	0	0	0	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	
7	0	0	0	0	
8	0	0	0	0	
9	0	0	0	0	
10	0	0	0	0	
11	0	0	0	0	
12	0	0	0	0	
13	0	0	0	0	
14	0	0	0	0	
15	0	0	0	0	
16	0	0	0	0	
17	0	0	0	0	
18	0	0	0	0	
19	0	0	0	0	
20	0	0	0	0	
21	0	0	0	0	
22	0	0	0	0	
23	0	0	0	0	
24	0	0	0	0	
25	0	0	0	0	
26	0	0	0	0	
27	0	0	0	0	
28	0	0	0	0	
29	0	0	0	0	
30	0	0	0	0	

Observer's Name (Print): Robert Raymond	
Observer's Signature: [signature]	Date: 4-9-09
Organization: URS	
Certified by: Karl Koontz	Date: 4-6-09

Continue on reverse side

Main Stack
OTM-28 DATA

URS

SUMMARY OF RESULTS

Project Name:	Haverhill Compliance Test
Project Number:	39400492.520001
Site Location:	Unit #2
Test Location:	Main Stack
Test Train:	PM/PM_{10} (Condensable & Filterable)

Parameters	Run # 1	Run # 2	Run # 3	Average
Run Times	8:09-9:17	10:02-11:08	11:45-12:52	
Date	4/9/2009	4/9/2009	4/9/2009	
Sample Time	60	60	60	
Target Production Rate (wet tons coal charged / oven)	45	45	45	45
Vol. Sampled @ STP (ft3)	44.850	45.954	44.673	45.159
Moisture Content (% Vol.)	20.7	20.0	19.8	20.2
O2 (%)	9.4	9.4	9.6	9.5
CO2 (%)	7.9	7.6	7.5	7.7
Stack Gas Temperature (°F)	262	262	263	262
Pitot Coef.	0.8200	0.8200	0.8200	0.8200
Stack Velocity (ft/min.)	2,791	2,826	2,738	2,785
Stack Velocity (ft/sec.)	46.51	47.11	45.63	46.42
Gas Flow Rate (ACFM)	370,440	375,166	363,376	369,661
Gas Flow Rate (SCFM)	264,676	268,016	259,371	264,021
Gas Flow Rate (DSCFM)	209,909	214,320	207,947	210,725
Percent Isokinetic	97.6	97.9	98.1	97.9
Total Condensables				
Particulate Conc. (Grains/DSCF)	0.0012	0.0012	0.0010	0.0011
Particulate Mass Rate (pounds/hr)	2.23	2.22	1.73	2.06
Filterable Particulate				
Particulate Conc. (Grains/DSCF)	0.0019	0.0021	0.0030	0.0023
Particulate Mass Rate (pounds/hr)	3.41	3.89	5.30	4.20
Total PM/PM_{10} (Condensables + Filterable)				
Particulate Conc. (Grains/DSCF)	0.0031	0.0033	0.0040	0.0035
Particulate Mass Rate (pounds/hr)	5.64	6.11	7.02	6.26

URS

PARTICULATE TEST LAB DATA SHEET

PROJECT: HNCC
SOURCE: Main Stack
Analyst: Mike Mowery
Balance: URS-2 Citizen

JOB NO.: 39400492
TRAIN I.D.: M5
Date: 1st Final: 5/14/2009
2nd Final: 5/15/2009

Calibration: 100 mg = 0.1 1 g = 0.9999 20 g = 20.0000

Filter Weights

Filter I.D.	Initial Weight		Final Weight		Weight Gain
	1st	2nd	1st	2nd	
09-045 OTM-1	0.3528	0.3526	0.3552	0.3551	0.0025
09-046 OTM-2	0.3573	0.3573	0.3605	0.3602	0.0029
09-061 OTM-3	0.3596	0.3595	0.3636	0.3635	0.0040

Probe Wash Weights

Sample I.D.	Initial Pre-Weight		Final Weight		Weight Gain
	1st	2nd	1st	2nd	
Run 1 OTM-1	12.4389	12.4385	12.4417	12.4415	0.0030
Run 2 OTM-2	12.2116	12.2116	12.2152	12.2150	0.0034
Run 3 OTM-3	12.2304	12.2306	12.2353	12.2352	0.0046
Br-13 Blank	12.2259	12.6160	12.6162	12.6161	0.0001

2nd weight results are used for final weight determination.

Sample Room Conditions during final weight determination:

Date	RH, %	Temp. (F)	Desicator RH, %
5/14/2009	40	70	0
5/15/2009	37	68	0

URS

OTM-28 Emission Calculations

Project Name: Haverhill Unit 2 Compliance
Project No.: 39400492
Test Date: 4/9/2009
Source: Main Stack

Run (Sample ID)	PW Initial	PW Final	Probe Wash Gain	lbs/hr	gr/dscf
Run 1	12.4385	12.4415	0.0030	1.86	0.0010
Run 2	12.2116	12.2150	0.0034	2.10	0.0011
Run 3	12.2306	12.2352	0.0046	2.83	0.0016

Run (Sample ID)	Filter Initial	Filter Final	Filter Gain	lbs/hr	gr/dscf
Run 1	0.3526	0.3551	0.0025	1.5477	0.0009
Run 2	0.3573	0.3602	0.0029	1.7890	0.0010
Run 3	0.3595	0.3635	0.0040	2.4629	0.0000

Run (Sample ID)			Combined Solid PM Gain	lbs/hr	gr/dscf
Run 1			0.0055	3.4049	0.0019
Run 2			0.0063	3.8865	0.0021
Run 3			0.0086	5.2952	0.0030

Run (Sample ID)			Organic Gain	lbs/hr	gr/dscf
Run 1			0.0036	2.2287	0.0012
Run 2			0.0036	2.2209	0.0012
Run 3			0.0028	1.7240	0.0010

Run (Sample ID)			Inorganic Gain	lbs/hr	gr/dscf
Run 1			4.70E-06	0.0029	1.62E-06
Run 2			4.30E-06	0.0027	1.44E-06
Run 3			4.10E-06	0.0025	1.42E-06

Run (Sample ID)			Total Condensable	lbs/hr	gr/dscf
Run 1			0.0036	2.2316	0.0012
Run 2			0.0036	2.2235	0.0012
Run 3			0.0028	1.7266	0.0010

Run (Sample ID)			Total PM (Condensables & Solids)	lbs/hr	gr/dscf
Run 1			0.0091	5.6365	0.0031
Run 2			0.0099	6.1100	0.0033
Run 3			0.0114	7.0218	0.0039

gr/dscf=15.43*(wt)/Vstd

lbs/hr=(wt)(dscfm)(60)/(Vmstd)(453.6)

Run #	Flow Rates (dscfm)	Metered Vol (std)
Run 1	209,909	44.850
Run 2	214,320	45.954
Run 3	207,947	44.673
Average	**210,725**	**45.159**

Main Stack
OTM-28 Run 1

URS STACK TEST DATA SHEET Method used: OTM-28

Project:	HNCC Unit #2 Compliance Test	Barom. Psr.:	29.28	Stack Dia.:	156"
Project No:	39400492.520001	Static Psr.:	-0.72	Stack Area:	
Source:	Main Stack	Meter Box I.D.:	URS 001	Port Length:	4"
Run No.:	1	Delta H @:	1.7232	Port Dia.:	4"
Date:	4-9-09	Gamma:	0.9710	Probe Liner:	glass
Operator:	M. Mowery	Pitot Coef.:	0.811 AQS-5001	Filter No.:	OTM-1 2nd filter

TRAVERSE POINT NUMBER	SAMPLING TIME Clock	SAMPLING TIME Sample	VELOCITY DELTA P	SAMPLE DELTA H	GAS SAMPLE VOLUME	DGM TEMP.	STACK TEMP.	PROBE TEMP.	FILTER BOX TEMP.	~~FILTER~~ OUTLET TEMP.	LAST IMPINGER TEMP.	TRAIN VACUUM
1	8:09	0	0.50	1.95	571.050	57	263	260	245	39	40	4
2		2.5	0.52	2.05	573.10	58	263	255	245	49	40	4
3		5.0	0.55	2.15	574.20	59	264	258	245	63	38	4
4		7.5	0.53	2.10	577.00	59	263	251	245	70	38	4
5		10.0	0.46	1.80	578.80	60	260	258	247	74	40	4
6		12.5	0.40	1.55	580.50	61	259	260	247	76	41	4
7	8:27	15.0	0.55	2.15	582.705	62	263	256	255	70	42	4
8		17.5	0.60	2.35	584.50	63	264	258	253	74	43	5
9		20.5	0.55	2.15	586.60	64	263	256	251	77	45	5
10		22.5	0.55	2.15	588.65	65	263	257	253	80	47	5
11		25.0	0.40	1.55	590.70	66	260	258	252	81	50	4
12		27.5	0.38	1.50	593.00	67	261	253	252	81	50	4
13	8:45	30.0	0.52	2.05	594.735	68	262	251	247	75	52	4
14		32.5	0.57	2.25	596.40	69	263	261	246	72	49	4
15		35.0	0.60	2.35	598.45	69	263	259	248	75	49	4
16		37.5	0.56	2.20	600.70	70	263	259	246	79	51	4
17		40.0	0.48	1.85	602.50	71	262	262	245	82	52	4
18		42.5	0.45	1.45	604.70	72	260	254	247	82	52	3
19	9:02	45.0	0.45	1.45	606.550	72	261	260	260	74	49	3
20		47.5	0.50	1.95	608.20	73	263	260	256	79	51	4
21		50.0	0.52	2.05	610.10	74	263	258	252	84	52	5
22		52.5	0.50	1.95	612.30	75	262	258	255	89	52	5
23		55.0	0.46	1.80	614.00	75	259	250	254	90	57	5
24		57.5	0.40	1.55	615.85	76	258	249	243	92	60	5
	9:17	60			617.940							
AVERAGE					46.890							

LEAK CHECKS	
Pitot impact:	good
Pitot static:	good
Train initial:	0.0@15"
Train Final:	0.0@6"

NOZZLE MEASUREMENT	
I.D. No.:	M1
1	0.295
2	0.299
3	0.299
Avg.	0.298

STACK GAS ANALYSIS				
	CO2	O2		
1	7.7	9.5		
2	8.0	9.5		
3	8.0	9.2		
Avg.	7.9	9.4		

NOTES: Production Run

URS

TEST LAB DATA SHEET

PROJECT: **HNCC Unit #2 Compliance**

JOB NO.: **39400329.520001**

SOURCE: Main Stack

DATE: 4-9-09

TRAIN I.D.: OTM-28-1

TEST NO.: 1

COLLECTED BY: MGM

CHKD. BY: TJB

CONDENSATION

IMPINGER NO.	INITIAL VOL., ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	539.0	712.4	173.4
2	609.7	623.2	13.5
3	704.6	734.2	29.6
4	891.7	923.8	32.1
5			
6			
7			
8			
9			
TOTAL			248.6

STACK TEST CALCULATIONS

Project:	Haverhill	Barom. Psr.:	29.28		Calculated
Project No:	39400492	Static Psr.:	-0.72	Ps:	29.227
Source:	Unit # 2 Stack	Delta H @:	1.7232	As:	132.732
Run No.:	1	Gamma:	0.971	An:	0.000484
Date:	4/9/2009	Pitot Coef.:	0.811		
Sample Volume:	46.89	Stack Dia.:	156 ,in.		
Sample Time:	60	Nozzle Dia.:	0.298 ,in.		
O2 Conc.:	9.4	H2O Gain:	248.6 ,ml		
CO2 Conc.:	7.9	Part. Weight:	,g		

TRAVERSE POINT NUMBER	VELOCITY DELTA P Actual	Sq. Root	DELTA H	DRY GAS METER TEMPERATURE	STACK TEMP.
1	0.50	0.707107	1.95	57	263
2	0.52	0.72111	2.05	58	263
3	0.55	0.74162	2.15	59	264
4	0.53	0.728011	2.10	59	263
5	0.46	0.678233	1.80	60	260
6	0.40	0.632456	1.55	61	259
7	0.55	0.74162	2.15	62	263
8	0.60	0.774597	2.35	63	264
9	0.55	0.74162	2.15	64	263
10	0.55	0.74162	2.15	65	263
11	0.40	0.632456	1.55	66	260
12	0.38	0.616441	1.50	67	261
13	0.52	0.72111	2.05	68	262
14	0.57	0.754983	2.25	69	263
15	0.60	0.774597	2.35	69	263
16	0.56	0.748331	2.20	70	263
17	0.48	0.69282	1.85	71	262
18	0.45	0.67082	1.45	72	260
19	0.45	0.67082	1.45	72	261
20	0.50	0.707107	1.95	73	263
21	0.52	0.72111	2.05	74	263
22	0.50	0.707107	1.95	75	262
23	0.46	0.678233	1.80	75	259
24	0.40	0.632456	1.55	76	258
AVERAGE	0.5	0.705683	1.93	66.875	261.875

URS

TEST LAB DATA SHEET

PROJECT:	Haverhill Unit 2 Compliance	PROJECT NO.:	39400492.00000
SOURCE:	Unit # 2 Stack	TEST DATE:	4/9/2009
TRAIN I.D.	OTM-28	TEST NO.:	1
COLLECTED BY:	MSM	CHKD BY:	TJB

CONDENSATION

IMPINGER NO.	INITIAL VOL.,ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	539	712.4	173.4
2	609.7	623.2	13.5
3	704.6	734.2	29.6
4	891.7	923.8	32.1
5			0
6			0
7			0
TOTAL	2745	2993.6	248.6

PARTICULATE

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g
PROBE WASH			0
REAGENT BLANK			0
CORRECTED PROBE WASH *			0
FILTER # 1			0
FILTER # 2			0
IMPINGERS			0

* subtract reagent blank from probe wash

TOTAL PARTICULATED COLLECTED

PARTICULATE COLLECTED (excluding impinger catch)
PARTICULATE COLLECTED (including impinger catch)

QA PROBE WASH (as required)

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g

COMMENTS:

Project: Haverhill
Project No: 39400492
Source: Unit # 2 Stack
Run No.: 1

Stack Sampling Calculations

Volume of Water Collected

Vwstd = (VI0)(0.04707)

Vwstd = 11.70 cubic feet

Volume of Gas Metered, Standard Conditions

Vmstd = ((17.64) (Vm)(Pb + DeltaH/13.6)(gamma))/Tm

Vmstd = 44.850 cubic feet

Moisture Content

Bwo = Vwstd/(Vmstd + Vwstd)

Bwo = 0.21

Molecular Weight of the Dry Gas Stream

Md = (.44)(%CO2) + (.32)(%O2) + (.28)(%CO +%N2)

Md = 29.6

Molecular Weight of Stack Gas

Ms = (Md(1-Bwo) + 18(bwo)

Ms = 27.2

Velocity of Stack Gas

Vs = 174 Cp (DeltaP sq.rt.)((Ts+459.6) X 29.92 X 28.96/Ps/Ms)^.5

Vs = 2,790.9 ft/min

Total Flow of Stack Gas

Qa = As X Vs

Qa = 370,440.50 ACFM

Qs = Qa X 528/Ts X Ps/29.92

Qs = 264,675.60 SCFM

Qstd = Qs(1 - Bwo)

Qstd = 209,909.21 DSCFM

Vsstd = Qstd/As

Vsstd = 1581.45 ft/min

Percent Isokinetic

Is = Vmstd/(An X Time X Vsstd)

Is = 0.98

Particulate Concentration

Cs = (15.43)(Mn)/Vmstd

Cs = 0.0000

Particulate Mass Rate

Pmr = (Mn)(Qstd)(60)/(Vmstd)(453.6)

Pmr = 0.00

Main Stack
OTM-28 Run 2

URS STACK TEST DATA SHEET Method used: OTM-28

Project:	HNCC Unit #2 Compliance Test	Barom. Psr.:	29.28	Stack Dia.:	156"
Project No:	39400492.520001	Static Psr.:	-0.75	Stack Area:	
Source:	Main Stack	Meter Box I.D.:	URS 001	Port Length:	4"
Run No.:	2	Delta H @:	1.7232	Port Dia.:	4"
Date:	4-9-09	Gamma:	0.9710	Probe Liner:	glass
Operator:	M. Mowery	Pitot Coef.:	0.811 ARS-5001	Filter No.:	OTM-2

TRAVERSE POINT NUMBER	SAMPLING TIME Clock	SAMPLING TIME Sample	VELOCITY DELTA P	SAMPLE DELTA H	GAS SAMPLE VOLUME	DGM TEMP.	STACK TEMP.	PROBE TEMP.	FILTER BOX TEMP.	~~FILTER~~ 2nd filter OUTLET TEMP.	LAST IMPINGER TEMP.	TRAIN VACUUM
1	10:02	0	0.53	2.10	618.140	75	264	249	252	61	51	4
2		2.5	0.58	2.25	620.00	75	264	244	251	68	48	4
3		5.0	0.55	2.15	622.15	76	263	259	264	76	47	4
4		7.5	0.50	1.95	624.20	76	263	264	267	84	48	4
5		10.0	0.40	1.55	626.10	76	260	236	258	88	51	4
6		12.5	0.35	1.35	628.20	77	255	232	245	90	51	4
7	10:19	15.0	0.58	2.25	630.070	77	263	233	245	85	54	4
8		17.5	0.58	2.25	631.70	78	264	239	244	86	55	5
9		20.0	0.58	2.25	633.90	78	263	235	241	88	58	5
10		22.5	0.56	2.15	636.30	79	263	235	244	90	63	5
11		25.0	0.53	2.10	638.45	79	262	237	243	91	62	5
12		27.5	0.47	1.85	640.45	80	261	231	237	90	61	5
13	10:36	30.0	0.60	2.35	642.600	80	264	237	238	86	56	5
14		32.5	0.58	2.25	644.70	81	264	239	239	89	58	5
15		35.0	0.58	2.25	646.90	81	264	239	238	91	59	5
16		37.5	0.56	2.15	648.95	81	264	238	238	91	59	5
17		40.0	0.55	2.15	651.20	82	264	238	238	91	59	5
18		42.5	0.56	2.15	653.40	82	264	239	238	92	61	5
19	10:53	45.0	0.51	2.05	655.50	82	264	238	231	89	58	5
20		47.5	0.50	1.95	657.600	82	268	240	240	89	57	5
21		50.0	0.53	2.10	659.50	83	264	237	235	87	57	5
22		52.5	0.45	1.75	661.60	83	263	236	239	87	58	5
23		55.0	0.40	1.55	663.70	83	252	238	238	89	60	3
24		57.5	0.32	1.25	665.50	83	251	237	236	89	60	3
	11:08	60			667.330							
AVERAGE					49.190							

LEAK CHECKS	
Pitot impact:	good
Pitot static:	good
Train initial:	0.0 @ 15"
Train Final:	0.0 @ 7"

NOZZLE MEASUREMENT	
I.D. No.:	M-1
1	0.295
2	0.299
3	0.299
Avg.	0.298

STACK GAS ANALYSIS				
	CO2	O2		
1	7.8	9.1		
2	7.4	9.6		
3	7.5	9.5		
Avg.	7.6	9.4		

NOTES:

URS

TEST LAB DATA SHEET

PROJECT: **HNCC Unit #2 Compliance** JOB NO.: **39400329.520001**

SOURCE: Main Stack DATE: 4-9-09

TRAIN I.D.: OTM-28-2 TEST NO.: 2

COLLECTED BY: NSM CHKD. BY: TJB

CONDENSATION

IMPINGER NO.	INITIAL VOL., ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	545.3	714.7	169.4
2	617.0	629.4	12.4
3	718.4	753.0	34.6
4	897.2	925.4	28.2
5			
6			
7			
8			
9			
TOTAL	2777.9	3022.5	244.6

STACK TEST CALCULATIONS

Project:	Haverhill	Barom. Psr.:	29.28		Calculated
Project No:	39400492	Static Psr.:	-0.75	Ps:	29.225
Source:	Unit # 2 Stack	Delta H @:	1.7232	As:	132.732
Run No.:	2	Gamma:	0.971	An:	0.000484
Date:	4/9/2009	Pitot Coef.:	0.811		
Sample Volume:	49.19	Stack Dia.:	156	,in.	
Sample Time:	60	Nozzle Dia.:	0.298	,in.	
O2 Conc.:	9.4	H2O Gain:	244.6	,ml	
CO2 Conc.:	7.6	Part. Weight:		,g	

TRAVERSE POINT NUMBER	VELOCITY DELTA P Actual	Sq. Root	DELTA H	DRY GAS METER TEMPERATURE	STACK TEMP.
1	0.53	0.728011	2.10	75	264
2	0.58	0.761577	2.25	75	264
3	0.55	0.74162	2.15	76	263
4	0.50	0.707107	1.95	76	263
5	0.40	0.632456	1.55	76	260
6	0.35	0.591608	1.35	77	255
7	0.58	0.761577	2.25	77	263
8	0.58	0.761577	2.25	78	264
9	0.58	0.761577	2.25	78	263
10	0.56	0.748331	2.15	79	263
11	0.53	0.728011	2.10	79	262
12	0.47	0.685565	1.85	80	261
13	0.60	0.774597	2.35	80	264
14	0.58	0.761577	2.25	81	264
15	0.58	0.761577	2.25	81	264
16	0.56	0.748331	2.15	81	264
17	0.55	0.74162	2.15	82	264
18	0.56	0.748331	2.15	82	264
19	0.51	0.714143	2.05	82	264
20	0.50	0.707107	1.95	82	263
21	0.53	0.728011	2.10	83	264
22	0.45	0.67082	1.75	83	263
23	0.40	0.632456	1.55	83	252
24	0.32	0.565685	1.25	83	251
AVERAGE	0.5145833	0.715136	2.00625	79.54167	261.9167

URS

TEST LAB DATA SHEET

PROJECT:	Haverhill Unit 2 Compliance	PROJECT NO.:	39400492.00000
SOURCE:	Unit # 2 Stack	TEST DATE:	4/9/2009
TRAIN I.D.	OTM-28	TEST NO.:	2
COLLECTED BY:	MSM	CHKD BY:	TJB

CONDENSATION

IMPINGER NO.	INITIAL VOL.,ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	545.3	714.7	169.4
2	617.0	629.4	12.4
3	718.4	753.0	34.6
4	897.2	925.4	28.2
5			0.0
6			0.0
7			0.0
TOTAL	2777.90	3022.5	244.6

PARTICULATE

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g
PROBE WASH			0
REAGENT BLANK			0
CORRECTED PROBE WASH *			0
FILTER # 1			0
FILTER # 2			0
IMPINGERS			0

* subtract reagent blank from probe wash

TOTAL PARTICULATED COLLECTED

PARTICULATE COLLECTED (excluding impinger catch)
PARTICULATE COLLECTED (including impinger catch)

QA PROBE WASH (as required)

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g

COMMENTS:

Project: Haverhill
Project No: 39400492
Source: Unit # 2 Stack
Run No.: 2

Stack Sampling Calculations

Volume of Water Collected

Vwstd = (VI0)(0.04707)

Vwstd = 11.51 cubic feet

Volume of Gas Metered, Standard Conditions

Vmstd = ((17.64) (Vm)(Pb + DeltaH/13.6)(gamma))/Tm

Vmstd = 45.954 cubic feet

Moisture Content

Bwo = Vwstd/(Vmstd + Vwstd)

Bwo = 0.20

Molecular Weight of the Dry Gas Stream

Md = (.44)(%CO2) + (.32)(%O2) + (.28)(%CO +%N2)

Md = 29.6

Molecular Weight of Stack Gas

Ms = (Md(1-Bwo) + 18(bwo)

Ms = 27.3

Velocity of Stack Gas

Vs = 174 Cp (DeltaP sq.rt.)((Ts+459.6) X 29.92 X 28.96/Ps/Ms)^.5

Vs = 2,826.5 ft/min

Total Flow of Stack Gas

Qa = As X Vs

Qa = 375,165.57 ACFM

Qs = Qa X 528/Ts X Ps/29.92

Qs = 268,015.91 SCFM

Qstd = Qs(1 - Bwo)

Qstd = 214,320.11 DSCFM

Vsstd = Qstd/As

Vsstd = 1614.68 ft/min

Percent Isokinetic

Is = Vmstd/(An X Time X Vsstd)

Is = 0.98

Particulate Concentration

Cs = (15.43)(Mn)/Vmstd

Cs = 0.0000

Particulate Mass Rate

Pmr = (Mn)(Qstd)(60)/(Vmstd)(453.6)

Pmr = 0.00

Main Stack
OTM-28 Run 3

URS STACK TEST DATA SHEET Method used: OTM-28

Project: HNCC Unit #2 Compliance Test
Project No: 39400492.520001
Source: Main Stack
Run No.: 3
Date: 4-9-09
Operator: M. Mowery

Barom. Psr.: 29.28
Static Psr.: -0.77
Meter Box I.D.: URS 001
Delta H @: 1.7232
Gamma: 0.9710
Pitot Coef.: 0.811 AQS-5001

Stack Dia.: 156"
Stack Area:
Port Length: 4"
Port Dia.: 4"
Probe Liner: glass
Filter No.: OTM-3
2nd Filter

TRAVERSE POINT NUMBER	SAMPLING TIME Clock	SAMPLING TIME Sample	VELOCITY DELTA P	SAMPLE DELTA H	GAS SAMPLE VOLUME	DGM TEMP.	STACK TEMP.	PROBE TEMP.	FILTER BOX TEMP.	~~FILTER~~ OUTLET TEMP.	LAST IMPINGER TEMP.	TRAIN VACUUM
1	11:45	0	0.50	1.95	667.650	78	264	236	233	57	46	3
2		2.5	0.50	1.95	669.45	78	264	254	258	57	45	3
3		5.0	0.50	1.95	671.50	79	264	254	255	58	45	3
4		7.5	0.51	2.00	673.60	79	263	262	269	60	46	3
5		10.0	0.37	1.45	675.40	79	262	260	268	63	48	3
6		12.5	0.30	1.15	677.35	79	256	262	268	65	49	3
7	12:02	15.0	0.48	1.85	679.090	79	264	261	270	65	49	3
8		17.5	0.55	2.15	680.70	80	264	264	270	66	50	3
9		20.0	0.55	2.15	682.95	80	264	264	266	68	52	4
10		22.5	0.50	1.95	684.90	81	263	265	270	71	55	4
11		25.0	0.45	1.75	687.00	81	263	264	269	72	58	4
12		27.5	0.38	1.50	689.20	81	257	264	270	74	61	4
13	12:18	30.0	0.52	2.05	691.125	81	263	244	262	73	60	4
14		32.5	0.57	2.25	692.84	81	264	238	271	71	61	4
15		35.0	0.55	2.15	695.20	82	264	254	271	73	63	4
16		37.5	0.52	2.05	697.30	82	264	262	268	74	63	4
17		40.0	0.50	1.95	699.30	82	262	251	267	73	61	4
18		42.5	0.50	1.95	701.00	82	261	232	268	69	60	4
19	12:37	45.0	0.48	1.85	703.850	81	264	267	269	64	55	4
20		47.5	0.50	1.95	705.60	82	264	267	270	66	56	4
21		50.0	0.52	2.05	707.50	82	263	266	270	70	56	4
22		52.5	0.50	1.95	710.30	82	263	266	270	73	58	4
23		55.0	0.45	1.75	711.80	82	261	264	269	74	59	4
24		57.5	0.37	1.45	713.60	82	259	266	270	74	61	4
	12:52	60			715.580							
AVERAGE					47.930							

LEAK CHECKS	
Pitot impact:	good
Pitot static:	good
Train initial:	0.0@15"
Train Final:	0.0@7"

NOZZLE MEASUREMENT	
I.D. No.:	M-1
1	0.295
2	0.299
3	0.299
Avg.	0.298

STACK GAS ANALYSIS				
	CO2	O2		
1	7.5	9.8		
2	7.5	9.7		
3	7.5	9.6		
Avg.	7.5	9.6		

NOTES:

URS

TEST LAB DATA SHEET

PROJECT: **HNCC Unit #2 Compliance** JOB NO.: **39400329.520001**

SOURCE: Main Stack DATE: 4-9-09

TRAIN I.D.: OTM-28-3 TEST NO.: 3

COLLECTED BY: MGM CHKD. BY: TJB

CONDENSATION

IMPINGER NO.	INITIAL VOL., ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	565.0	729.7	164.7
2	602.5	609.6	7.1
3	755.6	784.2	28.6
4	884.5	918.8	34.3
5			
6			
7			
8			
9			
TOTAL	2807.6	3042.3	234.7

STACK TEST CALCULATIONS

Project:	Haverhill	Barom. Psr.:	29.28		Calculated
Project No:	39400492	Static Psr.:	-0.77	Ps:	29.223
Source:	Unit # 2 Stack	Delta H @:	1.7232	As:	132.732
Run No.:	3	Gamma:	0.971	An:	0.000484
Date:	4/9/2009	Pitot Coef.:	0.811		
Sample Volume:	47.930	Stack Dia.:	156 ,in.		
Sample Time:	60	Nozzle Dia.:	0.298 ,in.		
O2 Conc.:	9.6	H2O Gain:	234.7 ,ml		
CO2 Conc.:	7.5	Part. Weight:	,g		

TRAVERSE POINT NUMBER	VELOCITY DELTA P Actual	Sq. Root	DELTA H	DRY GAS METER TEMPERATURE	STACK TEMP.
1	0.50	0.707107	1.95	78	264
2	0.50	0.707107	1.95	78	264
3	0.50	0.707107	1.95	79	264
4	0.51	0.714143	2.00	79	263
5	0.37	0.608276	1.45	79	262
6	0.30	0.547723	1.15	79	256
7	0.48	0.69282	1.85	79	264
8	0.55	0.74162	2.15	80	264
9	0.55	0.74162	2.15	80	264
10	0.50	0.707107	1.95	81	263
11	0.45	0.67082	1.75	81	263
12	0.38	0.616441	1.50	81	257
13	0.52	0.72111	2.05	81	263
14	0.57	0.754983	2.25	81	264
15	0.55	0.74162	2.15	82	264
16	0.52	0.72111	2.05	82	264
17	0.50	0.707107	1.95	82	262
18	0.50	0.707107	1.95	82	261
19	0.48	0.69282	1.85	81	264
20	0.50	0.707107	1.95	82	264
21	0.52	0.72111	2.05	82	263
22	0.50	0.707107	1.95	82	263
23	0.45	0.67082	1.75	82	261
24	0.37	0.608276	1.45	82	259
AVERAGE	0.4820833	0.69259	1.88	80.625	262.5

URS

TEST LAB DATA SHEET

PROJECT:	Haverhill Unit 2 Compliance	PROJECT NO.:	39400492.00000
SOURCE:	Unit # 2 Stack	TEST DATE:	4/9/2009
TRAIN I.D.	OTM-28	TEST NO.:	3
COLLECTED BY:	MSM	CHKD BY:	TJB

CONDENSATION

IMPINGER NO.	INITIAL VOL.,ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	565.0	729.7	164.7
2	602.5	609.6	7.1
3	755.6	784.2	28.6
4	884.5	918.8	34.3
5			0.0
6			0.0
7			0.0
TOTAL	2807.6	3042.3	234.7

PARTICULATE

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g
PROBE WASH			0
REAGENT BLANK			0
CORRECTED PROBE WASH *			0
FILTER # 1			0
FILTER # 2			0
IMPINGERS			0

* subtract reagent blank from probe wash

TOTAL PARTICULATED COLLECTED

PARTICULATE COLLECTED (excluding impinger catch)
PARTICULATE COLLECTED (including impinger catch)

QA PROBE WASH (as required)

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g

COMMENTS:

Project: Haverhill
Project No: 39400492
Source: Unit # 2 Stack
Run No.: 3

Stack Sampling Calculations

Volume of Water Collected

Vwstd = (VI0)(0.04707)

Vwstd = 11.05 cubic feet

Volume of Gas Metered, Standard Conditions

Vmstd = ((17.64) (Vm)(Pb + DeltaH/13.6)(gamma))/Tm

Vmstd = 44.673 cubic feet

Moisture Content

Bwo = Vwstd/(Vmstd + Vwstd)

Bwo = 0.20

Molecular Weight of the Dry Gas Stream

Md = (.44)(%CO2) + (.32)(%O2) + (.28)(%CO +%N2)

Md = 29.6

Molecular Weight of Stack Gas

Ms = (Md(1-Bwo) + 18(bwo)

Ms = 27.3

Velocity of Stack Gas

Vs = 174 Cp (DeltaP sq.rt.)((Ts+459.6) X 29.92 X 28.96/Ps/Ms)^.5

Vs = 2,737.7 ft/min

Total Flow of Stack Gas

Qa = As X Vs

Qa = 363,375.60 ACFM

Qs = Qa X 528/Ts X Ps/29.92

Qs = 259,370.58 SCFM

Qstd = Qs(1 - Bwo)

Qstd = 207,947.17 DSCFM

Vsstd = Qstd/As

Vsstd = 1566.67 ft/min

Percent Isokinetic

Is = Vmstd/(An X Time X Vsstd)

Is = 0.98

Particulate Concentration

Cs = (15.43)(Mn)/Vmstd

Cs = 0.0000

Particulate Mass Rate

Pmr = (Mn)(Qstd)(60)/(Vmstd)(453.6)

Pmr = 0.00

Main Stack
M29 DATA

Project: Haverhill Unit 2 Compliance
Project No.: 39400492.520001

HAP Mass Emission Calculations
Unit 2 Main Stack

INPUT PARAMETERS

	Run 1	Run 2	Run 4	Average
Metals from M29 Test (lb/hr)	0.27	0.059	0.017	0.1153
Mercury from OHM Test (lb/hr)	4.55E-04	8.79E-04	1.19E-04	4.84E-04
Total HAP Metals (lb/hr)	0.2705	0.0599	0.0171	0.1158
Wet tons coal / hr	93.4	93.4	92.2	93.0
Mass Rate (lb/ton coal)	0.0029	0.0006	0.0002	0.0012

Metals Mass Rate (lb/hr)

Mmr= (Mn)(Qstd)(60)/(Vmstd)(453.6)

Mn= grams/sample
Qstd= stack gas flow rate (dscfm)
Vmstd= volume of air sample (@ stp)

Project: Haverhill Unit 2 Compliance
Project No.: 39400492.520001

Lead Mass Emission Calculations
Unit 2 Main Stack

INPUT PARAMETERS

Lead	Front Half ug	Back Half ug	Total ug	grams/sample	Vmstd	Qstd	gr/dscf	Mass Rate (lbs/hr)
Run 1	9.2	1.2	10.4	0.0000104	81.845	207,221	1.96E-06	0.0034830
Run 2	0	1.2	1.2	0.0000012	77.03	203,881	2.40E-07	0.0004019
Run 4	0	0	0	0.0000000	77.272	210,890	0.0000000	0.0000000
							7.34E-07	

Metals Mass Rate (lb/hr)

Mmr= (Mn)(Qstd)(60)/(Vmstd)(453.6)

Mn= grams/sample
Qstd= stack gas flow rate (dscfm)
Vmstd= volume of air sample (@ stp)

URS

Multi-Metals Mass Emission Calculations

Project Name: Haverhill Unit 2 Compliance
Project No. 39400492
Test Date: 4/7/2009

Test I.D.: **Main Stack - Run 1**

INPUT PARAMETERS

Vmstd: 81.845 Qstd: 207,221

Metal	Front Half ug	Back Half ug	Total ug	grams/sample	Mass Rate (lbs/hr)	Laboratory Reporting Limit
Antimony	N/D	N/D	0	0.0000000	0.0000000	6.0
Arsenic	3.2	N/D	3.2	0.0000032	0.0010717	1.0
Barium	N/D	N/D	0	0.0000000	0.0000000	20.0
Beryllium	N/D	N/D	0	0.0000000	0.0000000	0.5
Cadmium	N/D	N/D	0	0.0000000	0.0000000	1.0
Chromium	353	10.5	363.5	0.0003635	0.1217375	1.0
Cobalt	3.2	N/D	3.2	0.0000032	0.0010717	5.0
Copper	25.1	3.8	28.9	0.0000289	0.0096787	2.5
Lead	9.2	1.2	10.4	0.0000104	0.0034830	2.0
Manganese	47.7	2.4	50.1	0.0000501	0.0167787	1.5
Nickel	266	10.9	276.9	0.0002769	0.0927348	4.0
Phosphorous	N/D	N/D	0	0.0000000	0.0000000	30.0
Selenium	3.6	N/D	3.6	0.0000036	0.0012057	1.0
Silver	8.5	N/D	8.5	0.0000085	0.0028467	2.0
Thallium	N/D	N/D	0	0.0000000	0.0000000	5.0
Zinc	27.2	31.9	59.1	0.0000591	0.0197928	2.0

All analysis reported as estimated, but below reporting limit have been marked as N/D.

Metals Mass Rate (lb/hr)

Mmr= (Mn)(Qstd)(60)/(Vmstd)(453.6)

Mn= grams/sample
Qstd= stack gas flow rate (dscfm)
Vmstd= volume of air sample (@ stp)

Multi-Metals Mass Emission Calculations

Project Name: Haverhill Unit 2 Compliance
Project No. 39400492
Test Date: 4/7/2009

Test I.D.: **Main Stack - Run 2**

INPUT PARAMETERS

Vmstd: 78.981 Qstd: 204,827

Metal	Front Half ug	Back Half ug	Total ug	grams/sample	Mass Rate (lbs/hr)	Laboratory Reporting Limit
Antimony	N/D	N/D	0	0.0000000	0.0000000	6.0
Arsenic	N/D	N/D	0	0.0000000	0.0000000	1.0
Barium	N/D	N/D	0	0.0000000	0.0000000	20.0
Beryllium	N/D	N/D	0	0.0000000	0.0000000	0.5
Cadmium	N/D	N/D	0	0.0000000	0.0000000	1.0
Chromium	18.8	4.5	23.3	0.0000233	0.0079928	1.0
Cobalt	N/D	N/D	0	0.0000000	0.0000000	5.0
Copper	4.3	3	7.3	0.0000073	0.0025042	2.5
Lead	N/D	1.2	1.2	0.0000012	0.0004116	2.0
Manganese	5.5	13.4	18.9	0.0000189	0.0064834	1.5
Nickel	22	8.3	30.3	0.0000303	0.0103941	4.0
Phosphorous	N/D	N/D	0	0.0000000	0.0000000	30.0
Selenium	3.1	N/D	3.1	0.0000031	0.0010634	1.0
Silver	N/D	N/D	0	0.0000000	0.0000000	2.0
Thallium	N/D	N/D	0	0.0000000	0.0000000	5.0
Zinc	49.1	38.1	87.2	0.0000872	0.0299130	2.0

All analysis reported as estimated, but below reporting limit have been marked as N/D.

Metals Mass Rate (lb/hr)

Mmr= (Mn)(Qstd)(60)/(Vmstd)(453.6)

Mn= grams/sample
Qstd= stack gas flow rate (dscfm)
Vmstd= volume of air sample (@ stp)

URS

Multi-Metals Mass Emission Calculations

Project Name: Haverhill Unit 2 Compliance
Project No. 39400492
Test Date: 4/9/2009

Test I.D.: **Main Stack - Run 4**

INPUT PARAMETERS

Vmstd: 79.502 Qstd: 212,160

Metal	Front Half ug	Back Half ug	Total ug	grams/sample	Mass Rate (lbs/hr)	Laboratory Reporting Limit
Antimony	N/D	N/D	0.0	0.0000000	0.0000000	6.0
Arsenic	N/D	N/D	0.0	0.0000000	0.0000000	1.0
Barium	N/D	N/D	0.0	0.0000000	0.0000000	20.0
Beryllium	N/D	N/D	0.0	0.0000000	0.0000000	0.5
Cadmium	N/D	N/D	0.0	0.0000000	0.0000000	1.0
Chromium	7.9	N/D	7.9	0.0000079	0.0027886	1.0
Cobalt	N/D	N/D	0.0	0.0000000	0.0000000	5.0
Copper	N/D	N/D	0.0	0.0000000	0.0000000	2.5
Lead	N/D	N/D	0.0	0.0000000	0.0000000	2.0
Manganese	7.0	1.5	8.5	0.0000085	0.0030004	1.5
Nickel	11.8	N/D	11.8	0.0000118	0.0041653	4.0
Phosphorous	N/D	N/D	0.0	0.0000000	0.0000000	30.0
Selenium	3.10	N/D	3.1	0.0000031	0.0010943	1.0
Silver	N/D	N/D	0.0	0.0000000	0.0000000	2.0
Thallium	N/D	N/D	0.0	0.0000000	0.0000000	5.0
Zinc	7.4	9.0	16.4	0.0000164	0.0057891	2.0

All analysis reported as estimated, but below reporting limit have been marked as N/D.

Metals Mass Rate (lb/hr)

Mmr= (Mn)(Qstd)(60)/(Vmstd)(453.6)

Mn= grams/sample
Qstd= stack gas flow rate (dscfm)
Vmstd= volume of air sample (@ stp)

Main Stack
Metals Run 1

URS STACK TEST DATA SHEET Method used: M29

Project:	HNCC Unit #2 Compliance Test	Barom. Psr.:	29.20	Stack Dia.:	156"
Project No:	39400492.520001	Static Psr.:	-0.70	Stack Area:	
Source:	Main Stack	Meter Box I.D.:	URS 002	Port Length:	4"
Run No.:	1	Delta H @:	1.6984	Port Dia.:	4"
Date:	4-7-09	Gamma:	0.9963	Probe Liner:	glass
Operator:	M. Mowery	Pitot Coef.:	0.784 ABS-6003	Filter No.:	N/A

TRAVERSE POINT NUMBER	SAMPLING TIME Clock	SAMPLING TIME Sample	VELOCITY DELTA P	SAMPLE DELTA H	GAS SAMPLE VOLUME	DGM TEMP.	STACK TEMP.	PROBE TEMP.	FILTER BOX TEMP.	FILTER OUTLET TEMP.	LAST IMPINGER TEMP.	TRAIN VACUUM
1	9:54	0	0.64	0.95	750.675	74	259	232	231	145	35	1
2		7.5	0.59	0.87	754.800	76	258	234	244	167	36	1
3		15.0	0.58	0.86	758.910	78	257	243	255	193	36	1
4		22.5	0.50	0.75	762.320	79	255	241	247	202	37	1
5		30.0	0.43	0.65	766.350	81	237	240	251	202	37	1
6		37.5	0.35	0.50	769.750	82	235	253	251	195	38	1
7	10:43	45.0	0.56	0.87	772.590	83	260	249	257	160	39	1
8		52.5	0.60	0.90	776.450	84	258	250	259	206	42	1
9		1:00	0.57	0.85	780.310	85	259	250	266	216	44	1
10		7.5	0.55	0.82	784.100	85	257	247	264	213	44	1
11		15.0	0.48	0.72	788.350	86	256	249	266	211	45	1
12		22.5	0.42	0.62	791.410	86	251	249	269	210	45	1
13	11:36	30.0	0.60	0.90	795.100	85	260	205	257	176	44	1
14		37.5	0.60	0.90	798.450	85	260	229	275	219	42	1
15		45.0	0.55	0.82	802.40	86	259	230	262	228	42	1
16		52.5	0.55	0.82	806.150	87	259	227	257	226	41	1
17		2:00	0.50	0.75	809.970	87	257	198	261	222	40	1
18		7.5	0.40	0.60	813.600	87	253	214	265	220	42	1
19		15.0	0.53	0.80	817.105	86	260	248	271	149	40	1
20		22.5	0.50	0.75	820.40	87	261	251	274	202	40	1
21		30.0	0.50	0.75	824.40	87	260	250	275	205	41	1
22		37.5	0.50	0.75	827.95	87	258	249	275	206	42	1
23		45.0	0.35	0.50	831.32	88	255	248	272	203	42	1
24		52.5	0.35	0.50	834.38	88	252	246	276	198	41	1
	13:15	3:00			837.290							
AVERAGE					866.15							

LEAK CHECKS	
Pitot impact:	good
Pitot static:	good
Train initial:	0.0 @ 15"
Train Final:	0.0 @ 5"

NOZZLE MEASUREMENT	
I.D. No.:	M03
1	.228
2	.229
3	.229
Avg.	.229

STACK GAS ANALYSIS				
	CO2	O2		
1	8.1	9.0		
2	8.3	8.9		
3	8.5	8.6		
Avg.	8.3	8.8		

NOTES:

URS

TEST LAB DATA SHEET

PROJECT: **HNCC Unit #2 Compliance**

JOB NO.: **39400329.520001**

SOURCE: MAIN STK

DATE: 4/7/09

TRAIN I.D.: M29-1

TEST NO.: 1

COLLECTED BY: TB

CHKD. BY: TB

CONDENSATION

IMPINGER NO.	INITIAL VOL., ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	612.3	923.8	311.5
2	695.4	776.7	81.3
3	704.6	718.6	14.0
4	893.1	908.6	15.5
5			
6			
7			
8			
9			
TOTAL	2905.4	3327.7	422.3

STACK TEST CALCULATIONS

Project:	Haverhill	Barom. Psr.:	29.2		Calculated
Project No:	39400492	Static Psr.:	-0.7	Ps:	29.149
Source:	Unit # 2 Stack	Delta H @:	1.6984	As:	132.732
Run No.:	1	Gamma:	0.9963	An:	0.000286
Date:	4/7/2009	Pitot Coef.:	0.784		
Sample Volume:	86.615	Stack Dia.:	156 ,in.		
Sample Time:	180	Nozzle Dia.:	0.229 ,in.		
O2 Conc.:	8.8	H2O Gain:	422.3 ,ml		
CO2 Conc.:	8.3	Part. Weight:	,g		

TRAVERSE POINT NUMBER	VELOCITY DELTA P Actual	Sq. Root	DELTA H	DRY GAS METER TEMPERATURE	STACK TEMP.
1	0.64	0.8	0.95	74	259
2	0.59	0.768115	0.87	76	258
3	0.58	0.761577	0.86	78	257
4	0.50	0.707107	0.75	79	255
5	0.43	0.655744	0.65	81	237
6	0.35	0.591608	0.50	82	235
7	0.56	0.748331	0.87	83	260
8	0.60	0.774597	0.90	84	258
9	0.57	0.754983	0.85	85	259
10	0.55	0.74162	0.82	85	257
11	0.48	0.69282	0.72	86	256
12	0.42	0.648074	0.62	86	251
13	0.60	0.774597	0.90	85	260
14	0.60	0.774597	0.90	85	260
15	0.55	0.74162	0.82	86	259
16	0.55	0.74162	0.82	87	259
17	0.50	0.707107	0.75	87	257
18	0.40	0.632456	0.60	87	253
19	0.53	0.728011	0.80	86	260
20	0.50	0.707107	0.75	87	261
21	0.50	0.707107	0.75	87	260
22	0.50	0.707107	0.75	87	258
23	0.35	0.591608	0.50	88	255
24	0.35	0.591608	0.50	88	252
AVERAGE	0.5083333	0.71038	0.7583333	84.125	255.66667

Project: Haverhill
Project No: 39400492
Source: Unit # 2 Stack
Run No.: 1

Stack Sampling Calculations

Volume of Water Collected

Vwstd = (VI0)(0.04707)

Vwstd = 19.88 cubic feet

Volume of Gas Metered, Standard Conditions

Vmstd = ((17.64) (Vm)(Pb + DeltaH/13.6)(gamma))/Tm

Vmstd = 81.845 cubic feet

Moisture Content

Bwo = Vwstd/(Vmstd + Vwstd)

Bwo = 0.20

Molecular Weight of the Dry Gas Stream

Md = (.44)(%CO2) + (.32)(%O2) + (.28)(%CO +%N2)

Md = 29.7

Molecular Weight of Stack Gas

Ms = (Md(1-Bwo) + 18(bwo)

Ms = 27.4

Velocity of Stack Gas

Vs = 174 Cp (DeltaP sq.rt.)((Ts+459.6) X 29.92 X 28.96/Ps/Ms)^.5

Vs = 2,699.6 ft/min

Total Flow of Stack Gas

Qa = As X Vs

Qa = 358,328.68 ACFM

Qs = Qa X 528/Ts X Ps/29.92

Qs = 257,548.94 SCFM

Qstd = Qs(1 - Bwo)

Qstd = 207,221.43 DSCFM

Vsstd = Qstd/As

Vsstd = 1561.20 ft/min

Percent Isokinetic

Is = Vmstd/(An X Time X Vsstd)

Is = 1.02

Particulate Concentration

Cs = (15.43)(Mn)/Vmstd

Cs = 0.0000

Particulate Mass Rate

Pmr = (Mn)(Qstd)(60)/(Vmstd)(453.6)

Pmr = 0.00

URS

TEST LAB DATA SHEET

PROJECT:	Haverhill Compliance	PROJECT NO.:	39400492.520001
SOURCE:	Unit # 2	TEST DATE:	4/7/2009
TRAIN I.D.	M29-1	TEST NO.:	1
COLLECTED BY:	TJB	CHKD BY:	

CONDENSATION

IMPINGER NO.	INITIAL VOL.,ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	612.3	923.8	311.5
2	695.4	776.7	81.3
3	704.6	718.6	14.0
4	893.1	908.6	15.5
5			0
6			0
7			0
TOTAL	2905.4	3327.7	422.3

PARTICULATE

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g
PROBE WASH			0
REAGENT BLANK			0
CORRECTED PROBE WASH *			0
FILTER # 1			0
FILTER # 2			0
IMPINGERS			0

* subtract reagent blank from probe wash

TOTAL PARTICULATED COLLECTED

PARTICULATE COLLECTED (excluding impinger catch)
PARTICULATE COLLECTED (including impinger catch)

QA PROBE WASH (as required)

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g

COMMENTS:

Main Stack
Metals Run 2

URS STACK TEST DATA SHEET Method used: M29

Project: HNCC Unit #2 Compliance Test
Project No: 39400492.520001
Source: Main Stack
Run No.: 2
Date: 4-7-09
Operator: M. Mowery

Barom. Psr.: 29.20
Static Psr.: -0.75
Meter Box I.D.: URS 002
Delta H @: 1.6984
Gamma: 0.9963
Pitot Coef.: 0.784 MQS-~~5354~~ 6003

Stack Dia.: 156"
Stack Area:
Port Length: 4"
Port Dia.: 4"
Probe Liner: glass
Filter No.: N/A

TRAVERSE POINT NUMBER	SAMPLING TIME Clock	SAMPLING TIME Sample	VELOCITY DELTA P	SAMPLE DELTA H	GAS SAMPLE VOLUME	DGM TEMP.	STACK TEMP.	PROBE TEMP.	FILTER BOX TEMP.	FILTER OUTLET TEMP.	LAST IMPINGER TEMP.	TRAIN VACUUM
1	14:41	0	0.55	0.82	838.200	79	260	248	282	136	33	1
2		7.5	0.52	0.78	842.00	80	261	250	279	190	35	1
3		15.0	0.50	0.75	845.50	81	260	250	276	194	36	1
4		22.5	0.49	0.73	849.10	82	259	253	278	188	37	1
5		30.0	0.55	0.82	852.70	82	261	254	278	187	38	1
6		37.5	0.35	0.52	856.60	89	254	252	277	189	39	1
7	15:31	45.0	0.62	0.92	859.77	84	261	221	278	146	39	1
8		52.5	0.58	0.88	863.50	85	261	247	280	203	38	1
9		1:00	0.55	0.82	867.05	86	261	245	279	201	38	1
10		7.5	0.53	0.80	870.78	86	260	228	279	198	39	1
11		15.0	0.32	0.48	874.62	87	256	248	281	200	39	1
12		22.5	0.37	0.56	877.30	87	255	247	279	189	39	1
13		30.0	0.52	0.78	880.370	87	261	254	282	152	40	1
14		37.5	0.55	0.82	883.65	88	261	253	280	176	38	1
15		45.0	0.50	0.75	887.35	88	260	253	277	187	40	1
16		52.5	0.52	0.78	890.84	89	261	253	281	192	41	1
17		2:00	0.52	0.78	894.80	89	261	252	278	187	42	1
18		7.5	0.50	0.75	898.50	90	261	250	279	183	40	1
19	17:09	15.0	0.48	0.72	902.20	88	259	249	278	149	39	1
20		22.5	0.52	0.78	905.30	88	261	247	277	194	39	1
21		30.0	0.47	0.70	909.00	88	260	252	280	209	40	1
22		37.5	0.50	0.75	912.10	87	259	250	278	206	40	1
23		45.0	0.40	0.60	915.55	87	257	258	279	211	41	1
24		52.5	0.35	0.53	918.55	87	257	246	275	209	42	1
	17:54	3:00			922.102							
AVERAGE					83.902							

LEAK CHECKS	
Pitot impact:	good
Pitot static:	good
Train initial:	0.0 @ 16" Hg
Train Final:	0.0 5"

NOZZLE MEASUREMENT	
I.D. No.:	M3
1	.228
2	.229
3	.229
Avg.	.229

STACK GAS ANALYSIS				
	CO2	O2		
1	8.2	9.2		
2	9.0	7.7		
3	6.3	9.6		
Avg.	7.8	8.8		

NOTES:

URS

TEST LAB DATA SHEET

PROJECT: **HNCC Unit #2 Compliance**

JOB NO.: **39400329.520001**

SOURCE: Main Stk

DATE: 4/7/09

TRAIN I.D.: M29-2

TEST NO.: 2

COLLECTED BY: TJB

CHKD. BY: TJB

CONDENSATION

IMPINGER NO.	INITIAL VOL., ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	599.5	917.8	318.3
2	713.1	788.7	75.6
3	717.4	727.1	9.7
4	912.9	929.1	16.2
5			
6			
7			
8			
9			
TOTAL	2942.9	3362.7	419.8

STACK TEST CALCULATIONS

Project:	Haverhill	Barom. Psr.:	29.2		Calculated
Project No:	39400492	Static Psr.:	-0.75	Ps:	29.145
Source:	Unit # 2 Stack	Delta H @:	1.6984	As:	132.732
Run No.:	2	Gamma:	0.9963	An:	0.000286
Date:	4/7/2009	Pitot Coef.:	0.784		
Sample Volume:	83.902	Stack Dia.:	156	,in.	
Sample Time:	180	Nozzle Dia.:	0.229	,in.	
O2 Conc.:	8.8	H2O Gain:	419.8	,ml	
CO2 Conc.:	7.8	Part. Weight:		,g	

TRAVERSE POINT NUMBER	VELOCITY DELTA P Actual	Sq. Root	DELTA H	DRY GAS METER TEMPERATURE	STACK TEMP.
1	0.55	0.74162	0.82	79	260
2	0.52	0.72111	0.78	80	261
3	0.50	0.707107	0.75	81	260
4	0.49	0.7	0.73	82	259
5	0.55	0.74162	0.82	82	261
6	0.35	0.591608	0.52	89	254
7	0.62	0.787401	0.92	84	261
8	0.58	0.761577	0.88	85	261
9	0.55	0.74162	0.82	86	261
10	0.53	0.728011	0.80	86	260
11	0.32	0.565685	0.48	87	256
12	0.37	0.608276	0.56	87	255
13	0.52	0.72111	0.78	87	261
14	0.55	0.74162	0.82	88	261
15	0.50	0.707107	0.75	88	260
16	0.52	0.72111	0.78	89	261
17	0.52	0.72111	0.78	89	261
18	0.50	0.707107	0.75	90	261
19	0.58	0.761577	0.72	89	259
20	0.58	0.761577	0.78	89	261
21	0.58	0.761577	0.70	88	260
22	0.52	0.72111	0.75	88	259
23	0.42	0.648074	0.60	88	257
24	0.35	0.591608	0.53	87	257
AVERAGE	0.5029167	0.70668	0.7341667	86.16667	259.4583

URS

TEST LAB DATA SHEET

PROJECT:	Haverhill Compliance	PROJECT NO.:	39400492.520001
SOURCE:	Unit # 2	TEST DATE:	4/7/2009
TRAIN I.D.	M29-2	TEST NO.:	2
COLLECTED BY:	TJB	CHKD BY:	

CONDENSATION

IMPINGER NO.	INITIAL VOL.,ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	599.5	917.8	318.3
2	713.1	788.7	75.6
3	717.4	727.1	9.7
4	912.9	929.1	16.2
5			0.0
6			0.0
7			0.0
TOTAL	2942.90	3362.7	419.8

PARTICULATE

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g
PROBE WASH			0
REAGENT BLANK			0
CORRECTED PROBE WASH *			0
FILTER # 1			0
FILTER # 2			0
IMPINGERS			0

* subtract reagent blank from probe wash

TOTAL PARTICULATED COLLECTED

PARTICULATE COLLECTED (excluding impinger catch)
PARTICULATE COLLECTED (including impinger catch)

QA PROBE WASH (as required)

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g

COMMENTS:

Project: Haverhill
Project No: 39400492
Source: Unit # 2 Stack
Run No.: 2

Stack Sampling Calculations

Volume of Water Collected

Vwstd = (Vl0)(0.04707)

Vwstd = 19.76 cubic feet

Volume of Gas Metered, Standard Conditions

Vmstd = ((17.64) (Vm)(Pb + DeltaH/13.6)(gamma))/Tm

Vmstd = 78.981 cubic feet

Moisture Content

Bwo = Vwstd/(Vmstd + Vwstd)

Bwo = 0.20

Molecular Weight of the Dry Gas Stream

Md = (.44)(%CO2) + (.32)(%O2) + (.28)(%CO +%N2)

Md = 29.6

Molecular Weight of Stack Gas

Ms = (Md(1-Bwo) + 18(bwo)

Ms = 27.3

Velocity of Stack Gas

Vs = 174 Cp (DeltaP sq.rt.)((Ts+459.6) X 29.92 X 28.96/Ps/Ms)^.5

Vs = 2,698.7 ft/min

Total Flow of Stack Gas

Qa = As X Vs

Qa = 358,207.38 ACFM

Qs = Qa X 528/Ts X Ps/29.92

Qs = 256,072.58 SCFM

Qstd = Qs(1 - Bwo)

Qstd = 204,827.33 DSCFM

Vsstd = Qstd/As

Vsstd = 1543.16 ft/min

Percent Isokinetic

Is = Vmstd/(An X Time X Vsstd)

Is = 0.99

Particulate Concentration

Cs = (15.43)(Mn)/Vmstd

Cs = 0.0000

Particulate Mass Rate

Pmr = (Mn)(Qstd)(60)/(Vmstd)(453.6)

Pmr = 0.00

Main Stack
Metals Run 4

URS STACK TEST DATA SHEET Method used: M29

Project:	HNCC Unit #2 Compliance Test	Barom. Psr.:	29.28	Stack Dia.:	156"
Project No:	39400492.520001	Static Psr.:	-0.74	Stack Area:	
Source:	Main Stack	Meter Box I.D.:	URS002	Port Length:	4"
Run No.:	4	Delta H @:	1.6984	Port Dia.:	4"
Date:	4-9-08	Gamma:	0.9963	Probe Liner:	glass
Operator:	M. Mowery	Pitot Coef.:	0.784 AQS-6003	Filter No.:	N/A

TRAVERSE POINT NUMBER	SAMPLING TIME Clock	SAMPLING TIME Sample	VELOCITY DELTA P	SAMPLE DELTA H	GAS SAMPLE VOLUME	DGM TEMP.	STACK TEMP.	PROBE TEMP.	FILTER BOX TEMP.	FILTER OUTLET TEMP.	LAST IMPINGER TEMP.	TRAIN VACUUM
1	15:24	0	0.60	0.70	11.790	78	263	256	256	202	61	1
2		7.5	0.62	0.78	15.20	78	263	258	253	260	60	1
3		15.0	0.62	0.78	18.60	78	263	251	249	264	52	1
4		22.5	0.54	0.68	22.31	78	262	248	250	265	51	1
5		30.0	0.58	0.72	25.83	79	262	236	243	259	52	1
6		37.5	0.50	0.62	30.20	79	261	237	239	251	52	1
7	16:13	45.0	0.56	0.70	32.655	79	262	239	242	225	52	1
8		52.5	0.55	0.68	35.90	79	262	237	244	241	51	1
9		1:00	0.53	0.67	39.50	80	262	237	243	222	49	1
10		7.5	0.52	0.65	43.40	80	263	240	243	228	47	1
11		15.0	0.45	0.56	47.20	81	262	239	245	218	48	1
12		22.5	0.48	0.60	50.50	81	262	238	243	209	49	1
13		30.0	0.48	0.60	54.015	81	262	238	244	167	54	1
14		37.5	0.55	0.68	57.40	81	262	239	244	223	51	1
15		45.0	0.55	0.68	60.80	82	262	239	244	227	50	1
16		52.5	0.47	0.59	64.50	82	261	240	242	234	44	1
17		2:00	0.38	0.47	67.85	83	259	240	244	233	42	1
18		7.5	0.44	0.55	70.68	83	257	240	245	230	42	1
19		15.0	0.53	0.67	74.065	83	262	236	247	188	46	1
20		22.5	0.62	0.77	77.70	84	263	234	245	236	42	1
21		30.0	0.58	0.73	81.85	85	262	233	241	236	43	1
22		37.5	0.58	0.73	85.80	86	262	234	247	233	43	1
23		45.0	0.50	0.62	88.90	87	261	232	246	229	44	1
24		52.5	0.50	0.62	92.0	88	261	233	244	226	44	1
	18:36	3:00			95.305							
AVERAGE					83.515							

LEAK CHECKS	
Pitot impact:	good
Pitot static:	good
Train initial:	0.002/15"
Train Final:	0.004"

NOZZLE MEASUREMENT	
I.D. No.:	M3
1	0.228
2	0.229
3	0.229
Avg.	0.229

STACK GAS ANALYSIS				
	CO2	O2		
1	6.9	10.7		
2	7.2	10.4		
3	7.6	9.7		
Avg.	7.2	10.3		

NOTES:

URS

TEST LAB DATA SHEET

PROJECT: **HNCC Unit #2 Compliance** JOB NO.: **39400492.520001**

SOURCE: Main Stack DATE: 4-9-09

TRAIN I.D.: M29-4 TEST NO.: 4

COLLECTED BY: TJB-MAM CHKD. BY:

CONDENSATION

IMPINGER NO.	INITIAL VOL., ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	616.9	941.2	324.3
2	707.2	767.6	60.4
3	710.2	717.1	6.9
4	904.0	918.7	14.7
5			
6			
7			
8			
9			
TOTAL	2938.3	3344.6	406.3

STACK TEST CALCULATIONS

Project:	Haverhill	Barom. Psr.:	29.28		Calculated
Project No:	39400492	Static Psr.:	-0.74	Ps:	29.226
Source:	Unit # 2 Stack	Delta H @:	1.6984	As:	132.732
Run No.:	4	Gamma:	0.9963	An:	0.000286
Date:	4/9/2009	Pitot Coef.:	0.784		
Sample Volume:	83.515	Stack Dia.:	156 ,in.		
Sample Time:	180	Nozzle Dia.:	0.229 ,in.		
O2 Conc.:	10.3	H2O Gain:	406.3 ,ml		
CO2 Conc.:	7.2	Part. Weight:	,g		

TRAVERSE POINT NUMBER	VELOCITY DELTA P Actual	Sq. Root	DELTA H	DRY GAS METER TEMPERATURE	STACK TEMP.
1	0.60	0.774597	0.70	78	263
2	0.62	0.787401	0.78	78	263
3	0.62	0.787401	0.78	78	263
4	0.54	0.734847	0.68	78	262
5	0.58	0.761577	0.72	79	262
6	0.50	0.707107	0.62	79	261
7	0.56	0.748331	0.70	79	262
8	0.55	0.74162	0.68	79	262
9	0.53	0.728011	0.67	80	262
10	0.52	0.72111	0.65	80	263
11	0.45	0.67082	0.56	81	262
12	0.48	0.69282	0.60	81	262
13	0.48	0.69282	0.60	81	262
14	0.55	0.74162	0.68	81	262
15	0.55	0.74162	0.68	82	262
16	0.47	0.685565	0.59	82	261
17	0.38	0.616441	0.47	83	259
18	0.44	0.663325	0.55	83	257
19	0.53	0.728011	0.67	83	262
20	0.62	0.787401	0.77	84	263
21	0.58	0.761577	0.73	85	262
22	0.58	0.761577	0.73	86	262
23	0.50	0.707107	0.62	87	261
24	0.50	0.707107	0.62	88	261
AVERAGE	0.5304167	0.727076	0.6604167	81.45833	261.7083

Project: Haverhill
Project No: 39400492
Source: Unit # 2 Stack
Run No.: 4

Stack Sampling Calculations

Volume of Water Collected

Vwstd = (VI0)(0.04707)

Vwstd = 19.12 cubic feet

Volume of Gas Metered, Standard Conditions

Vmstd = ((17.64) (Vm)(Pb + DeltaH/13.6)(gamma))/Tm

Vmstd = 79.502 cubic feet

Moisture Content

Bwo = Vwstd/(Vmstd + Vwstd)

Bwo = 0.19

Molecular Weight of the Dry Gas Stream

Md = (.44)(%CO2) + (.32)(%O2) + (.28)(%CO +%N2)

Md = 29.6

Molecular Weight of Stack Gas

Ms = (Md(1-Bwo) + 18(bwo)

Ms = 27.3

Velocity of Stack Gas

Vs = 174 Cp (DeltaP sq.rt.)((Ts+459.6) X 29.92 X 28.96/Ps/Ms)^.5

Vs = 2,774.9 ft/min

Total Flow of Stack Gas

Qa = As X Vs

Qa = 368,321.11 ACFM

Qs = Qa X 528/Ts X Ps/29.92

Qs = 263,208.85 SCFM

Qstd = Qs(1 - Bwo)

Qstd = 212,170.45 DSCFM

Vsstd = Qstd/As

Vsstd = 1598.49 ft/min

Percent Isokinetic

Is = Vmstd/(An X Time X Vsstd)

Is = 0.97

Particulate Concentration

Cs = (15.43)(Mn)/Vmstd

Cs = 0.0000

Particulate Mass Rate

Pmr = (Mn)(Qstd)(60)/(Vmstd)(453.6)

Pmr = 0.00

URS

TEST LAB DATA SHEET

PROJECT:	Haverhill Compliance	PROJECT NO.:	39400492.520001
SOURCE:	Unit # 2	TEST DATE:	4/9/2009
TRAIN I.D.	M29-4	TEST NO.:	4
COLLECTED BY:	TJB	CHKD BY:	MSM

CONDENSATION

IMPINGER NO.	INITIAL VOL.,ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	616.9	941.2	324.3
2	707.2	767.6	60.4
3	710.2	717.1	6.9
4	904.0	918.7	14.7
5			0.0
6			0.0
7			0.0
TOTAL	2938.3	3344.6	406.3

PARTICULATE

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g
PROBE WASH			0
REAGENT BLANK			0
CORRECTED PROBE WASH *			0
FILTER # 1			0
FILTER # 2			0
IMPINGERS			0

* subtract reagent blank from probe wash

TOTAL PARTICULATED COLLECTED

PARTICULATE COLLECTED (excluding impinger catch)
PARTICULATE COLLECTED (including impinger catch)

QA PROBE WASH (as required)

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g

COMMENTS:

Main Stack
OHM DATA

URS

SUMMARY OF RESULTS	
Project Name:	Haverhill Compliance
Project Number:	39400492.520001
Site Location:	Unit #2
Test Location:	Main Stack
Test Train:	Mercury

Parameters	Run # 1	Run # 2	Run # 4	Average
Run Times	09:54-13:15	14:41-17:54	15:24-18:36	
Date	4/7/2009	4/7/2009	4/9/2009	
Sample Time	180	180	180	
Target Production Rate (wet tons/coal charged/oven)	45	45	45	45
Vol. Sampled @ STP (ft3)	69.313	69.033	71.426	69.924
Moisture Content (% Vol.)	18.9	19.0	19.5	19.1
O2 (%)	8.8	8.8	10.3	9.3
CO2 (%)	8.3	7.8	7.2	7.8
Stack Gas Temperature (°F)	264	265	267	265
Stack Velocity (ft/min.)	2,834	2,735	2,831	2,800
Stack Velocity (ft/sec.)	47.24	45.59	47.18	46.67
Gas Flow Rate (ACFM)	376,215	363,039	375,776	371,676
Gas Flow Rate (SCFM)	267,323	257,395	266,673	263,797
Gas Flow Rate (DSCFM)	216,867	208,445	214,772	213,362
Percent Isokinetic	97.4	100.6	101.0	99.6
Mercury (lb/hr)				
Particle Bound	N/D	N/D	N/D	N/D
Oxidized	N/D	N/D	N/D	N/D
Elemental	4.55E-04	8.79E-04	1.19E-04	4.84E-04
Total	4.55E-04	8.79E-04	1.19E-04	4.84E-04

Test Run 3 was started on 4/8/09, but was voided due to production interruption.

URS

Mercury Mass Emission Calculations

Project Name: Haverhill Unit 2 Compliance
Project No.: 39400492
Test Date: 4/7-9/09
Source: Main Stack

INPUT PARAMETERS

RUN 1

Sample I.D.	Total ug	grams/sample	Vmstd (cu. ft.)	Concentration (ug/m^3)	Qstd (dscfm)	Mass Rate (lbs/hr)	Production Rate (Tons/Coal Charged)	Emission Rate (Tons/Coal Charged)
Particle-bound	N/D	N/D	69.313	N/D	216,867	N/D	45.00	N/D
Oxidized	N/D	N/D	69.313	N/D	216,867	N/D	45.00	N/D
Elemental	1.1	1.10E-06	69.313	0.560	216,867	0.000455	45.00	1.01E-05
Total	1.1	1.10E-06	69.313	0.560	216,867	0.000455	45.00	1.01E-05

RUN 2

Sample I.D.	Total ug	grams/sample	Vmstd (cu. ft.)	Concentration (ug/m^3)	Qstd (dscfm)	Mass Rate (lbs/hr)	Production Rate (Tons/Coal Charged)	Emission Rate (Tons/Coal Charged)
Particle-bound	N/D	N/D	69.033	N/D	208,445	N/D	45.00	N/D
Oxidized	N/D	N/D	69.033	N/D	208,445	N/D	45.00	N/D
Elemental	2.2	2.20E-06	69.033	1.125	208,445	0.000879	45.00	1.95E-05
Total	2.2	2.20E-06	69.033	1.125	208,445	0.000879	45.00	1.95E-05

RUN 4

Sample I.D.	Total ug	grams/sample	Vmstd (cu. ft.)	Concentration (ug/m^3)	Qstd (dscfm)	Mass Rate (lbs/hr)	Production Rate (Tons/Coal Charged)	Emission Rate (Tons/Coal Charged)
Particle-bound	N/D	N/D	71.426	N/D	214,772	N/D	45.00	N/D
Oxidized	N/D	N/D	71.426	N/D	214,772	N/D	45.00	N/D
Elemental	0.3	3.00E-07	71.426	0.148	214,772	0.0001193	45.00	2.65E-06
Total	0.3	3.00E-07	71.426	0.148	214,772	0.0001193	45.00	2.65E-06

Mass Rate (lb/hr)

MR= (Mn)(Qstd)(60)/(Vmstd)(453.6)

Mn= grams/sample
Qstd= stack gas flow rate (dscfm)
Vmstd= volume of air sample (@ stp)

Main Stack
OHM Run 1

URS STACK TEST DATA SHEET Method used: OHM

Project:	HNCC Unit #2 Compliance Test	Barom. Psr.:	29.2	Stack Dia.:	156"
Project No:	39400492.520001	Static Psr.:	-0.70	Stack Area:	
Source:	Unit 2 Main Stack	Meter Box I.D.:	V	Port Length:	4.0"
Run No.:	#1	Delta H @:	1.8317	Port Dia.:	4.0"
Date:	4/7/09	Gamma:	0.9441	Probe Liner:	glass
Operator:	TG	Pitot Coef.:	0.811	AQS-5004 Filter No.:	

TRAVERSE POINT NUMBER	SAMPLING TIME Clock	SAMPLING TIME Sample	VELOCITY DELTA P	SAMPLE DELTA H	GAS SAMPLE VOLUME	DGM TEMP.	STACK TEMP.	PROBE TEMP.	FILTER BOX TEMP.	FILTER OUTLET TEMP.	LAST IMPINGER TEMP.	TRAIN VACUUM
1	09:53	0	0.65	0.64	850.100	75	267	259	261	170	45	1.0
2		7.5	0.67	0.66	853.80	76	266	260	260	175	45	1.5
3		15.0	0.64	0.65	857.10	77	265	260	261	183	43	1.5
4		22.5	0.62	0.60	860.50	78	263	259	260	185	45	1.5
5		30.0	0.51	0.50	863.60	80	262	260	260	187	44	1.5
6		37.5	0.43	0.41	866.90	82	253	259	260	180	44	1.0
1	10:38	45.0	0.55	0.54	869.415	83	266	255	249	160	43	2.0
2		52.5	0.60	0.59	872.80	83	265	247	245	183	42	2.0
3		1.00	0.58	0.57	875.90	84	267	255	253	189	43	2.0
4		7.5	0.53	0.51	879.00	85	264	248	234	188	44	2.0
5		15.0	0.43	0.41	882.70	86	262	251	262	186	46	2.0
6		22.5	0.38	0.37	884.96	86	259	245	236	177	47	1.5
1	11:36	30.0	0.51	0.50	887.520	85	264	259	266	137	43	2.0
2		37.5	0.55	0.54	890.50	86	266	259	252	170	42	2.0
3		45.0	0.52	0.51	893.90	86	265	262	260	171	43	2.0
4		52.5	0.50	0.49	896.80	87	265	259	259	170	41	2.0
5		2.00	0.50	0.49	899.80	87	265	261	260	163	42	2.0
6		7.5	0.39	0.38	903.00	87	262	260	261	164	41	2.0
1	12:30	15.0	0.56	0.55	905.715	86	266	268	270	170	43	2.5
2		22.5	0.53	0.51	908.60	87	265	272	273	186	46	2.5
3		30.0	0.55	0.54	912.00	87	266	274	270	192	47	3.0
4		37.5	0.44	0.43	915.30	88	265	274	270	203	48	3.0
5		45.0	0.41	0.40	918.30	88	263	273	276	200	49	3.0
6		52.5	0.40	0.39	920.90	88	263	276	270	195	50	2.5
	13:15	3.00			923.650							
AVERAGE					73.55							

LEAK CHECKS	
Pitot impact:	0.0@6.3" H2O
Pitot static:	0.0@5.2" H2O
Train initial:	0.0@ 15" Hg
Train Final:	0.0@ 6" Hg

NOZZLE MEASUREMENT	
I.D. No.:	M-2
1	0.212
2	0.210
3	0.210
Avg.	

STACK GAS ANALYSIS				
	CO2	O2		
1	8.1	9.0		
2	8.5	8.6		
3	8.3	8.9		
Avg.	8.3	8.8		

NOTES: windy conditions temps swinging filter exit temp low filter temp good

URS

TEST LAB DATA SHEET

PROJECT: **HNCC Unit #2 Compliance** JOB NO.: **39400492.520001**

SOURCE: Main Stack DATE: 4-7-09

TRAIN I.D.: OHM-1 TEST NO.: 1

COLLECTED BY: TJB / MSM CHKD. BY:

CONDENSATION

IMPINGER NO.	INITIAL VOL., ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	695.8	915.3	219.5
2	709.8	794.2	84.4
3	725.5	748.9	23.4
4	685.3	689.0	3.7
5	707.4	707.8	0.4
6	697.6	697.7	0.1
7	701.3	700.6	-0.7
8	868.9	880.7	11.8
9			
TOTAL	5791.6	6134.2	342.6

STACK TEST CALCULATIONS

Project:	Haverhill	Barom. Psr.:	29.2		Calculated
Project No:	39400188	Static Psr.:	-0.7	Ps:	29.149
Source:	Unit # 2 Stack	Delta H @:	1.8317	As:	132.732
Run No.:	1	Gamma:	0.9941	An:	0.000242
Date:	4/7/2009	Pitot Coef.:	0.811		
Sample Volume:	73.55	Stack Dia.:	156 ,in.		
Sample Time:	180	Nozzle Dia.:	0.211 ,in.		
O2 Conc.:	8.8	H2O Gain:	342.6 ,ml		
CO2 Conc.:	8.3	Part. Weight:	,g		

TRAVERSE POINT NUMBER	VELOCITY DELTA P Actual	Sq. Root	DELTA H	DRY GAS METER TEMPERATURE	STACK TEMP.
1	0.65	0.806226	0.64	75	267
2	0.67	0.818535	0.66	76	266
3	0.64	0.8	0.65	77	265
4	0.62	0.787401	0.60	78	263
5	0.51	0.714143	0.50	80	262
6	0.43	0.655744	0.41	82	253
7	0.55	0.74162	0.54	83	266
8	0.60	0.774597	0.59	83	265
9	0.58	0.761577	0.57	84	267
10	0.53	0.728011	0.51	85	264
11	0.43	0.655744	0.41	86	262
12	0.38	0.616441	0.37	86	259
13	0.51	0.714143	0.50	85	264
14	0.55	0.74162	0.54	86	266
15	0.52	0.72111	0.51	86	265
16	0.50	0.707107	0.49	87	265
17	0.50	0.707107	0.49	87	265
18	0.39	0.6245	0.38	87	262
19	0.56	0.748331	0.55	86	266
20	0.53	0.728011	0.51	87	265
21	0.55	0.74162	0.54	87	266
22	0.44	0.663325	0.43	88	265
23	0.41	0.640312	0.40	88	263
24	0.40	0.632456	0.39	88	263
AVERAGE	0.51875	0.717903	0.5075	84.04167	263.91667

URS

TEST LAB DATA SHEET

PROJECT:	Haverhill Compliance	PROJECT NO.:	39400492.520001
SOURCE:	Unit # 2 Stack	TEST DATE:	4/7/2009
TRAIN I.D.	OHM-1	TEST NO.:	1
COLLECTED BY:	TJB	CHKD BY:	MSM

CONDENSATION

IMPINGER NO.	INITIAL VOL.,ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	695.8	915.3	219.5
2	709.8	794.2	84.4
3	725.5	748.9	23.4
4	685.3	689.0	3.7
5	707.4	707.8	0.4
6	697.6	697.7	0.1
7	701.3	700.6	-0.7
8	868.9	880.7	11.8
TOTAL	5791.6	6134.2	342.6

PARTICULATE

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g
PROBE WASH			0
REAGENT BLANK			0
CORRECTED PROBE WASH *			0
FILTER # 1			0
FILTER # 2			0
IMPINGERS			0

* subtract reagent blank from probe wash

TOTAL PARTICULATED COLLECTED

PARTICULATE COLLECTED (excluding impinger catch)
PARTICULATE COLLECTED (including impinger catch)

QA PROBE WASH (as required)

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g

COMMENTS:

Project: Haverhill
Project No: 39400188
Source: Unit # 2 Stack
Run No.: 1

Stack Sampling Calculations

Volume of Water Collected

Vwstd = (VI0)(0.04707)

Vwstd = 16.13 cubic feet

Volume of Gas Metered, Standard Conditions

Vmstd = ((17.64) (Vm)(Pb + DeltaH/13.6)(gamma))/Tm

Vmstd = 69.313 cubic feet

Moisture Content

Bwo = Vwstd/(Vmstd + Vwstd)

Bwo = 0.19

Molecular Weight of the Dry Gas Stream

Md = (.44)(%CO2) + (.32)(%O2) + (.28)(%CO +%N2)

Md = 29.7

Molecular Weight of Stack Gas

Ms = (Md(1-Bwo) + 18(bwo)

Ms = 27.5

Velocity of Stack Gas

Vs = 174 Cp (DeltaP sq.rt.)((Ts+459.6) X 29.92 X 28.96/Ps/Ms)^.5

Vs = 2,834.4 ft/min

Total Flow of Stack Gas

Qa = As X Vs

Qa = 376,214.68 ACFM

Qs = Qa X 528/Ts X Ps/29.92

Qs = 267,322.89 SCFM

Qstd = Qs(1 - Bwo)

Qstd = 216,867.33 DSCFM

Vsstd = Qstd/As

Vsstd = 1633.87 ft/min

Percent Isokinetic

Is = Vmstd/(An X Time X Vsstd)

Is = 0.97

Particulate Concentration

Cs = (15.43)(Mn)/Vmstd

Cs = 0.0000

Particulate Mass Rate

Pmr = (Mn)(Qstd)(60)/(Vmstd)(453.6)

Pmr = 0.00

Main Stack
OHM Run 2

URS STACK TEST DATA SHEET Method used: OHM

Project:	HNCC Unit #2 Compliance Test	Barom. Psr.:	29.2	Stack Dia.:	156"
Project No:	39400492.520001	Static Psr.:	-0.75	Stack Area:	
Source:	Unit #2 Main Stack	Meter Box I.D.:	V	Port Length:	4.0"
Run No.:	#2	Delta H @:	1.8317	Port Dia.:	4.0"
Date:	4/7/09	Gamma:	0.9441	Probe Liner:	glass
Operator:	TG	Pitot Coef.:	0.811 ABS-5004	Filter No.:	

TRAVERSE POINT NUMBER	SAMPLING TIME Clock	SAMPLING TIME Sample	VELOCITY DELTA P	SAMPLE DELTA H	GAS SAMPLE VOLUME	DGM TEMP.	STACK TEMP.	PROBE TEMP.	FILTER BOX TEMP.	FILTER OUTLET TEMP.	LAST IMPINGER TEMP.	TRAIN VACUUM
1	14:41	0	0.55	0.53	924.000	80	266	258	272	150	37	1.0
2		7.5	0.56	0.54	927.50	81	266	272	272	154	38	1.0
3		15.0	0.54	0.52	930.70	82	266	275	275	162	39	1.0
4		22.5	0.44	0.43	933.50	83	263	268	267	158	40	1.0
5		30.0	0.42	0.41	936.50	84	262	272	270	153	41	1.0
6		37.5	0.39	0.38	939.30	84	261	274	275	158	42	1.0
1	15:31	45.0	0.54	0.52	942.000	85	267	272	273	160	45	1.0
2		52.5	0.55	0.53	945.30	86	267	273	271	167	45	1.0
3		1.00	0.50	0.49	948.10	86	266	271	273	167	46	1.0
4		7.5	0.44	0.43	951.40	87	266	273	272	161	45	1.0
5		15.0	0.41	0.40	954.20	88	266	273	273	160	46	1.0
6		22.5	0.46	0.45	957.00	88	266	272	271	161	47	1.0
1	16:20	30.0	0.46	0.45	959.675	87	268	272	273	150	48	1.0
2		37.5	0.53	0.52	962.90	88	267	267	270	159	47	1.0
3		45.0	0.46	0.45	966.00	88	266	265	270	162	46	1.0
4		52.5	0.48	0.47	969.00	89	266	273	271	163	48	1.0
5		2.00	0.40	0.39	972.20	89	264	272	270	158	48	1.0
6		7.5	0.40	0.39	975.40	89	262	272	262	155	48	1.0
1	17:09	15.0	0.50	0.57	978.005	88	267	273	273	145	47	1.0
2		22.5	0.60	0.68	981.30	88	268	273	274	178	49	1.5
3		30.0	0.56	0.63	985.10	87	267	274	274	205	50	1.5
4		37.5	0.53	0.61	988.30	87	267	275	272	209	51	1.5
5		45.0	0.40	0.46	991.70	87	265	273	275	208	52	1.5
6		52.5	0.39	0.45	994.50	87	261	273	273	201	53	1.5
	17:54	3.00			997.542							
AVERAGE					73.542							

LEAK CHECKS	
Pitot impact:	0.00 5.3" H2O ✓
Pitot static:	0.00 4.9" H2O ✓
Train initial:	0.000 15" Hg
Train Final:	0.0005" Hg

NOZZLE MEASUREMENT	
I.D. No.:	M-2
1	0.212
2	0.210
3	0.210
Avg.	

STACK GAS ANALYSIS				
	CO2	O2		
1	8.2	9.2		
2	9.0	7.7		
3	6.3	9.6		
Avg.	7.8	8.8		

NOTES:

URS

TEST LAB DATA SHEET

PROJECT: **HNCC Unit #2 Compliance** JOB NO.: **39400329.520001**

SOURCE: Main Stk DATE: 4-7-09

TRAIN I.D.: OHM-2 TEST NO.: 2

COLLECTED BY: TJB CHKD. BY: TJB

CONDENSATION

IMPINGER NO.	INITIAL VOL., ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	712.8	935.8	223.0
2	703.3	805.5	102.2
3	710.9	717.6	6.7
4	702.2	704.8	2.6
5	715.0	713.9	-1.1
6	696.3	696.2	-0.1
7	710.1	709.1	-1.0
8	885.3	897.4	12.1
9			
TOTAL	5835.9	6180.3	344.4

STACK TEST CALCULATIONS

Project:	Haverhill	Barom. Psr.:	29.2		Calculated
Project No:	39400188	Static Psr.:	-0.75	Ps:	29.145
Source:	Unit # 2 Stack	Delta H @:	1.8317	As:	132.732
Run No.:	2	Gamma:	0.9941	An:	0.000243
Date:	4/7/2009	Pitot Coef.:	0.811		
Sample Volume:	73.542	Stack Dia.:	156 ,in.		
Sample Time:	180	Nozzle Dia.:	0.211 ,in.		
O2 Conc.:	8.8	H2O Gain:	344.4 ,ml		
CO2 Conc.:	7.8	Part. Weight:	,g		

TRAVERSE POINT NUMBER	VELOCITY DELTA P Actual	Sq. Root	DELTA H	DRY GAS METER TEMPERATURE	STACK TEMP.
1	0.55	0.74162	0.53	80	266
2	0.56	0.748331	0.54	81	266
3	0.54	0.734847	0.52	82	266
4	0.44	0.663325	0.43	83	263
5	0.42	0.648074	0.41	84	262
6	0.39	0.6245	0.38	84	261
7	0.54	0.734847	0.52	85	267
8	0.55	0.74162	0.53	86	267
9	0.50	0.707107	0.49	86	266
10	0.44	0.663325	0.43	87	266
11	0.41	0.640312	0.40	88	266
12	0.46	0.678233	0.45	88	266
13	0.46	0.678233	0.45	87	268
14	0.53	0.728011	0.52	88	267
15	0.46	0.678233	0.45	88	266
16	0.48	0.69282	0.47	89	266
17	0.40	0.632456	0.39	89	264
18	0.40	0.632456	0.39	89	262
19	0.50	0.707107	0.57	88	267
20	0.60	0.774597	0.68	88	268
21	0.56	0.748331	0.63	87	267
22	0.53	0.728011	0.61	87	267
23	0.40	0.632456	0.46	87	265
24	0.39	0.6245	0.45	87	261
AVERAGE	0.4795833	0.690973	0.4875	86.16667	265.4167

URS

TEST LAB DATA SHEET

PROJECT:	Haverhill Compliance	PROJECT NO.:	39400492.520001
SOURCE:	Unit # 2 Stack	TEST DATE:	4/7/2009
TRAIN I.D.	OHM-2	TEST NO.:	2
COLLECTED BY:	TJB	CHKD BY:	MSM

CONDENSATION

IMPINGER NO.	INITIAL VOL.,ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	712.8	935.8	223.0
2	703.3	805.5	102.2
3	710.9	717.6	6.7
4	702.2	704.8	2.6
5	715	713.9	-1.1
6	696.3	696.2	-0.1
7	710.1	709.1	-1.0
8	885.3	897.4	12.1
TOTAL	5835.90	6180.3	344.4

PARTICULATE

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g
PROBE WASH			0
REAGENT BLANK			0
CORRECTED PROBE WASH *			0
FILTER # 1			0
FILTER # 2			0
IMPINGERS			0

* subtract reagent blank from probe wash

TOTAL PARTICULATED COLLECTED

PARTICULATE COLLECTED (excluding impinger catch)
PARTICULATE COLLECTED (including impinger catch)

QA PROBE WASH (as required)

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g

COMMENTS:

Project: Haverhill
Project No: 39400188
Source: Unit # 2 Stack
Run No.: 2

Stack Sampling Calculations

Volume of Water Collected

Vwstd = (Vl0)(0.04707)

Vwstd = 16.21 cubic feet

Volume of Gas Metered, Standard Conditions

Vmstd = ((17.64) (Vm)(Pb + DeltaH/13.6)(gamma))/Tm

Vmstd = 69.033 cubic feet

Moisture Content

Bwo = Vwstd/(Vmstd + Vwstd)

Bwo = 0.19

Molecular Weight of the Dry Gas Stream

Md = (.44)(%CO2) + (.32)(%O2) + (.28)(%CO +%N2)

Md = 29.6

Molecular Weight of Stack Gas

Ms = (Md(1-Bwo) + 18(bwo)

Ms = 27.4

Velocity of Stack Gas

Vs = 174 Cp (DeltaP sq.rt.)((Ts+459.6) X 29.92 X 28.96/Ps/Ms)^.5

Vs = 2,735.1 ft/min

Total Flow of Stack Gas

Qa = As X Vs

Qa = 363,038.51 ACFM

Qs = Qa X 528/Ts X Ps/29.92

Qs = 257,394.57 SCFM

Qstd = Qs(1 - Bwo)

Qstd = 208,445.42 DSCFM

Vsstd = Qstd/As

Vsstd = 1570.42 ft/min

Percent Isokinetic

Is = Vmstd/(An X Time X Vsstd)

Is = 1.01

Particulate Concentration

Cs = (15.43)(Mn)/Vmstd

Cs = 0.0000

Particulate Mass Rate

Pmr = (Mn)(Qstd)(60)/(Vmstd)(453.6)

Pmr = 0.00

Main Stack
OHM Run 4

URS STACK TEST DATA SHEET Method used: OHM

Project:	HNCC Unit #2 Compliance Test	Barom. Psr.:	29.28	Stack Dia.:	156"
Project No:	39400492.520001	Static Psr.:	-0.74	Stack Area:	
Source:	Unit 2 Main Stack	Meter Box I.D.:	V	Port Length:	4.0"
Run No.:	#4	Delta H @:	1.8317	Port Dia.:	4.0"
Date:	4/9/09	Gamma:	0.9441	Probe Liner:	glass
Operator:	TG	Pitot Coef.:	0.811	Filter No.:	

TRAVERSE POINT NUMBER	SAMPLING TIME Clock	SAMPLING TIME Sample	VELOCITY DELTA P	SAMPLE DELTA H	GAS SAMPLE VOLUME	DGM TEMP.	STACK TEMP.	PROBE TEMP.	FILTER BOX TEMP.	FILTER OUTLET TEMP.	LAST IMPINGER TEMP.	TRAIN VACUUM
1	15:24	0	0.54	0.58	225.~~8~~500	80	269	269	272	267	62	2.0
2		7.5	0.54	0.58	229.100	79	269	247	243	270	57	2.0
3		15.0	0.56	0.60	232.20	79	269	245	239	279	55	2.0
4		22.5	0.53	0.57	235.60	80	268	246	240	273	55	2.0
5		30.0	0.46	0.50	238.90	80	266	246	241	260	54	2.0
6		37.5	0.38	0.41	242.20	81	254	245	239	251	56	1.5
1	16:13	45.0	0.52	0.56	244.655	80	268	246	241	232	61	2.0
2		52.5	0.49	0.53	248.00	81	268	245	240	263	61	2.0
3		1.00	0.52	0.56	251.00	82	268	244	244	264	58	2.0
4		7.5	0.48	0.52	254.40	83	268	245	242	265	56	2.0
5		15.0	0.40	0.43	257.70	83	266	246	236	259	57	2.0
6		22.5	0.36	0.39	260.40	84	262	246	239	260	56	1.5
1	17:01	30.0	0.58	0.625	263.270	83	269	241	247	240	59	2.0
2		37.5	0.60	0.65	266.70	84	268	248	244	265	53	2.5
3		45.0	0.57	0.62	270.30	85	269	245	241	268	55	3.0
4		52.5	0.56	0.60	274.20	85	267	244	240	264	55	3.0
5		2.00	0.48	0.52	277.40	86	265	243	250	262	55	3.0
6		7.5	0.41	0.44	280.90	86	259	246	243	257	55	2.5
1	17:50	15.0	0.56	0.60	283.750	86	268	244	240	226	60	3.0
2		22.5	0.60	0.65	287.40	87	270	247	241	259	55	3.5
3		30.0	0.59	0.64	291.30	88	269	247	241	256	55	3.5
4		37.5	0.54	0.58	295.30	89	268	244	240	252	55	3.0
5		45.0	0.48	0.52	298.60	90	267	244	240	246	57	3.0
6		52.5	0.56	0.60	301.60	90	268	245	240	249	58	3.0
	18:36	3.00			305.042							
AVERAGE					79.542							

LEAK CHECKS		
Pitot impact:	good	✓
Pitot static:	good	✓
Train initial:	0.0015" Hg	
Train Final:	0.0006" Hg	

NOZZLE MEASUREMENT	
I.D. No.:	M-2
1	0.212
2	0.210
3	0.210
Avg.	

STACK GAS ANALYSIS				
	CO2	O2		
1	6.9	10.7		
2	7.2	10.4		
3	7.6	9.7		
Avg.	7.2	10.3		

NOTES:

URS

TEST LAB DATA SHEET

PROJECT: **HNCC Unit #2 Compliance** JOB NO.: **39400492.520001**

SOURCE: Main Stack DATE: 4-9-09

TRAIN I.D.: OHM-4 TEST NO.: 4

COLLECTED BY: MGM CHKD. BY: TJB

CONDENSATION

IMPINGER NO.	INITIAL VOL., ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	699.9	970.9	271.0
2	717.7	786.4	68.7
3	719.9	732.7	12.8
4	688.0	689.1	1.1
5	709.3	708.0	-1.3
6	698	697.1	-0.9
7	686.9	686.7	-0.2
8	930.5	946	15.5
9			
TOTAL	5850.2	6216.9	366.7

STACK TEST CALCULATIONS

Project:	Haverhill	Barom. Psr.:	29.28		Calculated
Project No:	39400188	Static Psr.:	-0.74	Ps:	29.226
Source:	Unit # 2 Stack	Delta H @:	1.8317	As:	132.732
Run No.:	4	Gamma:	0.9441	An:	0.000243
Date:	4/9/2009	Pitot Coef.:	0.811		
Sample Volume:	79.542	Stack Dia.:	156 ,in.		
Sample Time:	180	Nozzle Dia.:	0.211 ,in.		
O2 Conc.:	10.3	H2O Gain:	366.7 ,ml		
CO2 Conc.:	7.2	Part. Weight:	,g		

TRAVERSE POINT NUMBER	VELOCITY DELTA P Actual	Sq. Root	DELTA H	DRY GAS METER TEMPERATURE	STACK TEMP.
1	0.54	0.734847	0.58	80	269
2	0.54	0.734847	0.58	79	269
3	0.56	0.748331	0.60	79	269
4	0.53	0.728011	0.57	80	268
5	0.46	0.678233	0.50	80	266
6	0.38	0.616441	0.41	81	254
7	0.52	0.72111	0.56	80	268
8	0.49	0.7	0.53	81	268
9	0.52	0.72111	0.56	82	268
10	0.48	0.69282	0.52	83	268
11	0.40	0.632456	0.43	83	266
12	0.36	0.6	0.39	84	262
13	0.58	0.761577	0.63	83	269
14	0.60	0.774597	0.65	84	268
15	0.57	0.754983	0.62	85	269
16	0.56	0.748331	0.60	85	267
17	0.48	0.69282	0.52	86	265
18	0.41	0.640312	0.44	86	259
19	0.56	0.748331	0.60	86	268
20	0.60	0.774597	0.65	87	270
21	0.59	0.768115	0.64	88	269
22	0.54	0.734847	0.58	89	268
23	0.48	0.69282	0.52	90	267
24	0.56	0.748331	0.60	90	268
AVERAGE	0.51	0.714495	0.553125	83.79167	266.75

Project: Haverhill
Project No: 39400188
Source: Unit # 2 Stack
Run No.: 4

Stack Sampling Calculations

Volume of Water Collected

Vwstd = (VI0)(0.04707)

Vwstd = 17.26 cubic feet

Volume of Gas Metered, Standard Conditions

Vmstd = ((17.64) (Vm)(Pb + DeltaH/13.6)(gamma))/Tm

Vmstd = 71.426 cubic feet

Moisture Content

Bwo = Vwstd/(Vmstd + Vwstd)

Bwo = 0.19

Molecular Weight of the Dry Gas Stream

Md = (.44)(%CO2) + (.32)(%O2) + (.28)(%CO +%N2)

Md = 29.6

Molecular Weight of Stack Gas

Ms = (Md(1-Bwo) + 18(bwo)

Ms = 27.3

Velocity of Stack Gas

Vs = 174 Cp (DeltaP sq.rt.)((Ts+459.6) X 29.92 X 28.96/Ps/Ms)^.5

Vs = 2,831.1 ft/min

Total Flow of Stack Gas

Qa = As X Vs

Qa = 375,776.10 ACFM

Qs = Qa X 528/Ts X Ps/29.92

Qs = 266,673.40 SCFM

Qstd = Qs(1 - Bwo)

Qstd = 214,772.07 DSCFM

Vsstd = Qstd/As

Vsstd = 1618.09 ft/min

Percent Isokinetic

Is = Vmstd/(An X Time X Vsstd)

Is = 1.01

Particulate Concentration

Cs = (15.43)(Mn)/Vmstd

Cs = 0.0000

Particulate Mass Rate

Pmr = (Mn)(Qstd)(60)/(Vmstd)(453.6)

Pmr = 0.00

URS

TEST LAB DATA SHEET

PROJECT:	Haverhill Compliance	PROJECT NO.:	39400492.520001
SOURCE:	Unit # 2 Stack	TEST DATE:	4/9/2009
TRAIN I.D.	OHM-4	TEST NO.:	4
COLLECTED BY:	MSM	CHKD BY:	TJB

CONDENSATION

IMPINGER NO.	INITIAL VOL.,ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	699.9	970.9	271.0
2	717.7	786.4	68.7
3	719.9	732.7	12.8
4	688.0	689.1	1.1
5	709.3	708	-1.3
6	698	697.1	-0.9
7	686.9	686.7	-0.2
8	930.5	946	15.5
TOTAL	5850.2	6216.9	366.7

PARTICULATE

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g
PROBE WASH			0
REAGENT BLANK			0
CORRECTED PROBE WASH *			0
FILTER # 1			0
FILTER # 2			0
IMPINGERS			0

* subtract reagent blank from probe wash

TOTAL PARTICULATED COLLECTED

PARTICULATE COLLECTED (excluding impinger catch)
PARTICULATE COLLECTED (including impinger catch)

QA PROBE WASH (as required)

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g

COMMENTS:

Appendix C

PCM
M5 TEST DATA

URS

SUMMARY OF RESULTS	
Project Name:	Haverhill Compliance Test
Project Number:	39400492.520001
Site Location:	Unit #2
Test Location:	PCM
Test Train:	M5

Parameters	Run # 1	Run # 2	Run # 3	Avgerage
Run Times	14:25-20:37	15:49-18:37	15:26-20:02	
Date	4/15/2009	4/16/2009	4/17/2009	
Sample Time	169	105	132	
Target Production Rate (wet tons coal charged / oven)	45	45	45	45
Production for Unit 2 (total dry tons coal charged during test run)	977.2	603.7	826.9	802.6
Vol. Sampled @ STP (ft3)	127.667	75.503	97.179	100.116
Moisture Content (% Vol.)	1.3	1.5	1.3	1.4
O2 (%)	21.1	21.2	21.0	21.1
CO2 (%)	0.0	0.1	0.0	0.0
Stack Gas Temperature (°F)	129	144	159	144
Stack Velocity (ft/min.)	3,311	3,507	3,330	3,383
Stack Velocity (ft/sec.)	55.18	58.45	55.50	56.38
Gas Flow Rate (ACFM)	52,657	55,774	52,964	53,798
Gas Flow Rate (SCFM)	46,350	48,243	44,674	46,422
Gas Flow Rate (DSCFM)	45,743	47,529	44,084	45,786
Percent Isokinetic	92.6	96.0	93.4	94.0
Particulate Conc. (Grains/DSCF)	0.0023	0.0021	0.0029	0.0025
Average emission rate during charging (lb/hr)	0.405	0.546	0.531	0.494
Particulate Mass Rate (lb/ton dry coal charged, time & process weighted)	0.0026	0.0025	0.0030	0.0027

Project: Haverhill Unit 2 Compliance Test
Project No: 39400492
Source: PCM

PM Mass Emission Rate Adjustment for Production

$E_p = (C \times Q \times T) / (P \times K)$

E_p = Process weighted mass emissions of PM, lb/ton.
C = Concentration of particulate matter of PM, gr/dscf.
Q = Volumetric flow rate of stack gas, dscf/hr.
T = Total time during a run that a sample is withdrawn from the stack during charging, hr.
K = Conversion factor, 7,000 gr/lb.
P = Total amount of dry coal charged during the test run, tons.

Run #	C	Q	T	P	E_p
1	0.00227	2,744,587	2.82	977.2	0.0026
2	0.00215	2,851,750	1.75	603.7	0.0025
3	0.00294	2,645,060	2.20	826.9	0.0030

PM Mass Emission Rate During Charging (lbs/hr)

PMR = (P / T) x Z

PMR = Time weighted mass emissions of PM, lb/hr.
P = Total amount of dry coal charged, tons.
T = Total time of charging operations, hr.
Z = Particulate mass rate, lb/ton process weighted.

Run #	P	T	Z	PMR
1	977.2	14:25 - 20:37 6.2	0.00257	0.40473
2	603.7	15:49 - 18:37 2.8	0.00253	0.54636
3	826.9	15:26 - 20:02 4.6	0.00295	0.53085

Project: Haverhill
Project No.: 39400492
Source: PCM
Test Date: 4/15/2009
Test I.D. M5

Parameters	Run # 1	Run # 2	Run # 3	Average
Sample Time	169	105	132	135.333333
Vol. Sampled @ STP (ft3)	127.667	75.503	97.179	100.116
Moisture Content (% Vol.)	1.3	1.5	1.3	1.4
O2 (%)	21.1	21.2	21.0	21.1
CO2 (%)	0.0	0.1	0.0	0.0
Stack Gas Temperature (°F)	129	144	159	144
Stack Velocity (ft/min.)	3,311	3,507	3,330	3,383
Gas Flow Rate (ACFM)	52,657	55,774	52,964	53,798
Gas Flow Rate (SCFM)	46,350	48,243	44,674	46,422
Gas Flow Rate (DSCFM)	45,743	47,529	44,084	45,786
Percent Isokinetic	92.6	96.0	93.4	94.0
Particulate Conc. (Grains/DSCF)	0.0023	0.0021	0.0029	0.0025
Particulate Conc. (MG/DSCM)	5.1996	4.9103	6.7219	5.6106
Particulate Mass Rate (pounds/hr)	0.89	0.87	1.11	0.96

Isokinetic Rate for test runs 2 and 3 are based on DeltaP recorded during sampling

Gas flow rate for test runs 2 and 3 are based on full traverse.

URS

PARTICULATE TEST LAB DATA SHEET

PROJECT: HNCC
SOURCE: Unit 2 PCM
Analyst: Mike Mowery
Balance: URS-2 Citizen

JOB NO.: 39400492
TRAIN I.D.: M5
Date: 1st Final: 5/14/2009
2nd Final: 5/15/2009

Calibration: 100 mg = 0.1 1 g = 0.9999 20 g = 20.0000

Filter Weights

Filter I.D.	Initial Weight		Final Weight		Weight Gain
	1st	2nd	1st	2nd	
09-045 M5 - Run 1	0.3537	0.3535	0.3642	0.3641	0.0106
09-046 M5 - Run 2	0.3553	0.3551	0.3605	0.3602	0.0051
09-051 M5 - Run 3	0.3547	0.3546	0.3667	0.3666	0.0120

Probe Wash Weights

Sample I.D.	Initial Pre-Weight		Final Weight		Weight Gain
	1st	2nd	1st	2nd	
BR-14 Run 1	12.7777	12.7775	12.7859	12.7858	0.0083
BR-15 Run 2	12.6129	12.6130	12.6184	12.6185	0.0055
BR-16 Run 3	12.7752	12.7550	12.7618	12.7616	0.0066
Br-13 Blank	12.2259	12.6160	12.6162	12.6161	0.0001

2nd weight results are used for final weight determination.

Sample Room Conditions during final weight determination:

Date	RH, %	Temp. (F)	Desicator RH, %
5/14/2009	40	70	0
5/15/2009	37	68	0

PCM
M5 Run 1

URS STACK TEST DATA SHEET Method used: 5

Project:	HNCC Unit #2 Compliance Test	Barom. Psr.:	29.42	Stack Dia.:	54"Ø
Project No:	39400492.520001	Static Psr.:	-.61	Stack Area:	
Source:	PCM	Meter Box I.D.:	URS 002	Port Length:	4"
Run No.:	#1	Delta H @:	1.6984	Port Dia.:	4"
Date:	4/15/09	Gamma:	.9963	Probe Liner:	Glass
Operator:	BS-CM	Pitot Coef.:	.83 ABS-5002	Filter No.:	M12-14 09045

	TRAVERSE POINT NUMBER	SAMPLING TIME Clock	SAMPLING TIME Sample	VELOCITY DELTA P	SAMPLE DELTA H	GAS SAMPLE VOLUME	DGM TEMP.	STACK TEMP.	PROBE TEMP.	FILTER BOX TEMP.	FILTER OUTLET TEMP.	LAST IMPINGER TEMP.	TRAIN VACUUM	Filt outlet
14:32	1-1	14:25	70	0.42	1.00	096.344	49	141	233	239	219	37	0	104
14:46	1-2	14:40	6	0.43	1.00	100.104	53	129	238	240	236	38	0	108
15:46	1-3	15:40	6	0.50	1.25	103.142	58	128	240	244	238	46	.05	112
~~15:56~~	1-4	15:49	7	0.47	1.10	106.852	59	130	240	246	241	39	.05	116
16:07	1-5	16:00	7	0.57	1.10	110.273	59	131	242	245	241	41	.05	120
16:21	1-6	16:15	6	0.69	1.55	114.144	60	130	243	246	240	41	.05	124
16:31	1-7	16:24	7	1.10	2.60	118.718	62	130	243	245	238	40	2.5	128
16:43	1-8	16:37	6	1.30	2.90	124.585	62	129	242	245	234	42	2.5	132
16:53	1-9	16:46	7	1.40	3.10	130.843	63	127	243	246	233	42	3.0	136
17:05	1-10	16:58	7	1.30	2.80	137.557	64	124	243	243	232	42	2.5	140
17:16	1-11	17:08	7	1.40	3.10	144.142	64	131	241	242	236	43	3.0	144
17:27	1-12	17:20	7	1.50	3.30	151.121	65	121	243	245	239	43	3.0	148
				~~1.00~~	~~2.30~~	158.092	~~65~~		~~240~~ ~~245~~			~~43~~		
17:40	2-1	17:32	8	1.00	2.30	158.092	65	118	240	245	232	43	2.0	152
17:52	2-2	17:44	8	0.97	2.25	164.245	65	125	242	244	232	42	2.0	156
18:04	2-3	17:56	8	0.82	1.85	170.422	64	132	239	244	231	42	2.0	160
18:29	2-4	18:22	7	0.70	1.60	176.042	61	130	241	245	240	42	1.5	164
18:42	2-5	18:35	7	0.65	1.50	180.386	60	121	242	242	241	41	1.5	168
18:55	2-6	18:49	6	0.75	1.75	184.660	59	123	238	245	244	41	2.0	172
19:09	2-7	19:02	7	0.80	1.90	189.314	59	128	243	245	245	42	2.0	176
19:22	2-8	19:15	7	0.96	2.20	194.425	60	140	242	242	241	42	2.0	180
19:36	2-9	19:29	7	0.80	1.90	199.966	61	138	239	242	236	42	2.0	184
19:50	2-10	19:42	8	0.96	2.20	205.000	62	150	241	246	240	41	2.0	188
20:04	2-11	19:56	8	1.00	2.30	210.897	63	122	240	245	240	42	2.0	192
20:37	2-12	20:29	8	1.10	2.60	217.011	58	136	241	244	239	40	2.5	196
↑ stop Time	~~[illegible]~~		2:49			224.238								
		* Test stopped early												
	AVERAGE		169			127.894								

LEAK CHECKS	
Pitot impact:	OK / ok
Pitot static:	OK / ok
Train initial:	@ 15" OK
Train Final:	0.002 5"

NOZZLE MEASUREMENT	
I.D. No.:	298-1
1	.228
2	.229
3	.228
Avg.	.228

STACK GAS ANALYSIS	CO2	O2		
1	Ø	21.09		
2				
3				
Avg.				

NOTES:

URS

TEST LAB DATA SHEET

PROJECT: **HNCC Unit #2 Compliance** JOB NO.: **39400329.520001**

SOURCE: PCM DATE: 4/14/09

TRAIN I.D.: # 1 (MS) TEST NO.: 1

COLLECTED BY: TJB CHKD. BY: GM

CONDENSATION

IMPINGER NO.	INITIAL VOL., ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	720.9	733.0	12.1
2	691.3	693.0	1.7
3	616.9	617.6	0.7
4	895.7	917.2	21.5
5			
6			
7			
8			
9			
TOTAL	2924.8	2960.8	36

STACK TEST CALCULATIONS

Project:	Haverhill	Barom. Psr.:	29.42		Calculated
Project No:	39400492	Static Psr.:	-0.61	Ps:	29.375
Source:	PCM	Delta H @:	1.6984	As:	15.904
Run No.:	1	Gamma:	0.9963	An:	0.000284
Date:	4/15/2009	Pitot Coef.:	0.83		
Sample Volume:	127.894	Stack Dia.:	54 ,in.		
Sample Time:	169	Nozzle Dia.:	0.228 ,in.		
O2 Conc.:	21.09	H2O Gain:	36.0 ,ml		
CO2 Conc.:	0	Part. Weight:	0.0188 ,g		

TRAVERSE POINT NUMBER	VELOCITY DELTA P Actual	Sq. Root	DELTA H	DRY GAS METER TEMPERATURE	STACK TEMP.
1	0.42	0.648074	1.00	49	141
2	0.43	0.655744	1.10	53	129
3	0.50	0.707107	1.25	58	128
4	0.47	0.685565	1.10	59	130
5	0.57	0.754983	1.10	59	131
6	0.69	0.830662	1.55	60	130
7	1.10	1.048809	2.60	62	130
8	1.30	1.140175	2.90	62	129
9	1.40	1.183216	3.10	63	127
10	1.30	1.140175	2.80	64	124
11	1.40	1.183216	3.10	64	131
12	1.50	1.224745	3.30	65	121
13	1.00	1	2.30	65	118
14	0.97	0.984886	2.25	65	125
15	0.82	0.905539	1.85	64	132
16	0.70	0.83666	1.60	61	130
17	0.65	0.806226	1.50	60	121
18	0.75	0.866025	1.75	59	123
19	0.80	0.894427	1.90	59	128
20	0.96	0.979796	2.20	60	140
21	0.80	0.894427	1.90	61	138
22	0.96	0.979796	2.20	62	130
23	1.00	1	2.30	63	122
24	1.10	1.048809	2.60	58	136
AVERAGE	0.8995833	0.933294	2.05	60.625	128.91667

URS

TEST LAB DATA SHEET

PROJECT:	Haverhill Unit #2 Compliance	PROJECT NO.:	39400329.52000
SOURCE:	PCM	TEST DATE:	4/14/2009
TRAIN I.D.	M5-1	TEST NO.:	1
COLLECTED BY:	TJB	CHKD BY:	MSM

CONDENSATION

IMPINGER NO.	INITIAL VOL.,ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	720.9	733.0	12.1
2	691.3	693.0	1.7
3	616.9	617.6	0.7
4	895.7	917.2	21.5
5			0
6			0
7			0
TOTAL	2924.8	2960.8	36.0

PARTICULATE

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g
PROBE WASH	12.7775	12.7858	0.0083
REAGENT BLANK	12.6160	12.6161	0.0001
CORRECTED PROBE WASH *			0.0082
FILTER # 1 09-045	0.3535	0.3641	0.0106

* subtract reagent blank from probe wash

TOTAL PARTICULATED COLLECTED

PARTICULATE COLLECTED (excluding impinger catch)	0.0188
PARTICULATE COLLECTED (including impinger catch)	

QA PROBE WASH (as required)

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g

COMMENTS:

PCM
M5 Run 2

URS STACK TEST DATA SHEET Method used: M5

Project:	HNCC Unit #2 Compliance Test	Barom. Psr.:	29.65	Stack Dia.:	54"
Project No:	39400492.520001	Static Psr.:	-.61	Stack Area:	
Source:	PCM	Meter Box I.D.:	URS 002	Port Length:	4"
Run No.:	#2	Delta H @:	1.6984	Port Dia.:	4"
Date:	4-16-09	Gamma:	0.9963	Probe Liner:	Glass
Operator:	BJ - GM	Pitot Coef.:	0.83 AQS-5002	Filter No.:	09-046

	TRAVERSE POINT NUMBER	SAMPLING TIME Clock	SAMPLING TIME Sample	VELOCITY DELTA P	SAMPLE DELTA H	GAS SAMPLE VOLUME	DGM TEMP.	STACK TEMP 127	PROBE TEMP.	FILTER BOX TEMP.	FILTER OUTLET TEMP.	LAST IMPINGER TEMP.	TRAIN VACUUM	
15:55	1	15:49	6	1.10	2.60	224.706	64	~~63~~	236	244	225	55	2.5	103
16:06	2	15:59	7	1.20	2.80	229.761	66	130	241	243	238	52	3.00	107
16:15	3	16:09	6	0.90	2.15	235.818	68	138	241	244	238	53	2.0	111
16:24	4	16:18	6	0.93	2.20	240.828	71	153	236	238	241	54	2.0	115
16:47	5	16:41	6	0.85	2.00	246.033	74	146	243	245	239	56	2.0	119
16:57	6	16:51	6	0.85	2.00	251.272	75	152	241	242	239	54	2.0	123
17:08	7	17:01	7	0.65	1.55	256.089	76	148	242	247	236	49	1.5	127
17:18	8	17:11	7	0.65	1.55	260.877	77	137	243	244	230	47	1.5	131
17:28	9	17:21	7	0.70	1.70	265.382	76	143	243	243	227	47	2.0	135
17:38	10	17:32	6	0.80	1.90	270.335	76	145	243	244	228	46	2.0	139
17:49	11	17:42	7	0.90	2.15	275.374	77	153	242	241	231	46	2.0	143
18:02	12	17:54	8	0.92	2.20	280.746	77	154	246	246	225	48	2.5	147
						286.810								
18:12	1	18:06	6	0.42	1.05	286.810	77	144	242	247	228	46	1.5	151
18:24	2	18:17	7	0.42	1.05	290.557	76	142	244	250	226	46	1.5	155
18:37	3	18:30	7	0.46	1.10	294.220	76	150	245	252	228	45	1.5	159
19:15	4	19:12/20:28	3/3	0.54	1.30	298.537	75	142	248	256	228	44	1.5	163
	5 4					301.703								163
	6 5			0.63										
	7 6			0.74		Correct stop time: 18:37								
	8 7			1.40										
	9 8			1.80										
	10 9			1.90										
	11 10			1.90										
	12 11			1.90										
	12			1.80										
			1:45											
	AVERAGE					76.997								

LEAK CHECKS	
Pitot impact:	ok / ok
Pitot static:	ok / ok
Train initial:	0.00@15"
Train Final:	0.00@ 5"

NOZZLE MEASUREMENT	
I.D. No.:	298-1
1	.228
2	.228
3	.228
Avg.	.228

STACK GAS ANALYSIS	CO2	O2		
1	0.08	21.18		
2				
3				
Avg.				

NOTES: 19:12-19:15 Door open NO Push/Charge.
20:28-20:30 Door open NO Push/Charge

URS

TEST LAB DATA SHEET

PROJECT: **HNCC Unit #2 Compliance** JOB NO.: **39400329.520001**

SOURCE: PCM DATE: 4/14/09

TRAIN I.D.: #2 (ms) TEST NO.: #2

COLLECTED BY: TJB CHKD. BY: CM

CONDENSATION

IMPINGER NO.	INITIAL VOL., ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	687.7	698.2	10.5
2	692.8	694.4	1.6
3	611.5	611.6	0.1
4	883.6	895.5	11.9
5			
6			
7			
8			
9			
TOTAL	2875.6	2899.7	24.1

STACK TEST CALCULATIONS

Project:	Haverhill	Barom. Psr.:	29.65		Calculated
Project No:	39400492	Static Psr.:	-0.61	Ps:	29.605
Source:	PCM	Delta H @:	1.6984	As:	15.904
Run No.:	2	Gamma:	0.9963	An:	0.000284
Date:	4/16/2009	Pitot Coef.:	0.83		
Sample Volume:	76.997	Stack Dia.:	54 ,in.		
Sample Time:	105	Nozzle Dia.:	0.228 ,in.		
O2 Conc.:	21.18	H2O Gain:	24.1 ,ml		
CO2 Conc.:	0.08	Part. Weight:	0.0105 ,g		

TRAVERSE POINT NUMBER	VELOCITY DELTA P Actual	Sq. Root	DELTA H	DRY GAS METER TEMPERATURE	STACK TEMP.
1	1.10	1.048809	2.60	64	127
2	1.20	1.095445	2.80	66	130
3	0.90	0.948683	2.15	68	138
4	0.93	0.964365	2.20	71	153
5	0.85	0.921954	2.00	74	146
6	0.85	0.921954	2.00	75	152
7	0.65	0.806226	1.55	76	148
8	0.65	0.806226	1.55	77	137
9	0.70	0.83666	1.70	76	143
10	0.80	0.894427	1.90	76	145
11	0.90	0.948683	2.15	77	153
12	0.92	0.959166	2.20	77	154
13	0.42	0.648074	1.05	77	144
14	0.42	0.648074	1.05	76	142
15	0.46	0.678233	1.10	76	150
16	0.54	0.734847	1.30	75	142
17	0.63	0.793725			
18	0.74	0.860233			
19	1.40	1.183216			
20	1.80	1.341641			
21	1.90	1.378405			
22	1.90	1.378405			
23	1.90	1.378405			
24	1.80	1.341641			
AVERAGE	1.015	0.979896	1.83125	73.8125	144

URS

TEST LAB DATA SHEET

PROJECT:	Haverhill Unit #2 Compliance	PROJECT NO.:	39400329.52000
SOURCE:	PCM	TEST DATE:	4/14/2009
TRAIN I.D.	M5-2	TEST NO.:	2
COLLECTED BY:	TJB	CHKD BY:	MSM

CONDENSATION

IMPINGER NO.	INITIAL VOL.,ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	687.7	698.2	10.5
2	692.8	694.4	1.6
3	611.5	611.6	0.1
4	883.6	895.5	11.9
5			0.0
6			0.0
7			0.0
TOTAL	2875.60	2899.7	24.1

PARTICULATE

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g
PROBE WASH	12.613	12.6185	0.0055
REAGENT BLANK	12.6160	12.6161	0.0001
CORRECTED PROBE WASH *			0.0054
FILTER # 1 09-046	0.3551	0.3602	0.0051

* subtract reagent blank from probe wash

TOTAL PARTICULATED COLLECTED

PARTICULATE COLLECTED (excluding impinger catch)	0.0105
PARTICULATE COLLECTED (including impinger catch)	

QA PROBE WASH (as required)

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g

COMMENTS:

Project: Haverhill
Project No: 39400492
Source: PCM
Run No.: 2

Stack Sampling Calculations

Volume of Water Collected

Vwstd = (Vl0)(0.04707)

Vwstd = 1.13 cubic feet

Volume of Gas Metered, Standard Conditions

Vmstd = ((17.64) (Vm)(Pb + DeltaH/13.6)(gamma))/Tm

Vmstd = 75.503 cubic feet

Moisture Content

Bwo = Vwstd/(Vmstd + Vwstd)

Bwo = 0.01

Molecular Weight of the Dry Gas Stream

Md = (.44)(%CO2) + (.32)(%O2) + (.28)(%CO +%N2)

Md = 28.9

Molecular Weight of Stack Gas

Ms = (Md(1-Bwo) + 18(bwo)

Ms = 28.7

Velocity of Stack Gas

Vs = 174 Cp (DeltaP sq.rt.)((Ts+459.6) X 29.92 X 28.96/Ps/Ms)^.5

Vs = 3,506.9 ft/min

Total Flow of Stack Gas

Qa = As X Vs

Qa = 55,774.28 ACFM

Qs = Qa X 528/Ts X Ps/29.92

Qs = 48,243.26 SCFM

Qstd = Qs(1 - Bwo)

Qstd = 47,529.16 DSCFM

Vsstd = Qstd/As Sampling Traverse

Vsstd = 2988.45 ft/min 2642.2

Percent Isokinetic

Is = Vmstd/(An X Time X Vsstd)

Is = 0.96

Particulate Concentration

Cs = (15.43)(Mn)/Vmstd

Cs = 0.0021

Particulate Mass Rate

Pmr = (Mn)(Qstd)(60)/(Vmstd)(453.6)

Pmr = 0.87

PCM
M5 Run 3

URS STACK TEST DATA SHEET Method used: M5

Project:	HNCC Unit #2 Compliance Test	Barom. Psr.:	29.65	Stack Dia.:	54"
Project No:	39400492.520001	Static Psr.:	-.61	Stack Area:	
Source:	PCM	Meter Box I.D.:	URS002	Port Length:	4"
Run No.:	#3	Delta H @:	1.6484	Port Dia.:	4"
Date:	4-17-09	Gamma:	0.9963	Probe Liner:	Glass
Operator:	BS GM	Pitot Coef.:	0.83 ABS-5002	Filter No.:	09-051

	TRAVERSE POINT NUMBER	SAMPLING TIME Clock	SAMPLING TIME Sample	VELOCITY DELTA P	SAMPLE DELTA H	GAS SAMPLE VOLUME	DGM TEMP.	STACK TEMP.	PROBE TEMP.	FILTER BOX TEMP.	FILTER OUTLET TEMP.	LAST IMPINGER TEMP.	TRAIN VACUUM	
15:32	1	15:26	6	.46	1.10	304.368	72	153	246	259	241	54	1.0	104
16:15	2	16:09	6	.46	1.10	307.912	73	160	247	258	259	53	1.0	108
16:29	3	16:23	6	.46	1.10	311.474	78	160	246	259	257	55	1.0	112
16:39	4	16:32	7	.46	1.10	315.088	82	160	244	258	258	56	1.0	116
16:51	5	16:43	8	.54	1.30	319.130	84	165	249	258	259	58	1.5	120
17:02	6	16:56	6	.70	1.70	323.797	86	167	247	259	255	55	2.0	124
17:12	7	17:06	6	1.20	2.80	328.597	87	163	249	259	254	56	3.0	128
17:22	8	17:16	6	1.40	3.10	334.270	88	160	249	259	250	58	3.0	132
17:32	9	17:26	6	1.40	3.10	340.012	89	163	252	261	244	60	3.0	136
17:43	10	17:36	7	1.50	3.25	346.183	90	168	250	259	246	60	3.0	140
17:54	11	17:47	7	1.50	3.25	353.271	91	161	250	259	245	56	3.0	144
18:10	12	18:03	7	1.50	3.25	359.710	91	157	250	259	248	50	3.0	148
						366.239								
18:26	1	18:15	7	.92	2.15	366.239	91	155	248	259	246	49	2.0	152
18:33	2	18:26	7	.92	2.15	371.911	91	157	250	262	246	50	2.0	156
18:46	3	18:39	7	.86	2.05	377.057	90	153	250	261	244	52	2.0	160
19:04	4	18:58	6	.75	1.75	382.327	88	155	248	259	247	53	1.5	164
19:17	5	19:10	7	.65	1.50	387.114	87	160	249	259	249	56	1.5	168
19:31	6	19:25	6	.60	1.40	391.634	86	156	249	260	245	56	1.5	172
19:47	7	19:40	7	.70	1.65	396.023	86	157	249	261	247	57	1.5	176
20:02	8	19:55	7	.77	1.80	400.742	87	158	249	260	253	52	2.0	180
	9			.65		405.654								
	10			.73										
	11			.93										
	12			1.00										
			2:12											
AVERAGE														

LEAK CHECKS	
Pitot impact:	ok
Pitot static:	ok
Train initial:	0.00 @ 15"
Train Final:	0.00 @ 5"

NOZZLE MEASUREMENT	
I.D. No.:	248-1
1	.228
2	.228
3	.228
Avg.	.228

STACK GAS ANALYSIS	CO2	O2		
1	0	21		
2				
3				
Avg.				

NOTES:

URS

TEST LAB DATA SHEET

PROJECT: **HNCC Unit #2 Compliance** JOB NO.: **39400329.520001**

SOURCE: PCM DATE: 4-17-09

TRAIN I.D.: M5 #3 TEST NO.: #3

COLLECTED BY: BJ CHKD. BY: GM

CONDENSATION

IMPINGER NO.	INITIAL VOL., ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	733.0	739.2	6.2
2	693.0	695.8	2.8
3	617.6	619.0	GM ~~1.8~~ 1.4
4	917.2	934.4	17.2
5			
6			
7			
8			
9			
TOTAL	2960.8	2988.4	GM ~~24.6~~ 27.6

STACK TEST CALCULATIONS

Project:	Haverhill	Barom. Psr.:	29.65		Calculated
Project No:	39400492	Static Psr.:	-0.61	Ps:	29.605
Source:	PCM	Delta H @:	1.6984	As:	15.904
Run No.:	3	Gamma:	0.9963	An:	0.000284
Date:	4/17/2009	Pitot Coef.:	0.83		
Sample Volume:	101.286	Stack Dia.:	54 ,in.		
Sample Time:	132	Nozzle Dia.:	0.228 ,in.		
O2 Conc.:	21	H2O Gain:	27.6 ,ml		
CO2 Conc.:	0	Part. Weight:	0.0185 ,g		

TRAVERSE POINT NUMBER	VELOCITY DELTA P Actual	Sq. Root	DELTA H	DRY GAS METER TEMPERATURE	STACK TEMP.
1	0.46	0.678233	1.10	72	153
2	0.46	0.678233	1.10	73	160
3	0.46	0.678233	1.10	78	160
4	0.46	0.678233	1.10	82	160
5	0.54	0.734847	1.30	84	165
6	0.70	0.83666	1.70	86	167
7	1.20	1.095445	2.80	87	163
8	1.40	1.183216	3.10	88	160
9	1.40	1.183216	3.10	89	163
10	1.50	1.224745	3.25	90	168
11	1.50	1.224745	3.25	91	161
12	1.50	1.224745	3.25	91	157
13	0.92	0.959166	2.15	91	155
14	0.92	0.959166	2.15	91	157
15	0.86	0.927362	2.05	90	153
16	0.75	0.866025	1.75	88	155
17	0.65	0.806226	1.50	87	160
18	0.60	0.774597	1.40	86	156
19	0.70	0.83666	1.65	86	157
20	0.77	0.877496	1.80	87	158
21	0.65	0.806226			
22	0.73	0.8544			
23	0.93	0.964365			
24	1.00	1			
AVERAGE	0.8775	0.918843	2.03	85.85	159.4

URS

TEST LAB DATA SHEET

PROJECT:	Haverhill Unit #2 Compliance	PROJECT NO.:	39400329.52000
SOURCE:	PCM	TEST DATE:	4/17/2009
TRAIN I.D.	M5-3	TEST NO.:	3
COLLECTED BY:	TJB	CHKD BY:	MSM

CONDENSATION

IMPINGER NO.	INITIAL VOL.,ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	733.0	739.2	6.2
2	693.0	695.8	2.8
3	617.6	619.0	1.4
4	917.2	934.4	17.2
5			0.0
6			0.0
7			0.0
TOTAL	2960.8	2988.4	27.6

PARTICULATE

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g
PROBE WASH	12.7550	12.7616	0.0066
REAGENT BLANK	12.6160	12.6161	0.0001
CORRECTED PROBE WASH *			0.0065
FILTER # 1 09-051	0.3546	0.3666	0.0120

* subtract reagent blank from probe wash

TOTAL PARTICULATED COLLECTED

PARTICULATE COLLECTED (excluding impinger catch)	0.0185
PARTICULATE COLLECTED (including impinger catch)	

QA PROBE WASH (as required)

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g

COMMENTS:

Project: Haverhill
Project No: 39400492
Source: PCM
Run No.: 3

Stack Sampling Calculations

Volume of Water Collected

Vwstd = (Vl0)(0.04707)

Vwstd = 1.30 cubic feet

Volume of Gas Metered, Standard Conditions

Vmstd = ((17.64) (Vm)(Pb + DeltaH/13.6)(gamma))/Tm

Vmstd = 97.179 cubic feet

Moisture Content

Bwo = Vwstd/(Vmstd + Vwstd)

Bwo = 0.01

Molecular Weight of the Dry Gas Stream

Md = (.44)(%CO2) + (.32)(%O2) + (.28)(%CO +%N2)

Md = 28.8

Molecular Weight of Stack Gas

Ms = (Md(1-Bwo) + 18(bwo)

Ms = 28.7

Velocity of Stack Gas

Vs = 174 Cp (DeltaP sq.rt.)((Ts+459.6) X 29.92 X 28.96/Ps/Ms)^.5

Vs = 3,330.2 ft/min

Total Flow of Stack Gas

Qa = As X Vs

Qa = 52,964.32 ACFM

Qs = Qa X 528/Ts X Ps/29.92

Qs = 44,673.68 SCFM

Qstd = Qs(1 - Bwo)

Qstd = 44,084.34 DSCFM

Vsstd = Qstd/As Sampling Traverse

Vsstd = 2771.85 ft/min 2779.45

Percent Isokinetic

Is = Vmstd/(An X Time X Vsstd)

Is = 0.93

Particulate Concentration

Cs = (15.43)(Mn)/Vmstd

Cs = 0.0029

Particulate Mass Rate

Pmr = (Mn)(Qstd)(60)/(Vmstd)(453.6)

Pmr = 1.11

Project: Haverhill Unit 2 Compliance Test
Project No: 39400492
Source: PCM

PM Mass Emission Rate Adjustment for Production

$E_p = (C \times Q \times T) / (P \times K)$

E_p = Process weighted mass emissions of PM, lb/ton.
C = Concentration of particulate matter of PM, gr/dscf.
Q = Volumetric flow rate of stack gas, dscf/hr.
T = Total time during a run that a sample is withdrawn from the stack during charging, hr.
K = Conversion factor, 7,000 gr/lb.
P = Total amount of dry coal charged during the test run, tons.

Run #	C	Q	T	P	E_p
1	0.00227	2,744,587	2.82	1,018.3	0.0025
2	0.00215	2,851,750	1.75	603.7	0.0025
3	0.00294	2,645,060	2.20	826.9	0.0030

PM Mass Emission Rate During Charging (lbs/hr)

PMR = (P / T) x Z

PMR = Time weighted mass emissions of PM, lb/hr.
P = Total amount of dry coal charged, tons.
T = Total time of charging operations, hr.
Z = Particulate mass rate, lb/ton process weighted.

Run #	P	T	Z	PMR
1	1018.3	14:25 - 20:37 6.2	0.00246	0.40473
2	603.7	15:49 - 18:37 2.8	0.00253	0.54636
3	826.9	15:26 - 20:02 4.6	0.00295	0.53085

PCM
VE Data

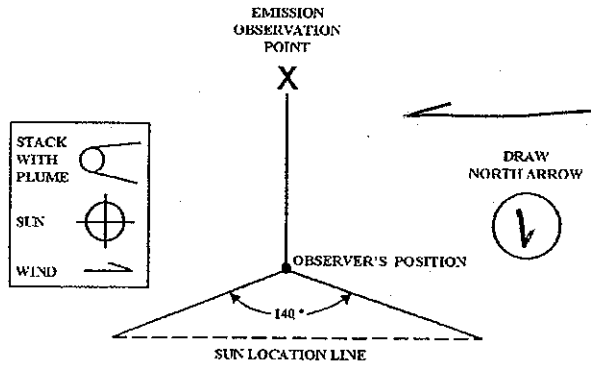
VISIBLE EMISSION OBSERVATION FORM Run #1

Company Name	HNCC
Location	PCM stack
City	Franklin Furnace
State	OH
Zip	
Process Equipment	
Operating Mode	Normal
Control Equipment	
Operating Mode	Normal
Describe Emission Point	54" Steel Stack
Height of Emission Point	30'
Height Relative to Observer	Start 24' End Same
Distance to Emission Point	Start 150' End Same
Direction to Emission Point	Start SW End SW
Vertical Angle to Observation Pt.	Start 20° End Same
Direction to Observation Point	Start SW End SW
Describe Emissions	Start Black Smoke End Same
Emission Color	Start Black End Same
If Water Droplet Plume (Circle)	Attached Detached (N/A)
Point In The Plume At Which Opacity Was Determined	Start 10' after stack End Same
Describe Plume Background	Start white overcast sky End Same
Background Color	Start White End Same
Sky Condition	Start Overcast End Same
Wind Speed	Start 0-5 End Same
Wind Direction	Start West End NW
Ambient Temp	Start End
Wet Bulb Temp	
RH Percent	

Observation Date	Start Time	End Time
4-15-09	1425	1607

Min \ Sec	0	15	30	45	Comments
1	0	0	0	0	Door open 1425
2	0	0	0	0	oven # 104
3	0	0	0	0	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	
7	0				Door closed 1431
8					
9	0	0	0	0	Door open 1440
10	0	0	0	0	oven # 108
11	0	0	0	0	
12	0	0	0	0	
13	0	0	0	0	
14	0	0	0	0	
15	0	0			Door closed 1446
16					
17	0	0	0	0	Door open 1539
18	0	0	0	0	oven # 112
19	0	0	0	0	
20	0	0	0	0	
21	0	0	0	0	
22	0	0	0	0	
23	0	0			Door closed 1545
24					
25	0	0	0	0	Door open 1449
26	0	0	0	0	oven # 116
27	0	0	0	0	
28	0	0	0	0	
29	0	0	0	0	
30	0	0	0	0	Door closed 1555

SOURCE LAYOUT SKETCH



Observer's Name (Print)	Robert Raymond
Observer's Signature	
Date	4-15-09
Organization	URS
Certified by	Carl Roontz
Date	4-6-09

Additional Information

Continue on reverse side

stack

PCM Run 1 4-15-09 (cont.)

Min \ Sec	0	15	30	45	Comments	
31					Door open	1600
32					Oven # 120	
33						
34						
35						
36						
37					Door closed	1607
38						
39						
40						
41						
42						
43						
44						
45						
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50						
51						
52						
53						
54						
55						
56						
57						
58						
59						
60						

Additional Information

VISIBLE EMISSION OBSERVATION FORM

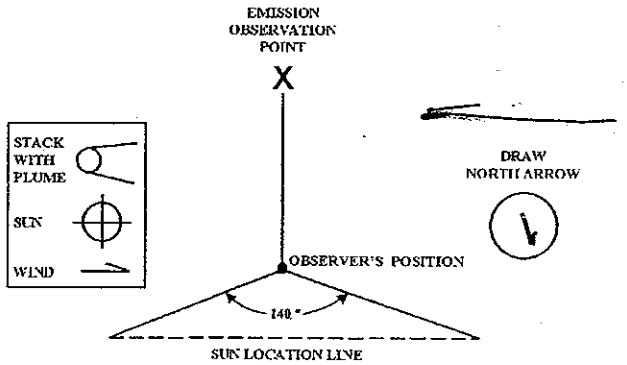
Run # 1

Company Name	HNCC
Location	PCM (Coke Oven Doors)
City	Franklin Furnace
State	OH
Zip	
Process Equipment	
Operating Mode	Normal
Control Equipment	
Operating Mode	Normal
Describe Emission Point	Coke Oven Doors
Height of Emission Point	12'
Height Relative to Observer	Start 6' End Same
Distance to Emission Point	Start 150' End Same
Direction to Emission Point	Start SW End SW
Vertical Angle to Observation Pt.	Start 20° End Same
Direction to Observation Point	Start SW End SW
Describe Emissions	Start Black Smoke End Same
Emission Color	Start Black End Same
If Water Droplet Plume (Circle)	Attached Detached (N/A)
Point In The Plume At Which Opacity Was Determined	Start 5' above Oven Doors End Same
Describe Plume Background	Start White Sky overcast End Same
Background Color	Start White End
Sky Condition	Start Overcast End Same
Wind Speed	Start 0-5 End 0-5
Wind Direction	Start West End NW
Ambient Temp	Start End
Wet Bulb Temp	
RH Percent	

Observation Date	Start Time	End Time
4-15-09	1425	1607

Min \ Sec	0	15	30	45	Comments
1	0	0	0	0	Door open 1425
2	0	0	0	0	Oven # 104
3	0	0	0	0	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	
7	10				Door closed 1431
8					
9	0	0	0	0	Door open 1440
10	0	0	0	0	Oven # 108
11	0	0	0	0	
12	10	0	0	0	
13	0	0	0	5	
14	0	0	0	0	
15	10	0			Door closed 1446
16					
17	0	0	0	0	Door open 1539
18	0	0	0	0	Oven # 112
19	0	0	0	5	
20	5	0	5	5	
21	0	0	0	0	
22	0	0	0	0	
23	10	0			Door closed 1545
24					
25	0	0	0	0	Door open
26	0	0	0	0	Oven # 116
27	10	10	5	5	
28	5	0	0	0	
29	0	0	0	5	
30	5	10	5	0	Door closed 1555

SOURCE LAYOUT SKETCH



Observer's Name (Print)	Robert Raymond
Observer's Signature	[signature]
Date	4-15-09
Organization	URS
Certified by	Carl Koontz
Date	4-16-09

Additional Information

Continue on reverse side

Coke Oven Doors

PCM Run 1 4-15-09 (cont)

Min \ Sec	0	15	30	45	Comments
31	0	0	0	0	Door Open 1600
32	0	0	0	5	Oven # 120
33	5	0	0	0	
34	0	0	0	0	
35	0	0	0	0	
36	5	5	0	5	Door closed
37					1607
38					
39					
40					
41					
42					
43					
44					
45					
46					
47					
48					
49					
50					
51					
52					
53					
54					
55					
56					
57					
58					
59					
60					

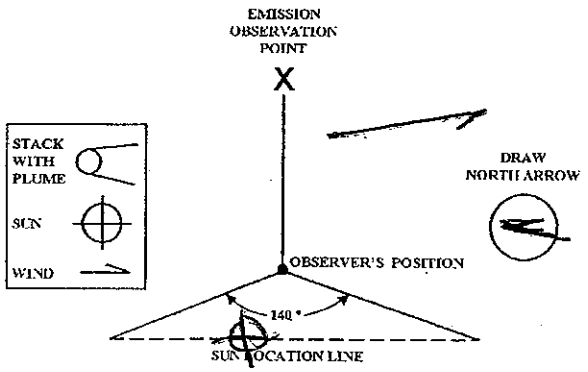
Additional Information

VISIBLE EMISSION OBSERVATION FORM

Run # 2

Company Name	HNCC
Location	PCM stack
City	Franklin Furnace
State	OH
Zip	
Process Equipment	
Operating Mode	Normal
Control Equipment	
Operating Mode	Normal
Describe Emission Point	54" steel stack
Height of Emission Point	30'
Height Relative to Observer	Start 24' End Same
Distance to Emission Point	Start 250' End Same
Direction to Emission Point	Start SE End SE
Vertical Angle to Observation Pt.	Start 20° End Same
Direction to Observation Point	Start SE End SE
Describe Emissions	Start Black smoke End same
Emission Color	Start Black End Same
If Water Droplet Plume (Circle)	Attached Detached N/A
Point In The Plume At Which Opacity Was Determined	Start 10' above stack End Same
Describe Plume Background	Start Blue sky End Same
Background Color	Start Blue End Same
Sky Condition	Start mostly sunny End Same
Wind Speed	Start ~~5-10 mph~~ 0-3 End Same
Wind Direction	Start NW End NW
Ambient Temp	Start End
Wet Bulb Temp	
RH Percent	

SOURCE LAYOUT SKETCH



Additional Information

Observation Date	Start Time	End Time
4-16-09	1621	1731

Min \ Sec	0	15	30	45	Comments
1	0	0	0	0	Door open 1621
2	0	0	0	0	oven #115
3	0	0	0	0	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	
7	0				Door closed 1627
8					
9	0	0	0	0	Door open 1655
10	0	0	0	0	oven # 123
11	0	0	0	0	
12	0	0	0	0	
13	0	0	0	0	
14	0	5	0	0	
15	0	0			Door closed 1701
16					
17	0	0	0	0	Door open 1705
18	0	0	0	0	oven # 127
19	0	0	0	0	
20	0	0	0	0	
21	0	0	0	0	
22	0	0	0	0	
23	0	0	0		Door closed 1711
24					
25	0	0	0	0	Door open 1715
26	0	0	0	0	oven # 131
27	0	0	0	0	
28	0	0	0	0	
29	0	0	0	0	
30	0	0	0	0	

Observer's Name (Print)	Robert Raymond
Observer's Signature	[signature]
Date	4-16-09
Organization	URS
Certified by	Carl Koontz
Date	4-6-09

Continue on reverse side

PCM Stack Run 2 4-16-09 (cont.)

Sec / Min	0	15	30	45	Comments
31	O				Door closed 1721
32					
33	O	O	O	O	Door open 1725
34	O	O	O	O	Oven# 135
35	O	O	O	O	
36	O	O	O	O	
37	O	O	O	O	
38	O	O	O	O	
39	O	O	O		Door closed 1731
40					
41					
42					
43					
44					
45					
46					
47					
48					
49					
50					
51					
52					
53					
54					
55					
56					
57					
58					
59					
60					

Additional Information

VISIBLE EMISSION OBSERVATION FORM

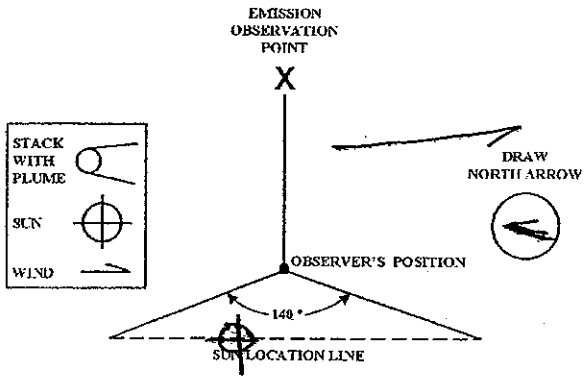
Run # 2

Company Name	HNCC
Location	Fugitives (Coke oven Doors)
City	Franklin Furnace
State	OH
Zip	
Process Equipment	
Operating Mode	Normal
Control Equipment	
Operating Mode	Normal
Describe Emission Point	Coke oven Doors
Height of Emission Point	12'
Height Relative to Observer	Start 6' End Same
Distance to Emission Point	Start 250' End Same
Direction to Emission Point	Start SE End SE
Vertical Angle to Observation Pt.	Start 20° End Same
Direction to Observation Point	Start SE End SE
Describe Emissions	Start Black Smoke End Same
Emission Color	Start Black End Same
If Water Droplet Plume (Circle)	Attached Detached (N/A)
Point In The Plume At Which Opacity Was Determined	Start 10' above oven Doors End Same
Describe Plume Background	Start Silver Vent stack white oven tops End Same
Background Color	Start Silver white End Same
Sky Condition	Start Mostly Sunny End Same
Wind Speed	Start 0-3 ~~Silver~~ white End Same
Wind Direction	Start NW End NW
Ambient Temp	Start End
Wet Bulb Temp	
RH Percent	

Observation Date	Start Time	End Time
4-16-09	1621	1731

Min \ Sec	0	15	30	45	Comments
1	0	0	0	0	Door Open 1621
2	0	0	0	0	Oven # 115
3	0	0	10	5	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	0	10	
7	0				Door closed 1627
8					
9	0	0	0	0	Door open 1655
10	0	0	0	0	Oven # 123
11	0	0	5	10	
12	5	0	0	0	
13	5	5	10	5	
14	5	5	0	15	
15	0	0			Door closed 1701
16					
17	0	0	0	0	Door open 1705
18	0	0	0	0	Oven # 127
19	0	0	5	0	
20	5	0	0	0	
21	0	0	0	10	
22	0	0	0	10	
23	10	0	0		Door closed 1711
24					
25	0	0	0	0	Door open 1715
26	0	0	0	0	Oven # 131
27	0	5	10	5	
28	5	0	0	0	
29	0	0	0	0	
30	0	5	0	10	

SOURCE LAYOUT SKETCH



Observer's Name (Print)	Robert Raymond
Observer's Signature	
Date	4-16-09
Organization	ARS
Certified by	Carl Koontz
Date	4-6-09

Additional Information

Continue on reverse side

PCM ovens Run 2 4-16-09 (cont.)

Min \ Sec	0	15	30	45	Comments
31	0				Door closed 1721
32					
33	0	0	0	0	Door open
34	0	5	0	0	oven # 135
35	0	0	0	5	
36	10	5	0	0	
37	0	0	0	0	
38	0	0	0	0	
39	10	10	0		1731 Door
40					closed
41					
42					
43					
44					
45					
46					
47					
48					
49					
50					
51					
52					
53					
54					
55					
56					
57					
58					
59					
60					

Additional Information

VISIBLE EMISSION OBSERVATION FORM

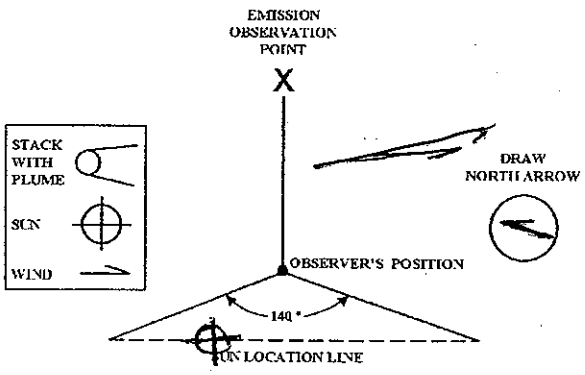
Run # 3

Company Name	HNCC
Location	PCM Stack
City	Franklin Furnace
State	OH
Zip	
Process Equipment	
Operating Mode	Normal
Control Equipment	
Operating Mode	Norm
Describe Emission Point	54" steel stack
Height of Emission Point	30'
Height Relative to Observer	Start 24' End Same
Distance to Emission Point	Start 200' End Same
Direction to Emission Point	Start SE End Same
Vertical Angle to Observation Pt.	Start 20° End Same
Direction to Observation Point	Start SE End Same
Describe Emissions	Start Black Smoke End Same
Emission Color	Start Black End Same
If Water Droplet Plume (Circle)	Attached Detached N/A
Point In The Plume At Which Opacity Was Determined	Start 10' above stack End Same
Describe Plume Background	Start Clear blue sky End Same
Background Color	Start Blue End Same
Sky Condition	Start Sunny Clear End Same
Wind Speed	Start 0-3 End Same
Wind Direction	Start NNW End NW
Ambient Temp	Start End
Wet Bulb Temp	
RH Percent	

Observation Date	Start Time	End Time
4-17-09	1807	1908

Min \ Sec	0	15	30	45	Comments
1	0	0	0	0	Door Open 1807
2	0	0	0	0	oven # 148
3	0	0	0	0	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	
7	0	0	0	0	Door closed 1814
8					
9	0	0	0	0	Door Open 1819
10	0	0	0	0	oven # 152
11	0	0	0	0	
12	0	0	0	0	
13	0	0	0	0	
14	5	0	0	0	
15	0	0	0	0	Door closed 1826
16					
17	0	0	0	0	Door open 1830
18	0	0	0	0	oven # 156
19	0	5	0	0	
20	0	0	0	0	
21	0	0	0	0	
22	0	0	0	0	
23	0				Door closed 1836
24					
25	0	0	0	0	Door Open 1843
26	0	0	0	0	oven # 160
27	0	0	0	0	
28	0	0	0	0	
29	0	0	0	0	
30	0	0	0	0	

SOURCE LAYOUT SKETCH



Observer's Name (Print)	Robert Raymond
Observer's Signature	
Date	4-17-09
Organization	URS
Certified by	Cark Koontz
Date	4-6-09

Additional Information

Continue on reverse side

PCM Stack Run 3 4-17-09 (cont)

Sec / Min	0	15	30	45	Comments
31	O	O	O		1849 Door closed
32					
33	O	O	O	O	Door open 1901
34	O	O	O	O	oven# 164
35	O	O	O	O	
36	O	O	O	O	
37	O	O	O	O	
38	O	O	O	O	
39	O	O	O	O	
40	O	O	O		1908 Door closed
41					
42					
43					
44					
45					
46					
47					
48					
49					
50					
51					
52					
53					
54					
55					
56					
57					
58					
59					
60					

Additional Information

VISIBLE EMISSION OBSERVATION FORM

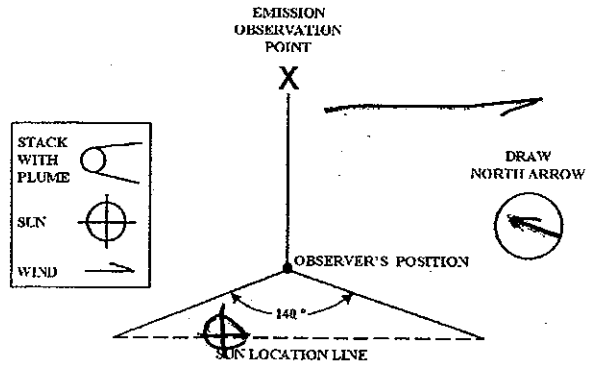
Run # 3

Company Name	HNCC
Location	Fugitives (Coke Oven Doors)
City	Franklin Furnace
State	OH
Zip	
Process Equipment	
Operating Mode	Normal
Control Equipment	
Operating Mode	Normal
Describe Emission Point	Coke Oven Doors
Height of Emission Point	12'
Height Relative to Observer	Start 6' End Same
Distance to Emission Point	Start 200' End Same
Direction to Emission Point	Start ESE End SE
Vertical Angle to Observation Pt.	Start 20° End 20°
Direction to Observation Point	Start ESE End SE
Describe Emissions	Start Black Smoke End Same
Emission Color	Start Black End Same
If Water Droplet Plume (Circle)	Attached Detached (N/A)
Point In The Plume At Which Opacity Was Determined	Start 10' above Oven Doors End Same
Describe Plume Background	Start Blue Sky End White oven tops, Silver vent stack
Background Color	Start Blue End Silver white
Sky Condition	Start Clear Sunny End Same
Wind Speed	Start 0-3 End Same
Wind Direction	Start NNW End NW
Ambient Temp	Start End
Wet Bulb Temp	
RH Percent	

Observation Date	Start Time	End Time
4-17-09	1807	1908

Min \ Sec	0	15	30	45	Comments
1	0	0	0	0	Door Open 1807
2	0	0	0	0	oven # 148
3	0	0	10	5	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	
7	10	5	0	0	Door closed 1814
8					
9	0	0	0	0	Door open 1819
10	0	5	5	0	oven # 152
11	0	0	0	0	
12	0	0	5	5	
13	5	0	0	0	
14	0	5	0	0	
15	0	0	0	15	Door closed 1826
16					
17	0	0	0	0	Door open 1830
18	0	0	0	0	oven # 156
19	0	0	0	0	
20	0	0	0	0	
21	0	0	0	0	
22	0	5	0	15	
23	5				Door closed 1836
24					
25	0	0	0	0	Door open 1843
26	0	0	0	5	oven # 160
27	0	0	0	5	
28	5	0	0	0	
29	0	0	0	0	
30	0	0	0	0	

SOURCE LAYOUT SKETCH



Observer's Name (Print)	Robert Raymond
Observer's Signature	[signature]
Date	4-17-09
Organization	URS
Certified by	Carl Koontz
Date	4-6-09

Additional Information

Continue on reverse side

PCM ovens Run 3 4-17-09 (cont.)

Min \ Sec	0	15	30	45	Comments
31	10	5	0		Door closed 1849
32					
33	0	0	0	5	Door open 1701
34	5	0	0	0	
35	0	0	10	25	
36	0	5	0	0	
37	0	0	0	0	
38	0	0	0	0	
39	0	0	0	0	
40	5	15	0		Door closed 1908
41					
42					
43					
44					
45					
46					
47					
48					
49					
50					
51					
52					
53					
54					
55					
56					
57					
58					
59					
60					

Additional Information

Appendix D

Hot Car
M5/12 TEST DATA

URS

SUMMARY OF RESULTS	
Project Name:	Haverhill Compliance Test
Project Number:	39400492.520001
Site Location:	Unit #2
Test Location:	Hot Car
Test Trains:	PM, Lead, NO_x, SO_2, CO, THC

Parameters	Run # 1	Run # 2	Run # 3	Avgerage
Run Times	14:26 - 20:37	15:48 - 18:37	15:27 - 20:04	
Date	4/15/2009	4/16/2009	4/17/2009	
Sample Time (minutes)	151	70	105.7	
Duration of Test Run (minutes)	371	169	277	272
Target Production Rate (wet tons coal charged / oven)	45	45	45	45
Production for Unit 2 (total tons of wet coke pushed during test run)	750.4	464.1	630.0	614.8
Production for Unit 2 (total tons of dry coal charged during test run)	1072.0	663.0	900.0	878.3
Average Charging Rate (wet tons coal/hr)	173.4	235.4	194.9	201.2
Vol. Sampled @ STP (ft3)	85.866	34.939	63.916	61.574
Moisture Content (% Vol.)	2.1	2.3	2.0	2.2
O2 (%)	19.7	19.3	18.8	19.2
CO2 (%)	2.1	1.9	2.3	2.1
Stack Gas Temperature (°F)	382	396	442	407
Stack Velocity (ft/min.)	3,888	3,822	3,566	3,759
Gas Flow Rate (ACFM)	46,849	46,045	42,969	45,288
Gas Flow Rate (SCFM)	28,868	28,226	24,533	27,209
Gas Flow Rate (DSCFM)	28,261	27,576	24,042	26,626
Percent Isokinetic	101.8	101.8	95.5	99.7
Particulate Conc. (Grains/DSCF)	0.059	0.071	0.053	0.061
Particulate Mass Rate (lb/hr)[A]	5.81	6.97	4.17	5.65
Particulate Mass Rate (lb/ton coke pushed, time & process weighted)	0.0478	0.0424	0.0306	0.0403
VE - Oven Door (% opacity) - Readings taken on 5 ovens	0.47	2.14	0.82	1.14
VE - Hot Car Stack (% opacity) - Readings taken on 5 ovens	1.87	1.70	1.02	1.53
Lead (gr/dscf)	3.50E-05	5.79E-05	6.13E-05	5.14E-05
Lead Mass Rate (lb/ton wet coal charged, time & process weighted)	0.0035	0.0057	0.0048	0.0046
CO (ppm)	82.000	67.120	78.590	75.903
CO (lb/hr)[A]	4.14	3.32	3.14	3.54
CO Mass Rate (lb/ton wet coal charged, time & process weighted)	0.024	0.014	0.016	0.018
SO_2 (ppm)	110.10	84.41	71.47	88.66
SO_2 (lb/hr)[A]	12.63	9.58	6.52	9.58
SO_2 Mass Rate (lb/ton wet coal charged, time & process weighted)	0.07	0.04	0.03	0.05
NO_x (ppm)	7.20	6.58	9.45	7.74
NO_x (lb/hr)[A]	0.59	0.59	0.63	0.60
NO_x Mass Rate (lb/ton wet coal charged, time & process weighted)	0.003	0.002	0.003	0.003
THC (ppm)	1.28	1.50	2.13	1.64
THC (lb/hr)[A]	0.099	0.098	0.157	0.118
THC Mass Rate (lb/ton wet coal charged, time & process weighted)	0.0006	0.0004	0.0008	0.0006

[A] Average emission rate over test = (lb/ton) x Avg Charge Rate

Project:	Haverhill
Project No.:	39400492
Source:	Hot Car
Test Date:	4/15/2009
Test I.D.	M5/M12

Parameters	Run # 1	Run # 2	Run # 3	Average
Sample Time	151	70	105.7	108.9
Vol. Sampled @ STP (ft3)	85.866	34.939	63.916	61.574
Moisture Content (% Vol.)	2.1	2.3	2.0	2.2
O2 (%)	19.7	19.3	18.8	19.2
CO2 (%)	2.1	1.9	2.3	2.1
Stack Gas Temperature (°F)	382	396	442	407
Stack Velocity (ft/min.)	3,158	2,800	3,864	3,274
Gas Flow Rate (ACFM)	38,051	33,738	46,560	39,450
Gas Flow Rate (SCFM)	23,435	20,600	26,526	23,520
Gas Flow Rate (DSCFM)	22,934	20,120	25,997	23,017
Percent Isokinetic	101.8	101.8	95.5	99.7
Particulate Conc. (Grains/DSCF)	0.0589	0.0713	0.0530	0.0611
Particulate Conc. (MG/DSCM)	134.7139	163.2103	121.3694	139.7645

PM Mass Emission Rate Based on Initial Traverse				
Parameters	Run # 1	Run # 2	Run # 3	Average
Stack Velocity (ft/min.)	3,888	3,822	3,566	3,759
Gas Flow Rate (ACFM)	46,849	46,045	42,969	45,288
Gas Flow Rate (SCFM)	28,868	28,226	24,533	27,209
Gas Flow Rate (DSCFM)	28,261	27,576	24,042	26,626

DeltaP's in the input sheet are from the single point sampling sheet.

Project: Haverhill Unit 2 Compliance
Project No.: 39400492.520001

Lead Mass Emission Calculations
Unit 2 Hot Car

INPUT PARAMETERS

Lead	Total ug	grams/sample	gr/dscf	Vmstd	Qstd	Mass Rate (lbs/hr)
Run 1	195	0.0001950	3.50E-05	85.866	28,261	0.0084895
Run 2	131	0.0001310	5.79E-05	34.939	27,576	0.0057032
Run 3	254	0.0002540	6.13E-05	63.916	24,042	0.0110581
Average	1.93E+02	1.93E-04	5.14E-05	6.16E+01	2.66E+04	8.42E-03

Metals Mass Rate (lb/hr)

Mmr= (Mn)(Qstd)(60)/(Vmstd)(453.6)

Mn= grams/sample
Qstd= stack gas flow rate (dscfm)
Vmstd= volume of air sample (@ stp)

Haverhill Unit 2 Compliance Test - Hot Car

Emission Rate Adjustment Formula: $E_p = (C \times Q \times T) / (P \times K)$

E_p = Process weighted mass emissions, lb/ton.
C = Concentration, gr/dscf.
Q = Volumetric flow rate of stack gas, dscf/hr.
T = Total time during a run that a sample is withdrawn from the stack during pushing, hr.
K = Conversion factor, 7,000 gr/lb.
P = Total amount of coke pushed during the test run, tons.

PMR = (P / T) x Z

PMR = Time weighted mass emissions of PM, lb/hr.
P = Total amount of wet coal charged (or wet coke pushed), tons.
T = Total time of charging operations, hr.
Z = Mass rate, lb/ton process weighted.

PM Mass Emission Rate Adjustment for Production

Run #	C	Q	T	P	E_p
1	0.059	1,695,660	2.52	750.4	0.0478
2	0.071	1,654,560	1.17	464.1	0.0424
3	0.053	1,442,520	1.76	630.0	0.0306

PM Mass Emission Rate During Charging (lbs/hr)

Run #	P	T	Z	PMR
1	750.4	14:26 - 20:37 6.18	0.04783	5.80721
2	464.1	15:48 - 18:37 2.82	0.04238	6.9744
3	630	15:27 - 20:04 4.62	0.03056	4.16766

Lead Mass Emission Rate Adjustment for Production

Run #	C	Q	T	P	E_p
1	3.50E-05	1,695,660	2.52	1,072.0	0.0000199
2	5.79E-05	1,654,560	1.17	663.0	0.0000241
3	6.13E-05	1,442,520	1.76	900.0	0.0000247

Lead Mass Emission Rate During Charging (lbs/hr)

Run #	P	T	Z	PMR
1	1072	14:26 - 20:37 6.18	2E-05	0.00346
2	663	15:48 - 18:37 2.82	2.4E-05	0.00566
3	900	15:27 - 20:04 4.62	2.5E-05	0.00482

URS

Gaseous Mass Emission Calculations

Project Nam Haverhill Unit 2 Compliance Test - Hot Car
Project No.:
Test Date: 4/15-17/09

Test I.D.	NOx Conc. (ppm)	CO Conc. (ppm)	SO_2 Conc. (ppm)	O_2 Conc. (%)	CO_2 Conc. (%)	THC (ppm)	Flow Rate (dscfm)	NOx Mass Rate (lb/hr)	NOx Conc. (gr/dscf)	CO Mass Rate (lb/hr)	CO Conc. (gr/dscf)	SO2 Rate (lb/hr)	SO2 Conc. (gr/dscf)	THC Mass Rate (lb/hr)	THC Conc. (gr/dscf)
1	7.20	82.00	110.10	19.27	1.98	1.28	28261	1.459	0.006	10.116	0.042	31.064	0.128	0.250	0.001
2	6.58	67.12	84.41	19.40	1.93	1.50	27576	1.301	0.006	8.080	0.034	23.238	0.098	0.286	0.001
3	9.45	78.59	71.47	18.85	2.17	2.13	24042	1.629	0.008	8.248	0.040	17.154	0.083	0.354	0.002

Mass Rate (lb/hr)

MR= (ppm)(mw constant)(Qstd)(60)

Mn= grams/sample
Qstd= stack gas flow rate (dscfm)
mw constant for NOx - 1.1949×10^{-7}
mw constant for CO - 7.2753×10^{-8}
mw constant for SO2 - 1.6639×10^{-7}
mw constant for O2 - 8.3114×10^{-8}
mw constant for CO2 - 1.1431×10^{-7}
mw constant for THC (as propane) - 1.1453×10^{-7}

Concentration (gr/dscf)

Conc. = ((lb/hr)/60)/dscfm)*7000

Haverhill Unit 2 Compliance Test - Hot Car

Emission Rate Adjustment Formula: $E_p = (C \times Q \times T) / (P \times K)$

E_p = Process weighted mass emissions, lb/ton.
C = Concentration of pollutant, gr/dscf.
Q = Volumetric flow rate of stack gas, dscf/hr.
T = Total time during a run that a sample is withdrawn from the stack during pushing, hr.
K = Conversion factor, 7,000 gr/lb.
P = Total amount of wet coal charged during the test run, tons.

CO Mass Emission Rate Adjustment for Production

Run #	C	Q	T	P	E_p
1	0.042	1,695,660	2.52	1,072.0	0.024
2	0.034	1,654,560	1.17	663.0	0.014
3	0.040	1,442,520	1.76	900.0	0.016

CO Mass Emission Rate During Charging (lbs/hr)

PMR = (P / T) x Z

PMR = Time weighted mass emissions, lb/hr.
P = Total amount of wet coal charged, tons.
T = Total time of charging operations, hr.
Z = Mass rate, lb/ton process weighted.

Run #	P	T	Z	PMR
1	1072	14:26 - 20:37 6.18	0.024	4.14
2	663	15:48 - 18:37 2.82	0.014	3.32
3	900	15:27 - 20:04 4.62	0.016	3.14

Haverhill Unit 2 Compliance Test - Hot Car

Emission Rate Adjustment Formula: $E_p = (C \times Q \times T) / (P \times K)$

E_p = Process weighted mass emissions, lb/ton.
C = Concentration of pollutant, gr/dscf.
Q = Volumetric flow rate of stack gas, dscf/hr.
T = Total time during a run that a sample is withdrawn from the stack during pushing, hr.
K = Conversion factor, 7,000 gr/lb.
P = Total amount of wet coal charged during the test run, tons.

NO_x Mass Emission Rate Adjustment for Production

Run #	C	Q	T	P	E_p
1	0.006	1,695,660	2.52	1,072.0	0.003
2	0.006	1,654,560	1.17	663.0	0.002
3	0.008	1,442,520	1.76	900.0	0.003

NO_x Mass Emission Rate During Charging (lbs/hr)

PMR = (P / T) x Z

PMR = Time weighted mass emissions, lb/hr.
P = Total amount of wet coal charged, tons.
T = Total time of charging operations, hr.
Z = Mass rate, lb/ton process weighted.

Run #	P	T	Z	PMR
1	1072	14:26 - 20:37 6.18	0.003	0.59
2	663	15:48 - 18:37 2.82	0.002	0.59
3	900	15:27 - 20:04 4.62	0.003	0.63

Haverhill Unit 2 Compliance Test - Hot Car

Emission Rate Adjustment Formula: $E_p = (C \times Q \times T) / (P \times K)$

E_p = Process weighted mass emissions, lb/ton.
C = Concentration of pollutant, gr/dscf.
Q = Volumetric flow rate of stack gas, dscf/hr.
T = Total time during a run that a sample is withdrawn from the stack during pushing, hr.
K = Conversion factor, 7,000 gr/lb.
P = Total amount of wet coal charged during the test run, tons.

SO_2 Mass Emission Rate Adjustment for Production

Run #	C	Q	T	P	E_p
1	0.128	1,695,660	2.52	1,072.0	0.073
2	0.098	1,654,560	1.17	663.0	0.041
3	0.083	1,442,520	1.76	900.0	0.033

SO_2 Mass Emission Rate During Charging (lbs/hr)

PMR = (P / T) x Z

PMR = Time weighted mass emissions, lb/hr.
P = Total amount of wet coal charged, tons.
T = Total time of charging operations, hr.
Z = Mass rate, lb/ton process weighted.

Run #	P	T	Z	PMR
1	1072	14:26 - 20:37 6.18	0.073	12.63
2	663	15:48 - 18:37 2.82	0.041	9.58
3	900	15:27 - 20:04 4.62	0.033	6.52

Haverhill Unit 2 Compliance Test - Hot Car

Emission Rate Adjustment Formula: $E_p = (C \times Q \times T) / (P \times K)$

E_p = Process weighted mass emissions, lb/ton.
C = Concentration of pollutant, gr/dscf.
Q = Volumetric flow rate of stack gas, dscf/hr.
T = Total time during a run that a sample is withdrawn from the stack during pushing, hr.
K = Conversion factor, 7,000 gr/lb.
P = Total amount of wet coal charged during the test run, tons.

THC Mass Emission Rate Adjustment for Production

Run #	C	Q	T	P	E_p
1	0.001	1,695,660	2.52	1,072.0	0.001
2	0.001	1,654,560	1.17	663.0	0.000
3	0.002	1,442,520	1.76	900.0	0.001

THC Mass Emission Rate During Charging (lbs/hr)

PMR = (P / T) x Z

PMR = Time weighted mass emissions, lb/hr.
P = Total amount of wet coal charged, tons.
T = Total time of charging operations, hr.
Z = Mass rate, lb/ton process weighted.

Run #	P	T	Z	PMR
1	1072	14:26 - 20:37 6.18	0.0006	0.099
2	663	15:48 - 18:37 2.82	0.0004	0.098
3	900	15:27 - 20:04 4.62	0.0008	0.157

URS

PARTICULATE TEST LAB DATA SHEET

PROJECT: HNCC
SOURCE: Unit 2 Hot Car
Analyst: Mike Mowery
Balance: URS-2 Citizen

JOB NO.: 39400492
TRAIN I.D.: M5/M12
Date: 1st Final: 5/14/2009
2nd Final: 5/15/2009

Calibration: 100 mg = 0.1 1 g = 0.9999 20 g = 20.0000

Filter Weights

Filter I.D.	Initial Weight		Final Weight		Weight Gain
	1st	2nd	1st	2nd	
09-048 M5 - Run 1	0.3536	0.3535	0.5479	0.5476	0.1941
09-049 M5 - Run 2	0.3517	0.3518	0.4858	0.4857	0.1339
09-061 M5 - Run 3	0.3515	0.3516	0.4914	0.4914	0.1398

Probe Wash Weights

Sample I.D.	Initial Pre-Weight		Final Weight		Weight Gain
	1st	2nd	1st	2nd	
BR-10 Run 1	12.7477	12.7475	12.8810	12.8811	0.1336
BR-11 Run 2	12.7510	12.7509	12.7790	12.7786	0.0277
BR-12 Run 3	12.2026	12.2026	12.2828	12.2826	0.0800
Br-13 Blank	12.2259	12.6160	12.6162	12.6161	0.0001

2nd weight results are used for final weight determination.

Sample Room Conditions during final weight determination:

Date	RH, %	Temp. (F)	Desicator RH, %
5/14/2009	40	70	0
5/15/2009	37	68	0

Hot Car
M5/12 Run 1

VELOCITY TRAVERSE DATA SHEET

URS

Project Name: HNCC Unit 2
Project No.: Hot Car
Date: 4-15-09 Prelim.

Test No.: Prelim. Run 1
Location: Hot Car stack
Personnel: MM TB

	Traverse Point	Velocity Pressure	Stack Temperature	Cyclonic Check
1	1	0.78		1°
Run 1 →	2	0.84		2°
	3	0.72		1°
	4	0.80		1.5°
	5	0.72		2.0°
	6	0.71		1.7°
	7	0.75		2.0°
	8	0.80		2.1°
	9	0.75		1.5°
	10	0.75		1.5°
	11	0.80		1.0°
	12	0.74		0°
2	13	0.88		0.5°
	14	1.10		0.5°
	15	1.10		1.0°
	16	0.95		0°
	17	0.80		1.2°
	18	1.0		2.3°
	19	0.95		2.0°
	20	0.97		1.5°
	21	1.0		1.0°
	22	1.1		1.0°
	23	1.0		0.2°
	24	1.0		0.8°
	Average	0.87		Avg = 1.22

Stack Dimensions: 47"Ø

Stack Area, As: _____ FT^2

Barometric Pressure, Pbar: _____ in. Hg

Static Pressure, Pst: -.63 in. H_2O

Stack Temperature, Ts: _____ °F

Stack Gas, O_2: _____ %

Stack Gas, CO_2: _____ %

Pitot Tube Coefficient, Cp: 0.816 ~~AQS~~ - 2030

Pitot Positive Leak Check: ✓ > 3.0 in H_2O

Pitot Negative Leak Check: ✓ > 3.0 in H_2O

Wet Bulb Temperature _____ °F

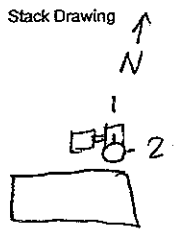
Dry Bulb Temperature _____ °F

Pitot Tube Type: S

Manometer Type: incline

Thermometer Type: _____

Stack Drawing



URS STACK TEST DATA SHEET Method used: M5/M12

Project:	HNCC Unit #2 Compliance Test	Barom. Psr.:	29.43	Stack Dia.:	47"Ø
Project No:	39400492.520001	Static Psr.:	-.63	Stack Area:	
Source:	Hot Car	Meter Box I.D.:	I	Port Length:	4"
Run No.:	1	Delta H @:	1.8317	Port Dia.:	3"
Date:	4-15-09	Gamma:	0.9441	Probe Liner:	SS
Operator:	MM TB	Pitot Coef.:	0.829 4.001	Filter No.:	09-048

	TRAVERSE POINT NUMBER	SAMPLING TIME start Clock	stop Sample	VELOCITY DELTA P	SAMPLE DELTA H	GAS SAMPLE VOLUME	DGM TEMP.	STACK TEMP.	PROBE TEMP.	FILTER BOX TEMP.	FILTER OUTLET TEMP.	LAST IMPINGER TEMP.	TRAIN VACUUM
104	1	2:26/2:32	5.28	0.60	1.20	307.080	56	248	248	244	156	35	1
108	2	2:41/	13.22	0.50	1.10	310.501	60	420	248	239	228	38	1
112	3	3:40/3:45	17.46	0.62	1.35	315.130	74	295	245	239	221	41	1
116	4	3:50/3:55	21.44	0.55	1.20	318.30	74	392	243	243	229	42	1
120	5	4:01/4:06	27.04	0.55	1.20	320.90	75	367	249	262	234	45	1
124	6	4:15/4:20	31.22	0.58	1.25	324.190	81	378	245	244	232	43	1
128	7	4:25/4:30	35.31	0.58	1.25	327.00	83	390	246	242	227	46	1
132	8	4:38/4:42	39.41	0.58	1.25	329.800	85	370	244	243	231	46	1
136	9	4:47/4:53	45.32	0.55	1.20	332.545	87	407	244	243	228	46	1
140	10	5:00/5:04	50.22	0.55	1.20	336.320	89	395	248	245	227	46	2
144	11	5:10/5:15	55.20	0.55	1.20	339.355	90	416	246	241	227	46	2
148	12	5:21/5:26	1:00.14	0.55	1.20	342.600	92	404	249	243	225	45	2
152	13	1734/1739	1:04:59	0.50	1.10	345.895	94	392	253	243	222	45	2
156	14	1746/1751	1:09:55	0.55	1.20	348.758	95	425	253	250	209	48	2
160	15	1758/1803	1:15:01	0.55	1.20	351.770	96	415	245	252	216	46	2
164	16	1824/1830	1:20:56	0.64	1.38	354.942	101	334	250	250	200	47	2
168	17	1837/1842	1:27:03	0.55	1.20	358.806	103	393	255	254	199	46	2
172	18	1850/1856	1:33:03	0.55	1.20	362.565	106	386	251	247	202	47	2
176	19	7:03/7:09	1:38:58	0.55	1.20	366.188	107	361	252	252	206	48	2
180	20	7:16/7:22	1:45.05	0.55	1.20	370.080	105	408	262	245	230	48	2
184	21	7:30/7:36	1:51.0	0.55	1.20	374.200	102	408	259	267	230	47	2
190	22	7:43/7:50	1:58.0	0.55	1.20	378.080	100	395	263	261	227	48	2
194	23	7:57/8:23	2:23.5	0.55	1.20	382.20	97	399	258	262	233	49	2
198	24	8:30/8:37	2:31	0.55	1.20	398.70	95	368	253	258	250	49	2
	~~25~~					403.050							
	AVERAGE		151			95.970							

LEAK CHECKS	
Pitot impact:	good
Pitot static:	good
Train initial:	0.0 @ 15"
Train Final:	0.0 @ 2"

NOZZLE MEASUREMENT	
I.D. No.:	M4
1	0.232
2	0.232
3	0.232
Avg.	0.232

STACK GAS ANALYSIS				
	CO2	O2		
1	2.03	19.69		
2				
3				
Avg.				

NOTES: Single point test @ point 2 of initial traverse

URS

TEST LAB DATA SHEET

PROJECT: **HNCC Unit #2 Compliance** JOB NO.: **39400329.520001**

SOURCE: Hot car DATE: 4/14/09

TRAIN I.D.: # M12-1 TEST NO.: # 1

COLLECTED BY: MM, TB CHKD. BY: CM + TB

CONDENSATION

IMPINGER NO.	INITIAL VOL., ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	702.5	725.2	22.7
2	681.0	682.5	1.5
3	614.7	615.1	0.4
4	884.1	899.4	15.3
5			
6			
7			
8			
9			
TOTAL	2882.3	2922.2	39.9

URS

VELOCITY TRAVERSE CALCULATION SHEET

Client:	HNCC
Project Number:	39400492
Source:	Hot Car Stack
Date:	4/15/2009
Velocity Test #:	Run 1

INPUT PARAMETERS

Barometric Pressure (Pb), in.Hg.	29.43 in, Hg
Avg. Percent CO2	2.1 %
Avg. Percent O2	19.7 %
Avg. Percent CO	0.0 %
Avg. Percent N2	78.2 %
Average Square Root of Delta P	0.9331 in. H_2O
Average Stack Temperature, (T_s)	382 (^oF)
Static Pressure	-0.63 in. H_2O
Stack Diameter	47.00 inches
Pressure in the stack, (P_s)	29.38 in Hg
Stack area, (A_s)	12.048 ft^2
Pitot Tube Coeffiecent , (C_p)	0.816
Average Percent Moisture, (B_{wo})	2.10%

Point No.	Delta P	Sq. Root Delta P	Stack Temp (F)
1	0.78	0.8832	248
2	0.84	0.9165	420
3	0.72	0.8485	295
4	0.80	0.8944	392
5	0.72	0.8485	367
6	0.71	0.8426	378
7	0.75	0.8660	390
8	0.80	0.8944	370
9	0.75	0.8660	407
10	0.75	0.8660	395
11	0.80	0.8944	416
12	0.74	0.8602	404
13	0.88	0.9381	392
14	1.10	1.0488	425
15	1.10	1.0488	415
16	0.95	0.9747	334
17	0.80	0.8944	393
16	1.00	1.0000	386
19	0.95	0.9747	361
20	0.97	0.9849	408
21	1.00	1.0000	408
22	1.10	1.0488	395
23	1.00	1.0000	399
24	1.00	1.0000	368
Average	**0.8754**	**0.9331**	**382**

VELOCITY CALCULATIONS

Molecular Weight of the Dry Gas Stream

Md = (.44)(%CO2) + (.32)(%O2) + (.28)(%CO +%N2)
Md = (0.44)*(2.10) + (0.32)*(19.70) + (0.28)*(78.20)
Md = 29.12 lb/lbmol

Molecular Weight of Stack Gas

Ms = (Md)(1-Bwo) + 18(Bwo)
Ms = (29.12) * (1-0.021) + (18) * (0.021)
Ms = 28.89 lb/lbmol

Velocity of Stack Gas

$Vs = 85.49*60*Cp*(\Delta P)^{0.5}\ [(Ts+460)/Ps/Ms]^{0.5}$
Vs = 85.49 * 60 *(0.82) * (0.9331) * sqrt {[(841.52)/(29.38)/(28.89)]}
Vs = 3,888.5 ft/min

Total Flow of Stack Gas

Qa = As X Vs
Qa = (12.0480) * (3,888.5)
Qa = 46,848.6 CFM

Qs = Qa X 528/Ts X Ps/29.92
Qs = (46,848.6) * (528/841.5) * (29.38/29.92)
Qs = 28,867.7 SCFM

Qstd = Qs(1 - Bwo)
Qstd = (28,867.7) * (1-0.021)
Qstd = 28,261.5 DSCFM

Vsstd = Qstd/As
Vsstd = (28,261.5)/(12.0480)
Vsstd = 2,345.7 ft/min

Velocity Test #: Run 1
VELOCITY TRAVERSE RESULTS

Stack Gas Temperature (F)	382	Stack Velocity (ft/min)	3,888
Moisture Content (% Vol)	2.10%	Gas Flow Rate (ACFM)	46,849
CO2 Percent	2.1	Gas Flow Rate (@ wet STP)	28,868
O2 Percent	19.7	Gas Flow Rate (DSCFM)	28,261

STACK TEST CALCULATIONS

Project:	Haverhill	Barom. Psr.:	29.43		Calculated	
Project No:	39400492	Static Psr.:	-0.63		Ps:	29.384
Source:	Hot Car	Delta H @:	1.8317		As:	12.048
Run No.:	1	Gamma:	0.9441		An:	0.000294
Date:	4/15/2009	Pitot Coef.:	0.829			
Sample Volume:	95.97	Stack Dia.:	47	,in.		
Sample Time:	151	Nozzle Dia.:	0.232	,in.		
O2 Conc.:	19.69	H2O Gain:	39.9	,ml		
CO2 Conc.:	2.08	Part. Weight:	0.3276	,g		

TRAVERSE POINT NUMBER	VELOCITY DELTA P Actual	Sq. Root	DELTA H	DRY GAS METER TEMPERATURE	STACK TEMP.
1	0.60	0.774597	1.20	56	248
2	0.50	0.707107	1.10	60	420
3	0.62	0.787401	1.35	74	295
4	0.55	0.74162	1.20	74	392
5	0.55	0.74162	1.20	75	367
6	0.58	0.761577	1.25	81	378
7	0.58	0.761577	1.25	83	390
8	0.58	0.761577	1.25	85	370
9	0.55	0.74162	1.20	87	407
10	0.55	0.74162	1.20	89	395
11	0.55	0.74162	1.20	90	416
12	0.55	0.74162	1.20	92	404
13	0.50	0.707107	1.10	94	392
14	0.55	0.74162	1.20	95	425
15	0.55	0.74162	1.20	96	415
16	0.64	0.8	1.38	101	334
17	0.55	0.74162	1.20	103	393
18	0.55	0.74162	1.20	106	386
19	0.55	0.74162	1.20	107	361
20	0.55	0.74162	1.20	105	408
21	0.55	0.74162	1.20	102	408
22	0.55	0.74162	1.20	100	395
23	0.55	0.74162	1.20	97	399
24	0.55	0.74162	1.20	95	368
AVERAGE	0.5583333	0.746953	1.21	89.45833	381.91667

URS

TEST LAB DATA SHEET

PROJECT:	HNCC Unit #2 Compliance	PROJECT NO.:	39400329.52000
SOURCE:	Hot Car	TEST DATE:	4/14/2009
TRAIN I.D.	#M12-1	TEST NO.:	1
COLLECTED BY:	TJB	CHKD BY:	MSM

CONDENSATION

IMPINGER NO.	INITIAL VOL.,ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	702.5	725.2	22.7
2	681	682.5	1.5
3	614.7	615.1	0.4
4	884.1	899.4	15.3
5			0
6			0
7			0
TOTAL	2882.3	2922.2	39.9

PARTICULATE

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g
PROBE WASH	12.7475	12.8811	0.1336
REAGENT BLANK	12.6160	12.6161	0.0001
CORRECTED PROBE WASH *			0.1335
FILTER # 1 09-048	0.3535	0.5476	0.1941

* subtract reagent blank from probe wash

TOTAL PARTICULATED COLLECTED

PARTICULATE COLLECTED (excluding impinger catch)	0.3276
PARTICULATE COLLECTED (including impinger catch)	

QA PROBE WASH (as required)

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g

COMMENTS:

Project: Haverhill
Project No: 39400492
Source: Hot Car
Run No.: 1

Stack Sampling Calculations

Volume of Water Collected

Vwstd = (VI0)(0.04707)

Vwstd = 1.88 cubic feet

Volume of Gas Metered, Standard Conditions

Vmstd = ((17.64) (Vm)(Pb + DeltaH/13.6)(gamma))/Tm

Vmstd = 85.866 cubic feet

Moisture Content

Bwo = Vwstd/(Vmstd + Vwstd)

Bwo = 0.02

Molecular Weight of the Dry Gas Stream

Md = (.44)(%CO2) + (.32)(%O2) + (.28)(%CO +%N2)

Md = 29.1

Molecular Weight of Stack Gas

Ms = (Md(1-Bwo) + 18(bwo)

Ms = 28.9

Velocity of Stack Gas

Vs = 174 Cp (DeltaP sq.rt.)((Ts+459.6) X 29.92 X 28.96/Ps/Ms)^.5

Vs = 3,158.2 ft/min

Total Flow of Stack Gas

Qa = As X Vs

Qa = 38,050.59 ACFM

Qs = Qa X 528/Ts X Ps/29.92

Qs = 23,435.31 SCFM

Qstd = Qs(1 - Bwo)

Qstd = 22,933.70 DSCFM

Vsstd = Qstd/As

Vsstd = 1903.49 ft/min

Percent Isokinetic

Is = Vmstd/(An X Time X Vsstd)

Is = 1.02

Particulate Concentration

Cs = (15.43)(Mn)/Vmstd

Cs = 0.0589

Particulate Mass Rate

Pmr = (Mn)(Qstd)(60)/(Vmstd)(453.6)

Pmr = 11.57

Hot Car
M5/12 Run 2

URS

VELOCITY TRAVERSE DATA SHEET

Project Name: HNCC
Project No.: 39400492
Date: 4-16-09

Test No.: Hot Car Run 2
Location: Stack
Personnel: MM B TB

	Traverse Point	Velocity Pressure	Stack Temperature
A	1	0.65	
	2	0.74	
	3	0.78	
	4	0.80	
	5	0.82	
→	6	0.80	
	7	0.86	
	8	1.15	
	9	1.20	
	10	1.20	
	11	1.20	
	12	1.15	
B	13	0.82	
	14	0.79	
	15	0.74	
	16	0.70	
	17	0.68	
	18	0.70	
	19	0.72	
	20	0.72	
	21	0.70	
	22	0.76	
	23	0.78	
	24	0.78	
	Average	0.84	

Stack Dimensions: 47"ø

Stack Area, As: _____ FT^2

Barometric Pressure, Pbar: _____ in. Hg

Static Pressure, Pst: -.42 in. H_2O

Stack Temperature, Ts: _____ °F

Stack Gas, O_2: _____ %

Stack Gas, CO_2: _____ %

Pitot Tube Coefficient, Cp: 0.816 AQS-2030

Pitot Positive Leak Check ✓ > 3.0 in H_2O

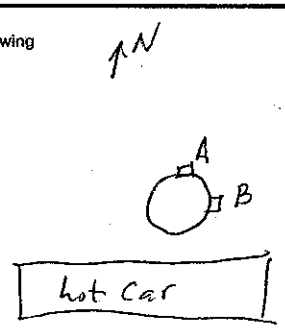
Pitot Negative Leak Check ✓ > 3.0 in H_2O

Wet Bulb Temperature _____ °F

Dry Bulb Temperature _____ °F

Pitot Tube Type: S
Manometer Type: incline
Thermometer Type: _____

Stack Drawing



URS STACK TEST DATA SHEET Method used: M5/12

Project:	HNCC Unit #2 Compliance Test	Barom. Psr.:	29.65	Stack Dia.:	47"Ø
Project No:	39400492.520001	Static Psr.:	-0.42	Stack Area:	
Source:	Hot Car	Meter Box I.D.:	V	Port Length:	4"
Run No.:	#2	Delta H @:	1.8317	Port Dia.:	3"
Date:	4-16-09	Gamma:	0.9441	Probe Liner:	S.S.
Operator:	MM TB	Pitot Coef.:	0.829 4-001	Filter No.:	09-049

Oven No.	TRAVERSE POINT NUMBER	SAMPLING TIME Clock	SAMPLING TIME Sample	VELOCITY DELTA P	SAMPLE DELTA H	GAS SAMPLE VOLUME	DGM TEMP.	STACK TEMP.	PROBE TEMP.	FILTER BOX TEMP.	FILTER OUTLET TEMP.	LAST IMPINGER TEMP.	TRAIN VACUUM
103	1	3:48/3:53	4:21	0.45	1.00	403.950	94	338	259	267	215	49	1
107	2	4:00/4:04	8:34	0.42	0.92	406.590	100	365	255	269	230	49	1
111	3	4:10/4:13	12:20	0.45	1.00	408.940	98	374	257	261	240	49	1
115	4	4:19/4:23	16.39	0.45	1.00	411.100	100	431	256	267	233	51	1
119	5	4:41/4:46	21.32	0.45	1.00	413.600	105	340	261	265	226	54	1
123	6	4:52/4:56	25.51	0.42	0.92	416.450	106	389	257	260	237	50	1
127	7	5:02/5:06	30.16	0.45	1.00	419.00	107	402	259	266	232	50	2
131	8	5:12/5:16	34.38	0.45	1.00	421.50	108	377	258	259	229	52	2
135	9	5:22/5:27	39.01	0.45	1.00	424.050	108	398	249	258	231	52	2
139	10	5:32/5:37	43.35	0.42	0.92	426.625	108	407	255	260	229	53	2
143	11	5:43/5:48	48.20	0.42	0.92	429.210	108	430	252	264	232	54	2
147	12	5:56/6:01	53:21	0.42	0.92	431.870	108	400	266	267	221	58	2
151	13	6:07/6:12	58:24	0.42	0.92	434.662	108	423	262	265	230	57	2
155	14	6:18/6:24	1:03:51	0.42	0.92	437.486	109	409	264	274	232	56	2
159	15	6:32/6:37	1:09:46	0.42	0.92	440.541	109	413	261	267	237	60	2
163	16	~~7:10~~ 6:29				443.838							
	17												
	18	*Test stopped early due to production issues.											
	19												
	20				15 ovens pushed								
	21												
	22												
	23												
	24												
AVERAGE		70				39.888							

LEAK CHECKS	
Pitot impact:	good
Pitot static:	good
Train initial:	0.0@15"
Train Final:	0.0@5"

NOZZLE MEASUREMENT	
I.D. No.:	M4
1.	0.232
2	0.232
3	0.232
Avg.	

STACK GAS ANALYSIS	CO2	O2		
1	1.93	19.2		
2				
3				
Avg.				

NOTES: Single Point test @ point 6 on initial traverse.

URS

TEST LAB DATA SHEET

PROJECT: **HNCC Unit #2 Compliance**

JOB NO.: **39400529.520001**

SOURCE: Hot Gas

DATE: 4/14/09

TRAIN I.D.: M12-2

TEST NO.: 2

COLLECTED BY: TJB

CHKD. BY: GM

CONDENSATION

IMPINGER NO.	INITIAL VOL., ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	698.0	708.1	10.1
2	671.8	672.1	0.3
3	605.2	605.3	0.1
4	891.1	898.3	7.2
5			
6			
7			
8			
9			
TOTAL	2866.1	2883.8	17.7

URS

VELOCITY TRAVERSE CALCULATION SHEET

Client:	HNCC
Project Number:	39400492
Source:	Hot Car Stack
Date:	4/16/2009
Velocity Test #:	Run 2

INPUT PARAMETERS

Barometric Pressure (Pb), in.Hg.	29.65 in, Hg
Avg. Percent CO2	1.9 %
Avg. Percent O2	19.2 %
Avg. Percent CO	0.0 %
Avg. Percent N2	78.9 %
Average Square Root of Delta P	0.9136 in. H_2O
Average Stack Temperature, (T_s)	393 (°F)
Static Pressure	-0.42 in. H_2O
Stack Diameter	47.00 inches
Pressure in the stack, (P_s)	29.62 in Hg
Stack area, (A_s)	12.048 ft^2
Pitot Tube Coeffiecent , (C_p)	0.816
Average Percent Moisture, (B_{wo})	2.30%

Point No.	Delta P	Sq. Root Delta P	Stack Temp (F)
1	0.65	0.8062	338
2	0.74	0.8602	365
3	0.78	0.8832	374
4	0.80	0.8944	431
5	0.82	0.9055	340
6	0.80	0.8944	389
7	0.86	0.9274	402
8	1.15	1.0724	377
9	1.20	1.0954	398
10	1.20	1.0954	407
11	1.20	1.0954	430
12	1.15	1.0724	400
13	0.82	0.9055	423
14	0.79	0.8888	409
15	0.74	0.8602	413
16	0.70	0.8367	
17	0.68	0.8246	
16	0.70	0.8367	
19	0.72	0.8485	
20	0.72	0.8485	
21	0.70	0.8367	
22	0.76	0.8718	
23	0.78	0.8832	
24	0.78	0.8832	
Average	**0.8433**	**0.9136**	**393**

VELOCITY CALCULATIONS

Molecular Weight of the Dry Gas Stream

Md = (.44)(%CO2) + (.32)(%O2) + (.28)(%CO +%N2)
Md = (0.44)*(1.93) + (0.32)*(19.20) + (0.28)*(78.87)
Md = 29.08 lb/lbmol

Molecular Weight of Stack Gas

Ms = (Md)(1-Bwo) + 18(Bwo)
Ms = (29.08) * (1-0.023) + (18) * (0.023)
Ms = 28.82 lb/lbmol

Velocity of Stack Gas

Vs = 85.49*60*Cp*(ΦP)$^{0.5}$ [(Ts+460)/Ps/Ms]$^{0.5}$
Vs = 85.49 * 60 *(0.82) * (0.9136) * sqrt {[(852.67)/(29.62)/(28.82)]}
Vs = 3,821.8 ft/min

Total Flow of Stack Gas

Qa = As X Vs
Qa = (12.0480) * (3,821.8)
Qa = 46,044.6 CFM

Qs = Qa X 528/Ts X Ps/29.92
Qs = (46,044.6) * (528/852.7) * (29.62/29.92)
Qs = 28,225.6 SCFM

Qstd = Qs(1 - Bwo)
Qstd = (28,225.6) * (1-0.023)
Qstd = 27,576.4 DSCFM

Vsstd = Qstd/As
Vsstd = (27,576.4)/(12.0480)
Vsstd = 2,288.9 ft/min

Velocity Test #: Run 2
VELOCITY TRAVERSE RESULTS

Stack Gas Temperature (F)	393	Stack Velocity (ft/min)	3,822
Moisture Content (% Vol)	2.30%	Gas Flow Rate (ACFM)	46,045
CO2 Percent	1.9	Gas Flow Rate (@ wet STP)	28,226
O2 Percent	19.2	Gas Flow Rate (DSCFM)	27,576

STACK TEST CALCULATIONS

Project:	Haverhill	Barom. Psr.:	29.65		Calculated
Project No:	39400492	Static Psr.:	-0.42	Ps:	29.619
Source:	Hot Car	Delta H @:	1.8317	As:	12.048
Run No.:	2	Gamma:	0.9441	An:	0.000294
Date:	4/16/2009	Pitot Coef.:	0.829		
Sample Volume:	39.888	Stack Dia.:	47 ,in.		
Sample Time:	70	Nozzle Dia.:	0.232 ,in.		
O2 Conc.:	19.25	H2O Gain:	17.7 ,ml		
CO2 Conc.:	1.91	Part. Weight:	0.1615 ,g		

TRAVERSE POINT NUMBER	VELOCITY DELTA P Actual	Sq. Root	DELTA H	DRY GAS METER TEMPERATURE	STACK TEMP.
1	0.45	0.67082	1.00	94	383
2	0.42	0.648074	0.92	100	365
3	0.45	0.67082	1.00	98	374
4	0.45	0.67082	1.00	100	431
5	0.45	0.67082	1.00	105	340
6	0.42	0.648074	0.92	106	389
7	0.45	0.67082	1.00	107	402
8	0.45	0.67082	1.00	108	377
9	0.45	0.67082	1.00	108	398
10	0.42	0.648074	0.92	108	407
11	0.42	0.648074	0.92	108	430
12	0.42	0.648074	0.92	108	400
13	0.42	0.648074	0.92	108	423
14	0.42	0.648074	0.92	109	409
15	0.42	0.648074	0.92	109	413
16					
17					
18					
19					
20					
21					
22					
23					
24					
AVERAGE	0.434	0.658689	0.9573333	105.0667	396.0667

URS

TEST LAB DATA SHEET

PROJECT:	HNCC Unit #2 Compliance	PROJECT NO.:	39400329.52000
SOURCE:	Hot Car	TEST DATE:	4/14/2009
TRAIN I.D.	#M12-2	TEST NO.:	2
COLLECTED BY:	TJB	CHKD BY:	MSM

CONDENSATION

IMPINGER NO.	INITIAL VOL.,ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	698.0	708.1	10.1
2	671.8	672.1	0.3
3	605.2	605.3	0.1
4	891.1	898.3	7.2
5			0.0
6			0.0
7			0.0
TOTAL	2866.10	2883.8	17.7

PARTICULATE

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g
PROBE WASH	12.7509	12.7786	0.0277
REAGENT BLANK	12.6160	12.6161	0.0001
CORRECTED PROBE WASH *			0.0276
FILTER # 1 09-049	0.3518	0.4857	0.1339

* subtract reagent blank from probe wash

TOTAL PARTICULATED COLLECTED

PARTICULATE COLLECTED (excluding impinger catch)	0.1615
PARTICULATE COLLECTED (including impinger catch)	

QA PROBE WASH (as required)

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g

COMMENTS:

Project: Haverhill
Project No: 39400492
Source: Hot Car
Run No.: 2

Stack Sampling Calculations

Volume of Water Collected

Vwstd = (VI0)(0.04707)

Vwstd = 0.83 cubic feet

Volume of Gas Metered, Standard Conditions

Vmstd = ((17.64) (Vm)(Pb + DeltaH/13.6)(gamma))/Tm

Vmstd = 34.939 cubic feet

Moisture Content

Bwo = Vwstd/(Vmstd + Vwstd)

Bwo = 0.02

Molecular Weight of the Dry Gas Stream

Md = (.44)(%CO2) + (.32)(%O2) + (.28)(%CO +%N2)

Md = 29.1

Molecular Weight of Stack Gas

Ms = (Md(1-Bwo) + 18(bwo)

Ms = 28.8

Velocity of Stack Gas

Vs = 174 Cp (DeltaP sq.rt.)((Ts+459.6) X 29.92 X 28.96/Ps/Ms)^.5

Vs = 2,800.3 ft/min

Total Flow of Stack Gas

Qa = As X Vs

Qa = 33,738.36 ACFM

Qs = Qa X 528/Ts X Ps/29.92

Qs = 20,599.70 SCFM

Qstd = Qs(1 - Bwo)

Qstd = 20,119.93 DSCFM

Vsstd = Qstd/As

Vsstd = 1669.95 ft/min

Percent Isokinetic

Is = Vmstd/(An X Time X Vsstd)

Is = 1.02

Particulate Concentration

Cs = (15.43)(Mn)/Vmstd

Cs = 0.0713

Particulate Mass Rate

Pmr = (Mn)(Qstd)(60)/(Vmstd)(453.6)

Pmr = 12.30

Hot Car
M5/12 Run 3

VELOCITY TRAVERSE DATA SHEET

Project Name: HNCC Unit 2
Project No.:
Date: 4-17-09

Test No.: 3
Location: Hot Car Stack
Personnel: MM TB

	Traverse Point	Velocity Pressure	Stack Temperature
A	1	0.22	
	2	0.17	
	3	0.18	
	4	0.19	
	5	0.24	
	6	0.34	
	7	2.00	
	8	1.70	
	9	1.50	
	10	0.95	
Run 3	11	0.65	
	12	0.55	
B	13	0.38	
	14	0.70	
	15	0.90	
	16	0.95	
	17	0.96	
	18	1.20	
	19	1.35	
	20	1.20	
	21	0.72	
	22	0.60	
	23	0.40	
	24	0.28	
	Average	0.76	

Stack Dimensions: 47"ø

Stack Area, As: _____ FT^2

Barometric Pressure, Pbar: _____ in. Hg

Static Pressure, Pst: -1.2 in. H_2O

Stack Temperature, Ts: _____ °F

Stack Gas, O_2: _____ %

Stack Gas, CO_2: _____ %

Pitot Tube Coefficient, Cp: 0.816 ADS-2030

Pitot Positive Leak Check ✓ > 3.0 in H_2O

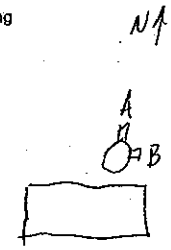
Pitot Negative Leak Check ✓ > 3.0 in H_2O

Wet Bulb Temperature _____ °F

Dry Bulb Temperature _____ °F

Pitot Tube Type: S
Manometer Type: incline
Thermometer Type:

Stack Drawing



URS STACK TEST DATA SHEET Method used: M5/12

Project:	HNCC Unit #2 Compliance Test	Barom. Psr.:	29.25	Stack Dia.:	47"ø
Project No:	39400492.520001	Static Psr.:	-1.2"	Stack Area:	
Source:	Hot Car #2	Meter Box I.D.:	II	Port Length:	4"
Run No.:	3	Delta H @:	1.8317	Port Dia.:	3"
Date:	4-17-09	Gamma:	0.9441	Probe Liner:	SS
Operator:	MM TB	Pitot Coef.:	0.829 4-001	Filter No.:	09-061

Oven No.	TRAVERSE POINT NUMBER	SAMPLING TIME Clock	SAMPLING TIME Sample	VELOCITY DELTA P	SAMPLE DELTA H	GAS SAMPLE VOLUME	DGM TEMP.	STACK TEMP.	PROBE TEMP.	FILTER BOX TEMP.	FILTER OUTLET TEMP.	LAST IMPINGER TEMP.	TRAIN VACUUM
104	1	3:27/3:31	4.12	0.90	1.80	444.030	82	294	259	235	227	46	1
108	2	4:10/4:18	12.31	0.85	1.70	448.90	87	349	259	256	267	54	2
112	3	4:24/4:28	16.27	0.80	1.60	454.930	90	450	255	257	254	53	2
116	4	4:33/4:37	20.20	0.75	1.50	457.786	92	462	258	251	253	55	2
120	5	4:45/4:51	25.45	0.80	1.60	460.525	95	443	262	252	253	54	2
124	6	4:57/5:01	30.01	0.75	1.50	464.490	99	461	259	251	244	54	2
128	7	5:06/5:11	34.23	0.76	1.50	467.570	102	470	264	249	248	55	2
132	8	5:16/5:21	38.37	0.75	1.50	470.730	104	472	257	248	234	56	2
136	9	5:26/5:31	43.04 ①	0.77	1.55	473.655	107	480	255	248	232	57	2
140	10	5:37/5:42	47.40	0.75	1.30	476.880	109	481	257	251	229	58	2
144	11	5:48/5:53	52.25	0.75	1.30	479.910	111	478	258	250	228	58	2
148	12	6:05/6:10	57:32	0.78	1.38	483.035	114	414	268	262	232	56	2
152	13	6:16/6:21	1:02:40	0.73	1.30	486.314	115	461	264	262	243	57	3
156	14	6:28/6:33	1:07:59	0.74	1.30	489.688	116	475	263	255	242	57	3
160	15	6:40/6:46	1:13:34	0.78	1.38	493.165	117	465	270	257	244	58	3
164	16	6:59/7:05	1:19:12	0.76	1.32	496.896	118	407	267	262	238	61	3
168	17	7:11/7:18	1:25:04	0.83	1.48	500.671	118	457	269	260	234	59	3
172	18	7:26/7:32	1:30:56	0.74	1.30	504.680	118	447	270	256	236	59	3
176	19	7:41/7:50	1:38:41	0.76	1.32	508.566	118	430	265	264	237	60	3
180	20	7:57/8:04	1:45:40	0.72	1.25	513.676	118	439	267	266	235	59	3
	21					518.218							
	22	* Test stopped early due to production issues.											
	23												
	24			20 ovens charged.									
AVERAGE													

LEAK CHECKS	
Pitot impact:	good/good
Pitot static:	good/good
Train initial:	0.0015"
Train Final:	0.0015"

NOZZLE MEASUREMENT		
I.D. No.:	~~M4~~	M4
1	~~0.281~~	.232
2	~~0.281~~	.232
3	~~0.280~~	.232
Avg.	~~.281~~	.232

STACK GAS ANALYSIS				
	CO2	O2		
1	2.25	18.8		
2				
3				
Avg.				

NOTES: ① Adjusted slide rule for increased stack temp. single point test @ point 11 on initial traverse.

URS

TEST LAB DATA SHEET

PROJECT: **HNCC Unit #2 Compliance** JOB NO.: **39400329.520001**

SOURCE: Hot Car Stack DATE: 4/17/09

TRAIN I.D.: M12-3 TEST NO.: 3

COLLECTED BY: MM & TB CHKD. BY: GM

CONDENSATION

IMPINGER NO.	INITIAL VOL., ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	701.4	715.3	13.9
2	693.8	695.5	1.7
3	619.3	619.4	0.1
4	879.3	891.2	11.9
5			
6			
7			
8			
9			
TOTAL	2893.8	2921.4	27.6

URS

VELOCITY TRAVERSE CALCULATION SHEET

Client:	HNCC
Project Number:	39400492
Source:	Hot Car Stack
Date:	4/17/2009
Velocity Test #:	Run 3

INPUT PARAMETERS

Barometric Pressure (Pb), in.Hg.	29.25 in, Hg
Avg. Percent CO2	2.3 %
Avg. Percent O2	18.8 %
Avg. Percent CO	0.0 %
Avg. Percent N2	78.9 %
Average Square Root of Delta P	0.8239 in. H_2O
Average Stack Temperature, (T_s)	442 (°F)
Static Pressure	-1.20 in. H_2O
Stack Diameter	47.00 inches
Pressure in the stack, (P_s)	29.16 in Hg
Stack area, (A_s)	12.048 ft^2
Pitot Tube Coeffiecent , (C_p)	0.816
Average Percent Moisture, (B_{wo})	2.00%

Point No.	Delta P	Sq. Root Delta P	Stack Temp (F)
1	0.22	0.4690	294
2	0.17	0.4123	349
3	0.18	0.4243	450
4	0.19	0.4359	462
5	0.24	0.4899	443
6	0.34	0.5831	461
7	2.00	1.4142	470
8	1.70	1.3038	472
9	1.50	1.2247	480
10	0.95	0.9747	481
11	0.65	0.8062	478
12	0.55	0.7416	414
13	0.38	0.6164	461
14	0.70	0.8367	475
15	0.90	0.9487	465
16	0.95	0.9747	407
17	0.96	0.9798	457
16	1.20	1.0954	447
19	1.35	1.1619	430
20	1.20	1.0954	439
21	0.72	0.8485	
22	0.60	0.7746	
23	0.40	0.6325	
24	0.28	0.5292	
Average	**0.7638**	**0.8239**	**442**

VELOCITY CALCULATIONS

Molecular Weight of the Dry Gas Stream

Md = (.44)(%CO2) + (.32)(%O2) + (.28)(%CO +%N2)
Md = (0.44)*(2.30) + (0.32)*(18.80) + (0.28)*(78.90)
Md = 29.12 lb/lbmol

Molecular Weight of Stack Gas

Ms = (Md)(1-Bwo) + 18(Bwo)
Ms = (29.12) * (1-0.020) + (18) * (0.020)
Ms = 28.90 lb/lbmol

Velocity of Stack Gas

$Vs = 85.49*60*Cp*(\sqrt{\Delta P})^{0.5}\ [(Ts+460)/Ps/Ms]^{0.5}$
Vs = 85.49 * 60 *(0.82) * (0.8239) * sqrt {[(901.35)/(29.16)/(28.90)]}
Vs = 3,566.5 ft/min

Total Flow of Stack Gas

Qa = As X Vs
Qa = (12.0480) * (3,566.5)
Qa = 42,969.0 CFM

Qs = Qa X 528/Ts X Ps/29.92
Qs = (42,969.0) * (528/901.4) * (29.16/29.92)
Qs = 24,532.8 SCFM

Qstd = Qs(1 - Bwo)
Qstd = (24,532.8) * (1-0.020)
Qstd = 24,042.2 DSCFM

Vsstd = Qstd/As
Vsstd = (24,042.2)/(12.0480)
Vsstd = 1,995.5 ft/min

Velocity Test #: Run 3
VELOCITY TRAVERSE RESULTS

Stack Gas Temperature (F)	442	Stack Velocity (ft/min)	3,566
Moisture Content (% Vol)	2.00%	Gas Flow Rate (ACFM)	42,969
CO2 Percent	2.3	Gas Flow Rate (@ wet STP)	24,533
O2 Percent	18.8	Gas Flow Rate (DSCFM)	24,042

STACK TEST CALCULATIONS

Project:	Haverhill	Barom. Psr.:	29.2		Calculated
Project No:	39400492	Static Psr.:	-1.2	Ps:	29.112
Source:	Hot Car	Delta H @:	1.8317	As:	12.048
Run No.:	3	Gamma:	0.9441	An:	0.000294
Date:	4/17/2009	Pitot Coef.:	0.829		
Sample Volume:	74.188	Stack Dia.:	47 ,in.		
Sample Time:	105.7	Nozzle Dia.:	0.232 ,in.		
O2 Conc.:	18.8	H2O Gain:	27.6 ,ml		
CO2 Conc.:	2.25	Part. Weight:	0.2197 ,g		

TRAVERSE POINT NUMBER	VELOCITY DELTA P Actual	Sq. Root	DELTA H	DRY GAS METER TEMPERATURE	STACK TEMP.
1	0.90	0.948683	1.80	82	294
2	0.85	0.921954	1.70	87	349
3	0.80	0.894427	1.60	90	450
4	0.75	0.866025	1.50	92	462
5	0.80	0.894427	1.60	95	443
6	0.75	0.866025	1.50	99	461
7	0.76	0.87178	1.50	102	470
8	0.75	0.866025	1.50	104	472
9	0.77	0.877496	1.55	107	480
10	0.75	0.866025	1.30	109	481
11	0.75	0.866025	1.30	111	478
12	0.78	0.883176	1.38	114	414
13	0.73	0.8544	1.30	115	461
14	0.74	0.860233	1.30	116	475
15	0.78	0.883176	1.38	117	465
16	0.76	0.87178	1.32	118	407
17	0.83	0.911043	1.48	118	457
18	0.74	0.860233	1.30	118	447
19	0.76	0.87178	1.32	118	430
20	0.72	0.848528	1.25	118	439
21					
22					
23					
24					
AVERAGE	0.7735	0.879162	1.44	106.5	441.75

URS

TEST LAB DATA SHEET

PROJECT:	HNCC Unit #2 Compliance	PROJECT NO.:	39400329.52000
SOURCE:	Hot Car	TEST DATE:	4/17/2009
TRAIN I.D.	#M12-3	TEST NO.:	3
COLLECTED BY:	TJB	CHKD BY:	MSM

CONDENSATION

IMPINGER NO.	INITIAL VOL.,ml/g	FINAL VOL., ml/g	NET GAIN, ml/g
1	701.4	715.3	13.9
2	693.8	695.5	1.7
3	619.3	619.4	0.1
4	879.3	891.2	11.9
5			0.0
6			0.0
7			0.0
TOTAL	2893.8	2921.4	27.6

PARTICULATE

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g
PROBE WASH	12.2026	12.2826	0.0800
REAGENT BLANK	12.6160	12.6161	0.0001
CORRECTED PROBE WASH *			0.0799
FILTER # 1 09-061	0.3516	0.4914	0.1398

* subtract reagent blank from probe wash

TOTAL PARTICULATED COLLECTED

PARTICULATE COLLECTED (excluding impinger catch)	0.2197
PARTICULATE COLLECTED (including impinger catch)	

QA PROBE WASH (as required)

SAMPLE I.D. NO.	INITIAL WT., g	FINIAL WT., g	NET WT., g

COMMENTS:

Project: Haverhill
Project No: 39400492
Source: Hot Car
Run No.: 3

Stack Sampling Calculations

Volume of Water Collected

Vwstd = (VI0)(0.04707)

Vwstd = 1.30 cubic feet

Volume of Gas Metered, Standard Conditions

Vmstd = ((17.64) (Vm)(Pb + DeltaH/13.6)(gamma))/Tm

Vmstd = 63.916 cubic feet

Moisture Content

Bwo = Vwstd/(Vmstd + Vwstd)

Bwo = 0.02

Molecular Weight of the Dry Gas Stream

Md = (.44)(%CO2) + (.32)(%O2) + (.28)(%CO +%N2)

Md = 29.1

Molecular Weight of Stack Gas

Ms = (Md(1-Bwo) + 18(bwo)

Ms = 28.9

Velocity of Stack Gas

Vs = 174 Cp (DeltaP sq.rt.)((Ts+459.6) X 29.92 X 28.96/Ps/Ms)^.5

Vs = 3,864.4 ft/min

Total Flow of Stack Gas

Qa = As X Vs

Qa = 46,559.63 ACFM

Qs = Qa X 528/Ts X Ps/29.92

Qs = 26,525.54 SCFM

Qstd = Qs(1 - Bwo)

Qstd = 25,997.13 DSCFM

Vsstd = Qstd/As

Vsstd = 2157.76 ft/min

Percent Isokinetic

Is = Vmstd/(An X Time X Vsstd)

Is = 0.95

Particulate Concentration

Cs = (15.43)(Mn)/Vmstd

Cs = 0.0530

Particulate Mass Rate

Pmr = (Mn)(Qstd)(60)/(Vmstd)(453.6)

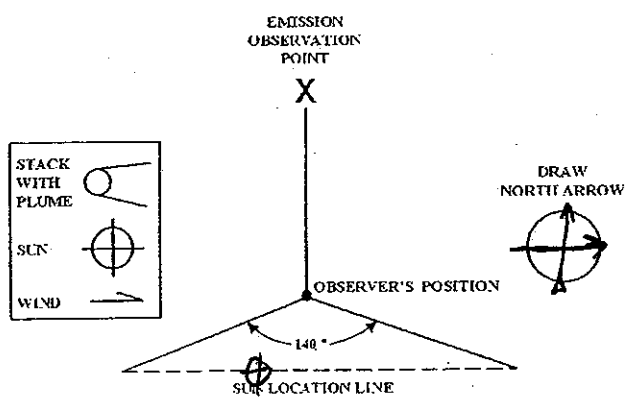
Pmr = 11.82

Hot Car
VE Data

VISIBLE EMISSION OBSERVATION FORM

Company Name	HNCC
Location	2446 Gallia
City	Franklin Furnace
State	OH
Zip	
Process Equipment	Coke Oven
Operating Mode	Normal
Control Equipment	N/A
Operating Mode	N/A
Describe Emission Point	Coke Oven Door
Height of Emission Point	20'
Height Relative to Observer	Start ~20' End ~20'
Distance to Emission Point	Start ~60' End ~60'
Direction to Emission Point	Start North End North
Vertical Angle to Observation Pt.	Start ~10° End ~10°
Direction to Observation Point	Start South End South
Describe Emissions	Start N/A End Black Smoke
Emission Color	Start Black End Black
If Water Droplet Plume (Circle)	Attached Detached (N/A)
Point In The Plume At Which Opacity Was Determined	Start 5' End 5'
Describe Plume Background	Start Ductwork & Sky End Ductwork & Sky
Background Color	Start Grey End Grey
Sky Condition	Start Overcast End Overcast
Wind Speed	Start 5-10mph End 5-10mph
Wind Direction	Start from West End from West
Ambient Temp	Start 58° End 58°
Wet Bulb Temp	N/A
RH Percent	N/A

SOURCE LAYOUT SKETCH



Additional Information

Observation Date	Start Time	End Time
4/15/09	1615	1701

Min \ Sec	0	15	30	45	Comments
1	0	0	0	0	(1) Oven 124
2	0	0	0	5	
3	0	0			
4	0	0	0	0	Oven 2 (128) 1625
5	0	5	0	0	
6	0	0	0		
7	0	0	0	0	Oven 3 (132) 1636 1637
8	0	0	10	0	
9	0	0			
10	0	0	0	0	Oven 4 (136) 16:47
11	0	0	0	0	
12	0	0	0		
13	0	0	0	0	Oven 5 (140) 1659
14	0	0	0	0	
15	5	0	0		
16					
17					
18					53 readings
19					25/53 = 0.47
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

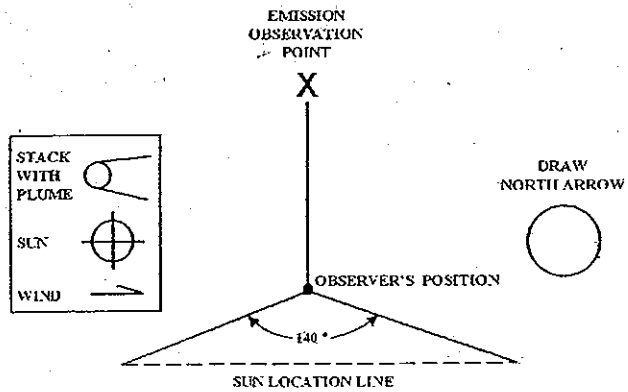
Observer's Name (Print)	Thomas Brado
Observer's Signature	[signature]
Date	4/15/09
Organization	URS Corp.
Certified by	Carl Koontz Assoc.
Date	11/28/08

Continue on reverse side

VISIBLE EMISSION OBSERVATION FORM

Company Name	Haverhill North Coke Company
Location	2446 Gallia
City	Franklin Furnace
State	OH
Zip	
Process Equipment	Hot Car
Operating Mode	Normal
Control Equipment	Multi Clone
Operating Mode	Normal
Describe Emission Point	Mobile Hot Car multiclone Stack
Height of Emission Point	35'
Height Relative to Observer	Start 35' End 35'
Distance to Emission Point	Start Varies End Varies
Direction to Emission Point	Start W to NE End W to NE
Vertical Angle to Observation Pt.	Start ~10° End ~16°
Direction to Observation Point	Start E to SW End E to SW
Describe Emissions	Start N/A End Black Smoke
Emission Color	Start Non visible End Black
If Water Droplet Plume (Circle)	Attached Detached (N/A)
Point In The Plume At Which Opacity Was Determined	Start 3' End 3'
Describe Plume Background	Start Grey Sky & Open Ductwork End
Background Color	Start Grey End Grey
Sky Condition	Start Overcast End Overcast
Wind Speed	Start ~~10~~ 5-10 End 5-10
Wind Direction	Start from West End from West
Ambient Temp	Start 55° End 55°
Wet Bulb Temp	N/A
RH Percent	N/A

SOURCE LAYOUT SKETCH



Additional Information: Mobile Source

Observation Date	Start Time	End Time
4/15/09	1426	

Min \ Sec	0	15	30	45	Comments
1	0	0	0	5	1st Oven (104)
2	15	10	5	5	
3	5	5	0	0	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	
7	0	0	0	0	
8	0	0	0	0	
9	0	0	0	0	
10	0	0	0	0	
11	0	0	0	0	
12	0	0	0	0	Stopped when car finished push to Church
13	0	0	10	20	2nd Oven (108)
14	10	10	0	0	
15	0	0	0	0	
16	0	0	0	0	
17	0	0	0	0	
18	0	0	0	0	
19	0	0	0	0	
20	0	0	0	0	
21	0	0	0	0	3rd Oven (112) 1540
22	0	20	20	10	
23	5	5	0	0	
24	0	0	0	0	
25	0	0	0	0	
26	0	0	0	0	
27	0	5	20	20	4th Oven (116) 1550
28	5	5	5	5	
29	0	0	0	0	
30	0	0	0	0	

Observer's Name (Print)	Thomas Brado
Observer's Signature	TB
Date	4/15/09
Organization	URS Corp.
Certified by	Carl Koontz Assoc.
Date	11/28/09

Continue on reverse side

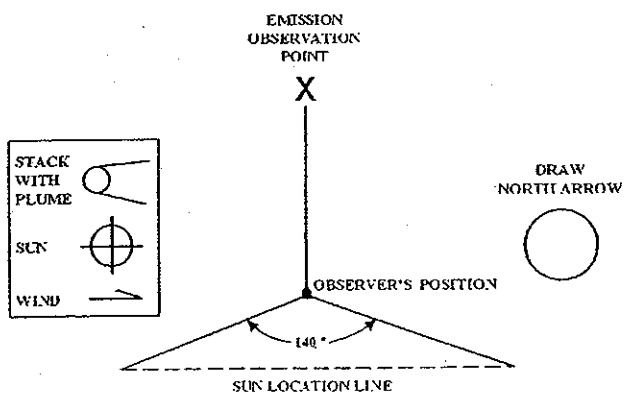
VISIBLE EMISSION OBSERVATION FORM

Company Name: HNCC		
Location		
City: Franklin Furnace	State: OH	Zip
Process Equipment: Hot Car		Operating Mode: Normal
Control Equipment: Multiclone		Operating Mode: Normal
Describe Emission Point		
Height of Emission Point	Height Relative to Observer: Start / End	
Distance to Emission Point: Start / End	Direction to Emission Point: Start / End	
Vertical Angle to Observation Pt.: Start / End	Direction to Observation Point: Start / End	
Describe Emissions: Start / End		
Emission Color: Start / End	If Water Droplet Plume (Circle): Attached / Detached / N/A	
Point In The Plume At Which Opacity Was Determined: Start / End		
Describe Plume Background: Start / End		
Background Color: Start / End	Sky Condition: Start / End	
Wind Speed: Start / End	Wind Direction: Start / End	
Ambient Temp: Start / End	Wet Bulb Temp	RH Percent

Observation Date	Start Time	End Time
4/15/09 pg2	14:26	

Min \ Sec	0	15	30	45	Comments
1	0	0	0	0	
2	0	0	5	20	Oven 5 (120) 1601
3	15	5	5	5	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	
7	0	0	0	0	
8	0	0			
9					
10					
11					
12					
13					150 readings
14					
15					280/150 = 1.87
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

SOURCE LAYOUT SKETCH



Observer's Name (Print): Thomas Brado	
Observer's Signature: TB	Date: 4/15/09
Organization: URS Corp.	
Certified by: Carl Koontz Assoc.	Date: 11/28/09

Additional Information

Continue on reverse side

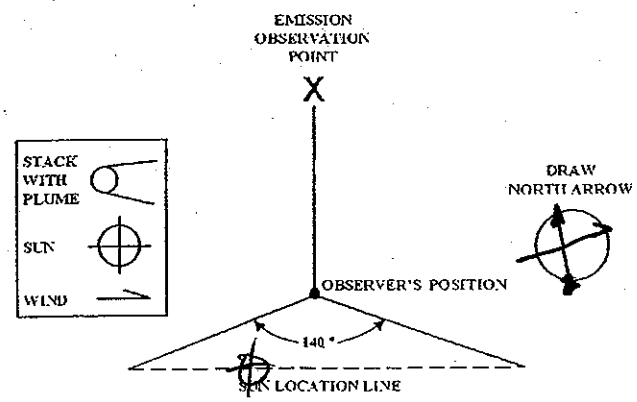
VISIBLE EMISSION OBSERVATION FORM

Company Name	Haverhill North
Location	2446 Gallia
City	Franklin Furnace
State	OH
Zip	
Process Equipment	Oven door Hot side
Operating Mode	Normal
Control Equipment	N/A
Operating Mode	N/A
Describe Emission Point	Coke Oven door opening
Height of Emission Point	~20'
Height Relative to Observer	Start ~20' End ~20'
Distance to Emission Point	Start 75' End 75'
Direction to Emission Point	Start NNE End NNE
Vertical Angle to Observation Pt.	Start ~10° End ~10°
Direction to Observation Point	Start SSW End SSW
Describe Emissions	Start None visable End Black/Gray Smoke
Emission Color	Start N/A End Black/Gray
If Water Droplet Plume (Circle)	Attached Detached (N/A)
Point In The Plume At Which Opacity Was Determined	Start 3' End 3'
Describe Plume Background	Start Ductwork End Ductwork
Background Color	Start Grey End Grey
Sky Condition	Start Clear End Clear
Wind Speed	Start 5-10mph End 5-10mph
Wind Direction	Start from W End from West
Ambient Temp	Start 75° End 75°
Wet Bulb Temp	N/A
RH Percent	N/A

Observation Date	Start Time	End Time
4/16/08	1652	

Min \ Sec	0	15	30	45	Comments
1	0	0	0	0	Oven #1 (123) 1652
2	10	10	5	0	
3	0	0			
4	0	0	0	0	Oven 2 (127) 1702
5	5	10	5	0	
6	0	0			
7	0	0	0	0	Oven 3 (131) 1712
8	10	5	20	0	
9	0	0			
10	0	0	0	5	Oven 4 (135) 1722
11	0	10	0	0	
12	0				
13	0	0	0	0	Oven 5 (139) 1732
14	0	0	5	5	
15	0	0	0		50
16					
17					49 readings
18					
19					105/49 = 2.14
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

SOURCE LAYOUT SKETCH



Observer's Name (Print)	Thomas Brado
Observer's Signature	TB
Date	4/16/09
Organization	URS Corp.
Certified by	Carl Krontz Assoc.
Date	11/28/08

Additional Information

Continue on reverse side

VISIBLE EMISSION OBSERVATION FORM

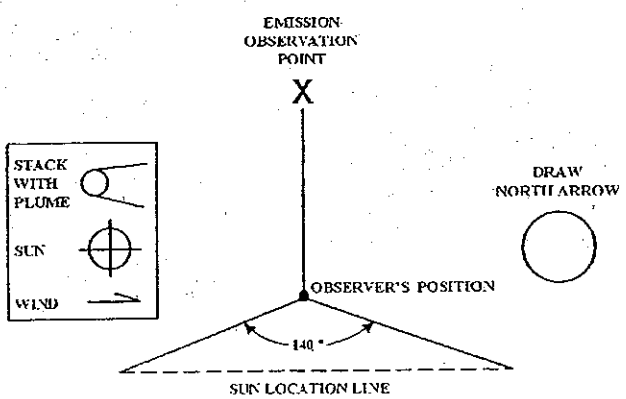
Company Name	Haverhill North Coke Company
Location	2446 Gallia
City	Franklin Furnace
State	OH
Zip	
Process Equipment	Hot Car
Operating Mode	Normal
Control Equipment	Multi Clone
Operating Mode	Normal
Describe Emission Point	Circular Stack on Mobile Car Vertical Exit
Height of Emission Point	~ 35'
Height Relative to Observer	Start 35' End 35'
Distance to Emission Point	Start Varies End Varies
Direction to Emission Point	Start E to NE End E to NE
Vertical Angle to Observation Pt.	Start ~10° End ~10°
Direction to Observation Point	Start W to SW End W to SW
Describe Emissions	Start None visable End Black smoke
Emission Color	Start N/A End Black
If Water Droplet Plume (Circle)	Attached Detached (N/A)
Point In The Plume At Which Opacity Was Determined	Start 3' End 3'
Describe Plume Background	Start Sky & Ductwork End Sky & Ductwork
Background Color	Start Blue/Gray End Blue/Gray
Sky Condition	Start Mostly Clear End
Wind Speed	Start Gentle End Gentle
Wind Direction	Start from NW End from NW
Ambient Temp	Start 75° End 75°
Wet Bulb Temp	N/A
RH Percent	N/A

Observation Date	Start Time	End Time
4/16/09	1549	

Min \ Sec	0	15	30	45	Comments
1	0	0	0	0	Over 1 (103)
2	10	10	5	0	
3	0	0	0	0	
4	0	0	0	0	
5	0	0	0	0	
6	0	0			
7	0	0	0	10	Over 2 (107) 1600
8	20	10	5	5	
9	0	0	0	0	
10	0	0	0	0	
11	0	0	0	0	
12	0				
13	0	0	0	0	Over 3 (111) 1609
14	20	10	5	0	
15	0	0	0	0	
16	0	0	0	0	
17	0	0	0	0	
18	0	0	0	15	Over 4 (115) 1619
19	15	5	0	0	
20	0	0	0	0	
21	0	0	0	0	
22	0	0	0	0	
23	0				
24	0	0	0	5	Over 5 (119) 1641
25	20	5	0	0	
26	0	0	0	0	
27	0	0	0	0	
28	0	0	0	0	105 readings
29	0				175/105 = 1.7
30					

105

SOURCE LAYOUT SKETCH



Observer's Name (Print)	Thomas Brado
Observer's Signature	TB
Date	4/16/09
Organization	URS Corp.
Certified by	Carl Koontz Assoc.
Date	11/28/08

Additional Information: Mobile Source Positions Vary

Continue on reverse side

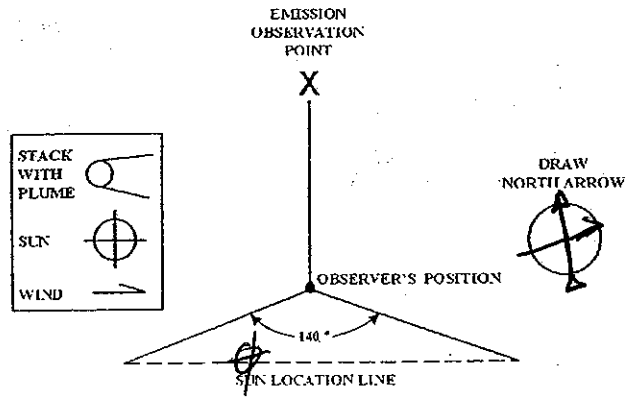
VISIBLE EMISSION OBSERVATION FORM

Company Name	Haverhill North Coke Company
Location	24 Gallia Pike
City	Franklin Furnace
State	OH
Zip	
Process Equipment	Coke Oven Phase II
Operating Mode	Normal
Control Equipment	N/A
Operating Mode	N/A
Describe Emission Point	Coke Oven door opening
Height of Emission Point	~20'
Height Relative to Observer	Start ~20' End ~20'
Distance to Emission Point	Start 75' End 75'
Direction to Emission Point	Start NNE End NNE
Vertical Angle to Observation Pt.	Start 10° End 10°
Direction to Observation Point	Start SSW End SSW
Describe Emissions	Start None visible End Black Smoke
Emission Color	Start N/A End Black
If Water Droplet Plume (Circle)	Attached Detached (N/A)
Point In The Plume At Which Opacity Was Determined	Start 3' End 3'
Describe Plume Background	Start Grey duct Blue Sky End Grey duct/Blue Sky
Background Color	Start Blue/Grey End Blue/Grey
Sky Condition	Start Clear End Clear
Wind Speed	Start 5-10 mph End 5-10 mph
Wind Direction	Start from W End from W
Ambient Temp	Start 75° End 75°
Wet Bulb Temp	N/A
RH Percent	N/A

Observation Date	Start Time	End Time
4/17/09	1656	

Min \ Sec	0	15	30	45	Comments
1	0	0	0	0	Oven #1 (124)
2	0	0	5	5	
3	0	0	0		
4	0	0	0	0	Oven 2 (128) 1706
5	0	0	5	0	
6	0	0			
7	0	0	0	0	Oven 3 (132) 1716
8	0	0	10	0	
9	0	0	0		
10	0	0	0	0	Oven 4 (136) 1726
11	0	0	0	10	
12	0	0	0		
13	0	0	0	0	Oven 5 (140) 1737
14	0	0	5	0	
15	5	0	0	0	
16					
17					
18					
19					55 readings
20					
21					45/55 = 0.82
22					
23					
24					
25					
26					
27					
28					
29					
30					

SOURCE LAYOUT SKETCH



Observer's Name (Print)	Thomas Brado
Observer's Signature	JB
Date	4/17/09
Organization	URS Corp.
Certified by	Carl Koontz Assoc.
Date	11/28/08

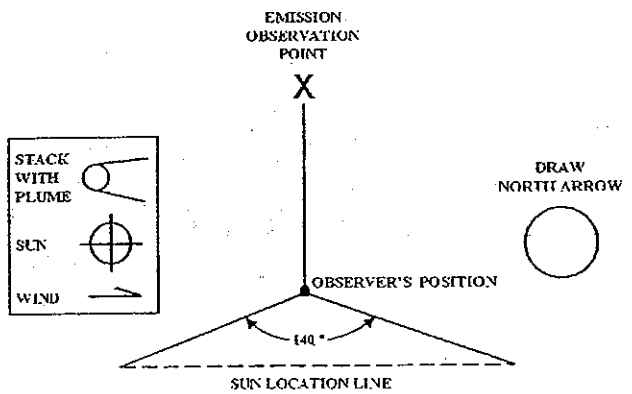
Additional Information

Continue on reverse side

VISIBLE EMISSION OBSERVATION FORM

Company Name	Haverhill North Coke Company
Location	2446 Gallia Pike
City	Franklin Furnace
State	OH
Zip	
Process Equipment	Coke Hot Car
Operating Mode	Normal
Control Equipment	Multiclone
Operating Mode	Normal
Describe Emission Point	Coke hot Car Stack (mobile)
Height of Emission Point	~35'
Height Relative to Observer	Start ~35' End ~35'
Distance to Emission Point	Start Varies End Varies
Direction to Emission Point	Start Varies End Varies
Vertical Angle to Observation Pt.	Start ~10° End ~10°
Direction to Observation Point	Start Varies End Varies
Describe Emissions	Start None visable End Black Smoke
Emission Color	Start N/A End Black
If Water Droplet Plume (Circle)	Attached Detached (N/A)
Point In The Plume At Which Opacity Was Determined	Start 3' End 3'
Describe Plume Background	Start Blue Clear Sky & Grey Ductwork End
Background Color	Start Blue/Grey End Blue/Grey
Sky Condition	Start Clear End Clear
Wind Speed	Start 5-10mph End 5-10mph
Wind Direction	Start from west End from west
Ambient Temp	Start 75° End 75°
Wet Bulb Temp	N/A
RH Percent	N/A

SOURCE LAYOUT SKETCH



Additional Information: mobile Source

Observation Date	Start Time	End Time
4/17/09	1526	

Min \ Sec	0	15	30	45	Comments
1	0	0	0	0	Oven 1 (104)
2	0	20	10	0	
3	0	0	0	0	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	
7	0	0	0	0	
8	0	0	0	0	
9	0	0	0	0	
10	0	0	0	0	
11	0	0	0	0	
12	0	0	0	0	
13	0	0	0	0	
14	0	0	0	0	
15	0	0	0	0	
16	0	0	0	0	
17	0	0	0	0	
18	0	0	0	0	
19	0	0	0	0	
20	0	0	0	0	
21	0	0	0	0	
22	0	0	0		
23	0	0	0	10	Oven 2 (108) 1618
24	15	5	5	0	
25	0	0	0	0	
26	0	0	0	0	
27	0	0	0	0	
28	0	0	0	0	
29	0	0	0	0	
30	0	0	0	0	

119

Observer's Name (Print)	Thomas Brado
Observer's Signature	[signature]
Date	4/17/09
Organization	URS Corp.
Certified by	Carl Kroontz Assoc.
Date	11/28/09

Continue on reverse side

VISIBLE EMISSION OBSERVATION FORM

pg 2

Company Name	Haverhill North Coke Company
Location	2446 Gallia Pike
City	Franklin Furnace
State	OH
Zip	
Process Equipment	Coke Hot Car
Operating Mode	Normal
Control Equipment	Multiclone
Operating Mode	Normal
Describe Emission Point	
Height of Emission Point	
Height Relative to Observer	Start End
Distance to Emission Point	Start End
Direction to Emission Point	Start End
Vertical Angle to Observation Pt.	Start End
Direction to Observation Point	Start End
Describe Emissions	Start End
Emission Color	Start End
If Water Droplet Plume (Circle)	Attached Detached N/A
Point In The Plume At Which Opacity Was Determined	Start End
Describe Plume Background	Start End
Background Color	Start End
Sky Condition	Start End
Wind Speed	Start End
Wind Direction	Start End
Ambient Temp	Start End
Wet Bulb Temp	
RH Percent	

Observation Date	Start Time	End Time
4/17/09	1526	

Min \ Sec	0	15	30	45	Comments
1	0	0	0		Oven #2 Con't.
2	0	0	0	0	Oven #3 (112) 1624
3	20	20	5	0	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	
7	0				
8	0	0	0	0	Oven #4 (116) 1633
9	0	0	20	20	
10	5	5	0	0	
11	0	0	0	0	
12	0	0	0	0	
13	0	0	0		
14	0	0	0	0	Oven 5 (120) 1645
15	0	0	15	20	
16	0	0	0	0	
17	0	0	0	0	
18	0	0	0	0	
19	0	0	0	0	192 readings
20	0	0	0	0	
21	0				195/192 = 1.02
22					
23					
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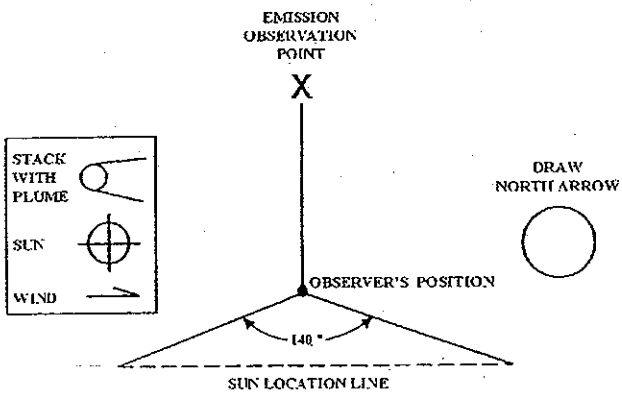
SOURCE LAYOUT SKETCH



Observer's Name (Print)	Thomas Brado
Observer's Signature	TB
Date	4/17/09
Organization	URS Corp.
Certified by	Carl Koontz Assoc.
Date	11/20/08

Additional Information

Continue on reverse side

Hot Car & PCM
Stack Gas CEM Data

URS

CALC. NO. _____

CALCULATION SHEET

SIGNATURE M. Mowery DATE 4-14-08 CHECKED _____ DATE _____

PROJECT HNCC PCM/hot car test JOB NO. _____ Jim Skipworth

SUBJECT CEM direct calibrations SHEET _____ OF _____ SHEETS

4-14-08

CEM calibration

	zero	mid	high
O_2	10:10 0.0	10:23 9:89	10:15 20.12
CO_2	10:10 0.02	10:23 11:06 50.31 ~~11:03~~ ~~47.98~~	10:15 19.06
CO	10:10 0.06	~~10:34~~ ~~83.31~~	10:58 99.43
NOx	10:10 -0.38	10:30 47.66	10:39 83.31
THC	10:10 0.05	11:32 30.08	11:29 45.05

O_2/CO_2 CC144573 18.97 CO_2 / 20.95 O_2

O_2/CO_2 CC2603 9.98% O_2 / 12.43% CO_2

NOx CC232136 47.4 ppm

NOx CC7488 89.0 ppm

CO XC021847B 50.209 ppm
CO CC203335 99.28 ppm

SO_2 LCCO SA12660 48.8 ppm
SO_2 CC42997 92.04 ppm

Propane CC146169 29.75
Propane CC15456 45.10

URS

CALC. NO. _____

CALCULATION SHEET

SIGNATURE M. Mowery DATE 4-15-09 CHECKED _____ DATE _____

PROJECT HNCC PCM / hot Car Test JOB NO. _____

SUBJECT CEM Data SHEET _____ OF _____ SHEETS

4-15-09

Daily CEM Drift Check

		zero		mid
O_2	17:41	0.06	17:56	9.10
CO_2	17:41	0.01	17:56	12.20
CO	17:41	0.03	18:03	49.33
NOx	17:41	0.0	17:53	47.50
SO_2	17:41	-0.06	17:59	48.99
THC	17:45	0.07	18:08	29.41

Run 1	Bag A		Bag B	Hot Car	Average
O_2	18:20	19.69	21:36	18.85	19.27
CO_2	18:20	2.08	21:36	1.87	1.98
NOx	18:20	~~10.52~~ nm 8.01	21:36	6.39	7.2
SO_2	18:20	109.20	21:36	110.97	110.08
THC	18:26	-0.13	21:43	2.56	1.28
CO	18:20	70.32	21:36	93.68	82.0

PCM Run 1 Tedlar Bag Composite

21:47	O_2	21.09
21:47	CO_2	0.05

URS

CALC. NO. _____

CALCULATION SHEET

SIGNATURE M. Mowery DATE 4-16-08 CHECKED _____ DATE _____

PROJECT HNCC PCM/hot Car test JOB NO. _____

SUBJECT CEM Data SHEET _____ OF _____ SHEETS

CEM Drift check

	zero		mid	
O_2	18:42	-0.04	18:48	10.01
CO_2	18:42	0.03	18:48	12.71
NOx	18:42	0.0	18:53	47.32
CO	18:42	0.30		
SO_2	18:42	0.17	18:59	48.97
THC	18:47	0.0	18:52	44.90

Hot Car Run 2

	Bag A		Bag B		Avg.
O_2	19:12	19.25	21:55	19.55	19.4
CO_2	19:12	1.91	21:55	1.95	1.93
NOx	19:12	6.78	21:55	6.37	6.58
CO	19:12	59.44	21:55	74.80	67.12
SO_2	19:12	86.54	21:55	82.29	84.41
THC	19:14	1.3	21:53	1.70	1.5

PCM Run 2 Bag

O_2	22:00	21.18
CO_2	22:00	0.08

URS

CALC. NO. _____

CALCULATION SHEET

SIGNATURE M. Mowery DATE 4-17-09 CHECKED _____ DATE _____

PROJECT HNCC JOB NO. _____

SUBJECT Unit 2 Hot Car/PCM SHEET _____ OF _____ SHEETS

CEM Daily Drift

	Zero		Mid	
O_2	18:24	0.08	18:30	12.24
CO_2	18:24	0.01	18:30	9.65
CO	18:24	-0.07	18:44	49.24
NOx	18:24	-0.02	18:36	47.05
SO_2	18:24	-0.17	18:40	48.56
THC	18:41	-0.00	18:36	44.64

Hot Car Run 3

		Bag A		Bag B	Avg
O_2	18:50	18.8	21:18	18.89	18.85
CO_2		2.25		2.08	2.17
CO		78.06		79.12	78.59
NOx		9.37		~~26~~ 9.52	9.45
SO_2		116.89		~~23.34~~ 26.04	71.47
THC	18:52	1.98	21:20	2.27	2.13

PCM Run 3

O_2 - 21.0

CO_2 - Ø

Appendix E

Enthalpy Laboratory Report

Main Stack

HCl Test Results
&
OTM-28 Condensables

URS Corporation

1093 Commerce Park Dr, Suite 100
Oak Ridge, TN 37830

HNCC
Project # 39400492

Analytical Report
(0409-67)

EPA Method 26A

Chloride
Hydrogen chloride

OTM-028

Condensible Particulate Matter

Enthalpy Analytical, Inc.
Phone: (919) 850 - 4392 / Fax: (919) 850 - 9012 / www.enthalpy.com
2202 Ellis Road Durham, NC 27703 - 5518

I certify that to the best of my knowledge all analytical data presented in this report:

- Have been checked for completeness
- Are accurate, error-free, and legible
- Have been conducted in accordance with approved protocol, and that all dev iations and analytical problems are summarized in the appropriate narrative(s)
- This analytical report was prepared in Portable Document Format (.PDF) and contains 132 pages.

Michael Steven Schapira

QA Review Performed by: Michael Steven Schapira

Summary of Results

o a A a Pa a e e # a e	o o a o EPA e o 26A 3 1 a

e #	39400492
o #	0409-67
P #	e a
e o a e	2009

o o a e a e g g			
	R1	***R2***	***R3***
o e	2 2	37 9	42 1
	NaOH Bk		
o e	2 34		

o a A a Pa a e e # a e	o o a o EPA e o 26A 3 1 a

e # o # P # e o a e	39400492 0409-67 e a 2009

o o a e a e g g			
	R1	***R2***	***R3***
oge o e	1 7	9	14
	H2SO4 Bk		
oge o e	2 4		

Company	URS Corporation
Analyst	ARM
Parameters	EPA OTM-028
# Samples	3 runs & 1 blank

Client #	39400492
Job #	0409-67
PO #	Verbal
Report Date	5/5/2009

Analysis of Condensible Particulate Recovery

Sample ID Number	*Run 1*		*Run 2*		*Run 3*		*Filter Blank*	
Organic								
Beaker Number	*13072*		*13073*		*13074*		*13075*	
Initial Acetone Volume, mL	63.0		68.5		55.0		0	
Initial MeCl2 Volume, mL	89.0		108		86.0		0	
Lab MeCl2 Volume, mL	165	Dates	165	Dates	165	Dates	75.0	Dates
Final Weight, g	1.9183	5/1/09	1.9166	5/1/09	1.9213	5/1/09	1.9214	5/1/09
Reweigh, Final, g	1.9183	5/4/09	1.9165	5/4/09	1.9213	5/4/09	1.9214	5/4/09
Beaker Tare, g	1.9147	4/23/09	1.9130	4/23/09	1.9185	4/23/09	1.9203	4/23/09
Organic Catch, mg	3.6		3.6		2.8		1.1	
Inorganic								
Beaker Number	*13127*	Dates	*13128*	Dates	*13129*	Dates	*13130*	Dates
Final Weight, g	1.9496	5/1/09	1.9522	5/1/09	1.9296	5/1/09	1.9505	5/1/09
Reweigh, Final, g	1.9494	5/4/09	1.9521	5/4/09	1.9294	5/4/09	1.9504	5/4/09
Beaker Tare, g	1.9455	4/27/09	1.9484	4/27/09	1.9254	4/27/09	1.9495	4/27/09
H2O FV, mL	354		344		342		75.0	
Condensed Volume, mL	100		100		100		0.0	
Removed Pre-aliquot, mL	0.5		0.5		0.5		0.5	
Pre-aliquot CF	1.00		1.00		1.00		1.01	
Removed Post-aliquot, mL	0.5		0.5		0.5		0.5	
Post-aliquot CF	1.01		1.01		1.01		1.01	
Net Inorganic Catch, mg	3.9		3.7		4.0		1.0	
Ammonium Correction, mg	0.9		1.1		0.9		0.1	
Corrected Inorganic, mg	3.0		2.6		3.2		0.8	
Condensible Particulate, mg	6.6		6.2		6.0		1.9	
Blank Corrected Result, ug	4.7		4.3		4.1			

Note: Blank correction is 2.0 mg or measured value, whichever is lower.

Client Blank Analyses

Type Blank	MeCl Blank
Beaker Number	*13076*
Tare weight, g	1.9087
Dry Residue Weight, g	1.9104
Reweigh, Final, g	1.9104
MeCl2 Residue, g	0.0017
MeCl2 Volume, mL	150
Max. MeCl2 Residue, g	0.0020

Type Blank	H2O Blank
Beaker Number	*13131*
Tare weight, g	1.9452
Dry Residue Weight, g	1.9458
Reweigh, Final, g	1.9458
Water Residue, g	0.0005
Water Volume, mL	150
Max. Water Residue, g	0.0015

Type Blank	Acetone
Beaker Number	*13078*
Tare weight, g	1.9083
Dry Residue Weight, g	1.9105
Reweigh, Final, g	1.9105
Acetone Residue, g	0.0022
Acetone Volume, mL	150
Max. Acetone Residue, g	0.0012

In-House Blank Analyses

Type Blank	MeCl Blank
Beaker Number	*13077*
Tare weight, g	1.9295
Dry Residue Weight, g	1.9306
Reweigh, Final, g	1.9306
MeCl2 Residue, g	0.0010
MeCl2 Volume, mL	225
Max. MeCl2 Residue, g	0.0030

Type Blank	H2O Blank
Beaker Number	*13132*
Tare weight, g	1.9431
Dry Residue Weight, g	1.9436
Reweigh, Final, g	1.9435
Water Residue, g	0.0004
Water Volume, mL	250
Max. Water Residue, g	0.0025

Type Blank	Acetone
Beaker Number	*13079*
Tare weight, g	1.9088
Dry Residue Weight, g	1.9168
Reweigh, Final, g	1.9168
Acetone Residue, g	0.0080
Acetone Volume, mL	200
Max. Acetone Residue, g	0.0016

Results

Company	URS Corporation
Analyst	MDS
Parameters	EPA Method 26A
# Samples	3 Runs & 1 blank

Client #	39400492
Job #	0409-67
PO #	Verbal
Report Date	5/5/2009

MDL 0.0421 (ug/mL)
LOQ 0.434 (ug/mL)
Compound Chloride

Lower Curve Limit 0.434 (ug/mL)
Upper Curve Limit 13.0 (ug/mL)

Sample ID	Lab ID # 1	Lab ID # 2	Analysis Method	Ret Time (min)	Ret Time (min)	% Diff Ret	Conc # 1 (ug/mL)	Conc # 2 (ug/mL)	% Diff Conc	Avg Conc (ug/mL)	DF	Vol (mL)	Catch Weight (ug)	Qual
R1 Imp 3&4	011-1201.D	011-1202.D	0409-67B.M	NA	NA	NA	0.0421	0.0421	0.0	0.0421	4.002	310	52.2	ND
R2 Imp 3&4	012-1301.D	012-1302.D	0409-67B.M	NA	NA	NA	0.0421	0.0421	0.0	0.0421	4.002	225	37.9	ND
R3 Imp 3&4	013-1401.D	013-1402.D	0409-67B.M	NA	NA	NA	0.0421	0.0421	0.0	0.0421	4.002	250	42.1	ND
NaOH Bk	014-1501.D	014-1502.D	0409-67B.M	4.28	4.24	0.9	4.23	4.29	0.7	4.26	4.1	145	2,534	
NaOH Rgt Blank	008-0901.D	008-0902.D	0409-67B.M	NA	NA	NA	0.0421	0.0421	0.0	0.0421	1	1.00	0.0421	ND
DI H2O Rgt Blank	009-1001.D	009-1002.D	0409-67B.M	NA	NA	NA	0.0421	0.0421	0.0	0.0421	1	1.00	0.0421	ND
Method Blank	010-1101.D	010-1102.D	0409-67B.M	NA	NA	NA	0.0421	0.0421	0.0	0.0421	4.1	1.00	0.173	ND
MS/R1 I3&4	015-1601.D	015-1602.D	0409-67B.M	4.22	4.17	1.2	2.08	2.07	0.2	2.08	1	0.525	1.09	
												Spike Amount (ug)	1.25	
												Native Amount (ug)	0.00	
												Spike Recovery (%)	87.2%	
MSD/R1 I3&4	016-1701.D	016-1702.D	0409-67B.M	4.22	4.18	1.0	2.06	2.04	0.3	2.05	1	0.525	1.08	
												Spike Amount (ug)	1.25	
												Native Amount (ug)	0.00	
												Spike Recovery (%)	86.1%	
hplc44pg56 LCS	007-0801.D	007-0802.D	0409-67B.M	4.23	4.19	1.0	7.00	6.99	0.0	6.99	1	1.00	6.99	
												Spike Amount (ug)	7.45	
												Spike Recovery (%)	93.9%	

Company	URS Corporation
Analyst	MDS
Parameters	EPA Method 26A
# Samples	3 Runs & 1 blank

Client #	39400492
Job #	0409-67
PO #	Verbal
Report Date	5/5/2009

MDL 0.0421 (ug/mL)
LOQ 0.446 (ug/mL)
Compound Hydrogen chloride

Lower Curve Limit 0.446 (ug/mL)
Upper Curve Limit 13.3 (ug/mL)

Sample ID	Lab ID # 1	Lab ID # 2	Analysis Method	Ret Time (min)	Ret Time (min)	% Diff Ret	Conc # 1 (ug/mL)	Conc # 2 (ug/mL)	% Diff Conc	Avg Conc (ug/mL)	DF	Vol (mL)	Catch Weight (ug)	Qual
R1 Imp 1&2	011-1201.D	011-1202.D	0409-67A.M	4.20	4.15	1.3	0.0623	0.0832	14.4	0.0728	4	540	157	J
R2 Imp 1&2	012-1301.D	012-1302.D	0409-67A.M	NA	4.17	NA	0.0421	0.0497	8.3	0.0459	4	520	95.5	J
R3 Imp 1&2	013-1401.D	013-1402.D	0409-67A.M	4.20	4.16	1.0	0.0767	0.0713	3.7	0.0740	4	500	148	J
H2SO4 Bk	014-1501.D	014-1502.D	0409-67A.M	NA	NA	NA	0.0421	0.0421	0.0	0.0421	4.1	147	25.4	ND
H2SO4 Rgt Blank	008-0901.D	008-0902.D	0409-67A.M	NA	NA	NA	0.0421	0.0421	0.0	0.0421	1	1.00	0.0421	ND
DI H2O Rgt Blank	009-1001.D	009-1002.D	0409-67A.M	NA	NA	NA	0.0421	0.0421	0.0	0.0421	1	1.00	0.0421	ND
Method Blank	010-1101.D	010-1102.D	0409-67A.M	NA	NA	NA	0.0421	0.0421	0.0	0.0421	4.1	1.00	0.173	ND
MS/R1 I1&2	015-1601.D	015-1602.D	0409-67A.M	4.19	4.15	0.9	2.36	2.33	0.7	2.34	1	0.525	1.23	
												Spike Amount (ug)	1.25	
												Native Amount (ug)	0.0364	
												Spike Recovery (%)	95.6%	
MSD/R1 I1&2	016-1701.D	016-1702.D	0409-67A.M	4.19	4.15	0.9	2.40	2.39	0.2	2.40	1	0.525	1.26	
												Spike Amount (ug)	1.25	
												Native Amount (ug)	0.0364	
												Spike Recovery (%)	97.7%	
hplc44pg54 LCS	007-0801.D	007-0802.D	0409-67A.M	4.19	4.16	0.7	7.33	7.32	0.0	7.32	1	1.00	7.32	
												Spike Amount (ug)	7.66	
												Spike Recovery (%)	95.6%	

o a	o o a o
A a	A
Pa a e e	EPA -02
# a e	3 1 a

e #	39400492
o #	0409-67
P #	e a
e o a e	5 5 2009

0 03
a a a o 0 02
4 o a 0 10 o # g a A 31 620

Sample ID.	Volume Received (mL)	Titration Aliquot Vol (mL)	Titration NH_4OH Vol (mL)	Aliquot Factor	H_2SO_4 (mg) Equivalent
Run 1	100	99 5	0 20	1 005	0 7
Run 2	100	99 5	0 25	1 005	1 13
Run 3	100	99 5	0 20	1 005	0 7
Filter Blank	100	99 5	0 05	1 005	0 14
Blank (Client Water)	100	99 5	0 03	1 005	0 0493

Narrative Summary

Enthalpy Analytical Narrative Summary

Company	URS Corporation
Analyst	MDS
Parameters	EPA Method 26A
# Samples	6 Runs & 2 blanks

Client #	39400492
Job #	0409-67
PO #	Verbal
Report Date	May 5, 2009

Custody

Tara Grayson of Enthalpy Analytical, Inc. received the samples on 4/21/09 at 18.5 °C after being relinquished by URS Corporation of Oak Ridge, TN. The samples were received in good condition, but were shipped in glass containers instead of the method-specified PPE. Prior to and during analysis, the samples were kept under lock with access only to authorized personnel by Enthalpy Analytical, Inc.

Analysis

The samples were analyzed for chloride and hydrogen chloride using the analytical procedures in EPA Method 26A, Determination of Hydrogen Halide and Halogen Emissions from Stationary Sources Isokinetic Method (40 CFR Part 60, Appendix A).

The samples were analyzed following the procedures in Section 11.0, Analytical Procedures. All samples and standards are prepared, stored, and analyzed using high-density polyethylene containers.

The Agilent Model 1100, High Performance Liquid Chromatograph ("Gonzo") was equipped with a Dionex CD20 Conductivity Detector and a Dionex Ion Pac AS14A, 4 x 250 mm (S/N 006531) column.

Calibration

The calibration curve is located in the back of this report and referenced in the Analysis Method column on the Detailed Results page.

For each calibration curve used, the first page of the curve contains all method specific parameters (i.e., curve type, origin, weight, etc.) used to quantify the samples. The calibration curve section also includes a table with the Retention Time (RetTime), Level (Lvl), Amount (corresponding units), Area, Response Factor (Amt/Area) and the analyte Name. The calibration table is used to identify (by retention time) and quantify each target compound.

Chromatographic Conditions

The acquisition methods COLSWTCH.M and CHLSWTCH.M are included in the Curve/QA Chromatograms section of this report.

Enthalpy Analytical Narrative Summary
(continued)

QC Notes

As required in Section 7.2.2, Absorbing Solution Blanks, client-provided reagent blanks were analyzed. Additionally, a quality control check sample was analyzed at the same time as the blanks and samples. All method required acceptance criteria were met.

All sample preparation and analytical holding times specified in the method were met. Section 13.2, Sample Stability, specifies an analytical holding time of four weeks.

Reporting Notes

The chloride result for the ***NaOH Blank*** sample was confirmed in an additional analysis.

The H_2SO_4 matrix samples were analyzed for Cl^- and F^- but are reported as HCl. The peaks listed in the "Sample Chromatograms" section are labeled hydrogen chloride. The additional molecular weight contribution from the H^+ is included in the results listed on each chromatogram and throughout the report.

Enthalpy Analytical, Inc. is accredited to perform this method for compliance purposes by the National Environmental Laboratory Accreditation Conference (NELAC) through the Louisiana Environmental Laboratory Accreditation Program (LELAP), certificate number 04010.

The results presented in this report are representative of the samples as provided to the laboratory.

Enthalpy Analytical Narrative Summary

Company	URS Corp. - Oak Ridge, TN
Analyst	ARM
Parameters	OTM-028
# Samples	3 Runs & 1 blank

Client #	39400492
Job #	0409-67
PO #	Verbal
Report Date	May 5, 2009

Custody

Tara Grayson of Enthalpy Analytical, Inc. received the samples on 4/21/09 at 18.5 °C after being relinquished by URS Corporation of Oak Ridge, TN. The samples were received in good condition and were shipped in glass containers. Prior to and during analysis, the samples were kept under lock with access only to authorized personnel by Enthalpy Analytical, Inc.

Analysis

The samples were analyzed for Condensible Particulate matter using the analytical procedures in OTM-028, Dry Impinger Method for Determining Condensable Particulate Emissions From Stationary Sources.

All samples were weighed on a Sartorius Model ME 5-F (SN 23104965) certified by Precision Weighing, Inc. through the end of October 2009, NIST Test # 1378199.

Sulfate was determined by titrating the sample with 0.1N NH_4OH using a micro burette.

QC Notes

Blank corrections in OTM-028 are determined by measuring a blank train. The blank total condensable particulate value correction is then used as the blank correction for the samples, as long as it is less than or equal to 2.0 mg. If the blank measurement is above 2.0 mg, then the correction is set at 2.0 mg. In this project the blank measured 1.9 mg.

Enthalpy considers gravimetric analyses for OTM-028 to be ±0.5 mg at best. Therefore, negative catch weights between 0 and –0.5 mg are set to zero and no investigation is undertaken. Negative catch weights <-0.5 mg are investigated. None of the catch results for this data set were negative.

Reporting Notes

The results presented in this report are representative of the samples as provided to the laboratory.

General Reporting Notes

The following are general reporting notes that are applicable to all Enthalpy Analytical, Inc. reports, unless specifically noted otherwise.

- The symbol ***MDL*** represents the Minimum Detection Limit. Below this value the laboratory cannot confim the presence of the analyte of interest reliably.
- The symbol ***LOQ*** represents the Limit of Quantification. Below this value the la boratory cannot quantitate the analyte of interest within the criteria of the method.
- The symbol ***ND*** following a value indicates a non -detect or analytical result below the MDL.
- The symbol ***J*** following a value indicates an analytical result between the MDL a nd the LOQ. A J flag indicates that the laboratory can positively identify the analyte of interest as present, but the value should be considered an estimate.
- The symbol ***E*** following a value indicates an analytical result exceeding 100% of the highest calib ration point.
- The symbol ***DF*** represents a Dilution Factor. This number represents dilutions during the extraction and/or laboratory stages of sample treatment. The analytical result taken from a laboratory instrument is multiplied by the DF to get final res ults.
- The Sample ID ***MS*** represents a Matrix Spike. An aliquot of an actual sample is spiked with a known amount of analyte so that a percent recovery value can be determined. This shows what effect the sample matrix may have on the target analyte, i.e. whet her or not anything in the sample matrix prohibits analysis for the analyte(s).
- The Sample ID ***MSD*** represents a Matrix Spike Duplicate. Prepared in the same manner as an MS, the use of duplicate matrix spikes allows further confirmation of laboratory qualit y by showing the consistency of results gained by performing the same steps multiple times. Most methods performed by Enthalpy do not require analysis of an MSD.
- The Sample ID ***BS*** represents a Blind Spike. A member of the Quality Assurance department has created BS samples for many of the analytes Enthalpy tests for, and only QA and the Enthalpy Analytical ownership have access to the actual values of these samples. The laboratory analyzes them without knowledge of the actual value, and the spreadsheets get completed for these samples solely by the QA group.
- The Sample ID ***LCS*** represents a Laboratory Control Sample. Whenever spikes are prepared for our clients more spikes are prepared than needed. The extras (randomly chosen) are kept in -house at the appropria te temperature conditions. When the spike samples come back from the client for analysis, the LCSs (usually two are saved) are analyzed to confirm that the analyte could be recovered from the media, separate from the spike samples which were used on the pr oject and which may have had issues caused during collection and/or transport.
- **Significant Figures**: Where the reported value is much greater than unity (1.00) in the units expressed (specifically values of 1,000 or greater), the number is rounded to a whol e number of units, rather than to 3 significant figures. For example, a value of 10,456.45 ug catch is rounded to 10,456 ug. There are five significant digits reported, but no confidence should be placed on more than three significant digits.

Sample Custody

URS

Chain of Custody Record

M5/26a HCL

Project	HNCC
Site	URS Oak Ridge
Project Number	39400492
Prepared by	T. Brado

Sample ID	Sample Matrix	Date/Time	Target Compound Hydrocloric Acid	Cl-		Hold *Backup sample*	Analyze - EPA Method 26a T	Shipping Container Number	Comments
M5/26-R1-Imp1+2	0.1N H2SO4	4/9/2009 1230hrs	X				X	1	
M5/26-R1-Imp3+4	0.1N NaOH	4/9/2009 1230hrs	~~X~~	X			X	1	
M5/26-R2-Imp1+2	0.1N H2SO4 1230	4/9/2009 ~~1400~~hrs	X				X	1	
M5/26-R2-Imp3+4	0.1N NaOH 1230	4/9/2009 ~~1400~~hrs	~~X~~	X			X	1	
M5/26-R3-Imp1+2	0.1N H2SO4 1625	4/9/2009 ~~1630~~hrs	X				X	1	
M5/26-R3-Imp3+4	0.1N NaOH 1625	4/9/2009 ~~1630~~hrs	~~X~~	X			X	1	
M5/26-Blk-0.1n H2SO4	0.1N H2SO4 1715	4/9/2009 ~~1630~~hrs	X				X	1	
M5/26-Blk-0.1n NaOH	0.1N NaOH 1715	4/9/09 ~~1630~~hrs	~~X~~	X			X	1	
	TAG 4/21/09			TAG 4/21/09					

Relinquished by:	Date	Time	Received by:	Date	Time	Relinquished by:	Date	Time
T. Brado	4/10/09	1100						
Received by:	**Date**	**Time**	**Relinquished by:**	**Date**	**Time**			

Received for Laboratory by	Date	Time	Airbill No.	Opened by:	Seal #	Date	Time	Temp (C)
	4/10/09	1100						18.5

Seal #	Condition

Remarks: * RECEIVED IN GLASS *
TAG

URS

Chain of Custody Record

OTM28

Project	HNCC
Site	URS Oak Ridge
Project Number	39400492
Prepared by	T. Brado

Sample ID	Sample Matrix	Date/Time	Target Compound Condensible Particulate Matter			Hold *Backup sample*	Analyze - EPA Method OTM2	Shipping Container Number	Comments
OTM28-R1-Condensate	H20	4/9/09 1230hrs	X				X	1	
OTM28-R1-Acetone Rinse	Acetone	4/9/09 1230hrs	X				X	1	
OTM28-R1-MeCl2 Rinse	MeCl2	4/9/09 1230hrs	X				X	1	
OTM28-R1-CPM Filter	Filter	4/9/09 1230hrs	X				X	1	
OTM28-R2-Condensate	H20	4/9/09 1400hrs	X				X	1	
OTM28-R2-Acetone Rinse	Acetone	4/9/09 1400hrs	X				X	1	
OTM28-R2-MeCl2 Rinse	MeCl2	4/9/09 1400hrs	X				X	1	
OTM28-R2-CPM Filter	Filter	4/9/09 1400hrs	X				X	1	
OTM28-R3-Condensate	H20	4/9/09 1645 ~~1430~~hrs	X				X	1	
OTM28-R3-Acetone Rinse	Acetone	4/9/09 1645 ~~1430~~hrs	X				X	1	
OTM28-R3-MeCl2	MeCl2	4/9/09 1645 ~~1430~~hrs	X				X	1	
OTM28-R3- CPM filter	Filter	4/9/09 1645 ~~1430~~hrs	X				X	1	

Remarks: ~~See Test Plan for Analyte List~~

Relinquished by:	Date	Time	Received by:	Date	Time	Relinquished by:	Date	Time
T. Brado	4/10/09	1600hrs						
Received by:	**Date**	**Time**	**Relinquished by:**	**Date**	**Time**			

Received for Laboratory by	Date	Time	Airbill No.	Opened by:	Seal #	Date	Time	Temp (C)
	4/21	10:03						19.5 °C

Seal #	Condition

Remarks

URS

Chain of Custody Record

OTM28

Project	HNCC
Site	URS Oak Ridge
Project Number	39400492
Prepared by	T. Brado

Sample ID	Sample Matrix	Date/Time	Target Compound Condensible Particulate Matter			Hold *Backup sample*	Analyze - EPA Method OTM2	Shipping Container Number	Comments
OTM28-Blk-Condensate	H20	4/9/09 ~~1430~~hrs 1715	X				X	1	
OTM28-Blk-Acetone Rinse	Acetone	4/9/09 ~~1430~~hrs 1715	X				X	1	
OTM28-Blk-MeCl2 Rinse	MeCl2	4/9/09 ~~1430~~hrs 1715	X				X	1	
		4/21/09							

Relinquished by:	Date	Time	Received by:	Date	Time	Relinquished by:	Date	Time
T. Brado	4/21/09	1600hrs						
Received by:	**Date**	**Time**	**Relinquished by:**	**Date**	**Time**			

Received for Laboratory by	Date	Time	Airbill No.	Opened by	Seal #	Date	Time	Temp (C)
	4/21/09	10:00						18.5

Seal #	Condition

Remarks

Test America Laboratory Report

Main Stack

Multi- metals including lead

Main Stack
M29

H9D140169 Analytical Report **1**

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Sample Receipt Documentation **330**

Total Number of Pages **332**

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

ANALYTICAL REPORT

PROJECT NO. 39400492

Haverhill North Coke Co.-M29

Lot #: H9D140169

Michael Mowery

URS Corporation
1093 Commerce Park Drive
Suite 100
Oak Ridge, TN 37830

TESTAMERICA LABORATORIES, INC.

Kevin S. Woodcock
Project Manager

April 27, 2009

ANALYTICAL METHODS SUMMARY

H9D140169

PARAMETER	ANALYTICAL METHOD
Inductively Coupled Plasma (ICP) Metals	SW846 6010B

References:

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

SAMPLE SUMMARY

H9D140169

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
K93H5	001	M29 RUN 1 FH	04/07/09	
K93JF	002	M29 RUN 1 BH	04/07/09	
K93JH	003	M29 RUN 2 FH	04/07/09	
K93JK	004	M29 RUN 2 BH	04/07/09	
K93JL	005	M29 RUN 4 FH	04/09/09	
K93JM	006	M29 RUN 4 BH	04/09/09	
K93JP	007	M29 0.1N NITRIC ACID BLANK	04/09/09	

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

PROJECT NARRATIVE
H9D140169

The results reported herein are applicable to the samples submitted for analysis only.

This report shall not be reproduced except in full, without the written approval of the laboratory.

The original chain of custody documentation is included with this report.

Sample Receipt

There were no problems with the condition of the samples received.

Quality Control and Data Interpretation

Unless otherwise noted, all holding times and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

These stack gas samples were prepared and analyzed using TestAmerica Knoxville standard operating procedure KNOX-MT-0006 which is based on EPA SW-846 Method 0060, "Determination of Metals in Stack Emissions" and Method 29, "Determination of Metals Emissions from Stationary Sources". SW-846 Method 6010B as incorporated in TestAmerica Knoxville standard operating procedure KNOX-MT-0007 was used to perform the final instrument analysis.

Acid digestion was performed on the front half particulate filter and the nitric acid probe rinse fractions separately using HNO_3 and HF. After digestion, these two fractions were combined, and the HF was sequestered using H_3BO_3 followed by another heating cycle. This digestate was adjusted to final volume and analyzed by ICP.

The 5%HNO_3/10%H_2O_2 impinger samples were reduced in volume, digested using HNO_3 and H_2O_2, and analyzed by ICP.

ICP results were calculated using the following equation:

TestAmerica Knoxville maintains the following certifications, approvals and accreditations: Arkansas DEQ Lab #88-0688, California DHS ELAP Cert. #2423, Colorado DPHE, Connecticut DPH Lab #PH-0223, Florida DOH Lab #E87177, Georgia DNR Lab #906, Hawaii DOH, Illinois EPA Lab #200012, Indiana DOH Lab #C-TN-02, Iowa DNR Lab #375, Kansas DHE Cert. #E-10349, Kentucky DEP Lab #90101, Louisiana DEQ Cert. #03079, Louisiana DOHH, Maryland DOE Cert. #277, Michigan DEQ Lab #9933, Nevada DEP, New Jersey DEP Lab #TN001, New York DOH Lab #10781, North Carolina DPH Lab #21705, North Carolina DEHNR Cert. #64, Ohio EPA VAP Lab #CL0059, Oklahoma DEQ Lab #9415, Pennsylvania DEP Lab #68-00576, South Carolina DHEC Cert #84001001, Tennessee DOH Lab #02014, Texas CEQ, Utah DOH Lab # QUAN3, Virginia DGS Lab #00165, Washington DOE Lab #C1314, West Virginia DEP Cert. #345, West Virginia DHHR Cert #9955C, Wisconsin DNR Lab #998044300, Naval Facilities Engineering Service Center and USDA Soil Permit #S-46424. This list of approvals is subject to change and does not imply that laboratory certification is available for all parameters reported in this environmental sample data report.

PROJECT NARRATIVE
H9D140169

$$ICPAnalyte, \mu g = \begin{pmatrix} Raw\ Sample \\ Concentration, \mu g/L \end{pmatrix} \times \begin{pmatrix} Bench \\ Dilution \\ Factor \end{pmatrix} \times \begin{pmatrix} Final\ Volume \\ ICP\ Digestate, L \end{pmatrix}$$

The serial dilution of samples M29 Run 1 FH and M29 Run 1 BH were outside control limits due to physical or chemical matrix interferences. Please note that the serial dilution test is performed to determine whether significant physical or chemical interferences exist due to the sample matrix. Due to the potential variability of the matrix of each sample, these results may have immediate bearing only on the specific sample analyzed.

The post digestion spike recovery for sample M29 Run 1 FH was outside control limits for chromium. However, the laboratory control sample showed acceptable result indicating that the analysis was in control. The post digestion spike result is, therefore, attributed to matrix effects.

QC DATA ASSOCIATION SUMMARY

H9D140169

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	AIR	SW846 6010B		9110031	
002	AIR	SW846 6010B		9110032	
003	AIR	SW846 6010B		9110031	
004	AIR	SW846 6010B		9110032	
005	AIR	SW846 6010B		9110031	
006	AIR	SW846 6010B		9110032	
007	AIR	SW846 6010B		9110031	

Sample Data Summary

URS Corporation

Client Sample ID: M29 RUN 1 FH

TOTAL Metals

Lot-Sample #...: H9D140169-001 Matrix.....: AIR
Date Sampled...: 04/07/09 Date Received..: 04/13/09

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9110031						
Antimony	5.6 B	6.0	ug	SW846 6010B	04/20-04/23/09	K93H51AA
		Dilution Factor: 1		Analysis Time..: 15:10	MDL.....: 0.85	
Arsenic	3.2	1.0	ug	SW846 6010B	04/20-04/23/09	K93H51AC
		Dilution Factor: 1		Analysis Time..: 15:10	MDL.....: 0.35	
Barium	6.4 B	20.0	ug	SW846 6010B	04/20-04/23/09	K93H51AD
		Dilution Factor: 1		Analysis Time..: 15:10	MDL.....: 0.35	
Beryllium	ND	0.50	ug	SW846 6010B	04/20-04/23/09	K93H51AE
		Dilution Factor: 1		Analysis Time..: 15:10	MDL.....: 0.16	
Cadmium	ND	1.0	ug	SW846 6010B	04/20-04/23/09	K93H51AF
		Dilution Factor: 1		Analysis Time..: 15:10	MDL.....: 1.0	
Chromium	353	1.0	ug	SW846 6010B	04/20-04/23/09	K93H51AG
		Dilution Factor: 1		Analysis Time..: 15:10	MDL.....: 0.31	
Cobalt	3.2 B	5.0	ug	SW846 6010B	04/20-04/23/09	K93H51AH
		Dilution Factor: 1		Analysis Time..: 15:10	MDL.....: 0.50	
Copper	25.1	2.5	ug	SW846 6010B	04/20-04/23/09	K93H51AJ
		Dilution Factor: 1		Analysis Time..: 15:10	MDL.....: 0.59	
Lead	9.2	2.0	ug	SW846 6010B	04/20-04/23/09	K93H51AK
		Dilution Factor: 1		Analysis Time..: 15:10	MDL.....: 2.0	
Manganese	47.7 J	1.5	ug	SW846 6010B	04/20-04/23/09	K93H51AL
		Dilution Factor: 1		Analysis Time..: 15:10	MDL.....: 0.15	
Nickel	266	4.0	ug	SW846 6010B	04/20-04/23/09	K93H51AM
		Dilution Factor: 1		Analysis Time..: 15:10	MDL.....: 0.44	
Phosphorus	25.5 B	30.0	ug	SW846 6010B	04/20-04/23/09	K93H51AN
		Dilution Factor: 1		Analysis Time..: 15:10	MDL.....: 1.9	
Selenium	3.6	1.0	ug	SW846 6010B	04/20-04/23/09	K93H51AP
		Dilution Factor: 1		Analysis Time..: 15:10	MDL.....: 0.35	

(Continued on next page)

URS Corporation

Client Sample ID: M29 RUN 1 FH

TOTAL Metals

Lot-Sample #...: H9D140169-001 Matrix.....: AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Silver	8.5	2.0	ug	SW846 6010B	04/20-04/23/09	K93H51AQ
		Dilution Factor: 1		Analysis Time..: 15:10	MDL.....: 0.95	
Thallium	ND	5.0	ug	SW846 6010B	04/20-04/23/09	K93H51AR
		Dilution Factor: 1		Analysis Time..: 15:10	MDL.....: 5.0	
Zinc	27.2 J	2.0	ug	SW846 6010B	04/20-04/23/09	K93H51AT
		Dilution Factor: 1		Analysis Time..: 15:10	MDL.....: 0.23	

NOTE(S):

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

URS Corporation

Client Sample ID: M29 RUN 1 BH

TOTAL Metals

Lot-Sample #...: H9D140169-002 Matrix.....: AIR
Date Sampled...: 04/07/09 Date Received..: 04/13/09

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9110032						
Antimony	0.92 B	6.0	ug	SW846 6010B	04/20-04/23/09	K93JF1AA
		Dilution Factor: 1		Analysis Time..: 14:27	MDL.....: 0.85	
Arsenic	ND	1.0	ug	SW846 6010B	04/20-04/23/09	K93JF1AC
		Dilution Factor: 1		Analysis Time..: 14:27	MDL.....: 0.33	
Barium	2.2 B	20.0	ug	SW846 6010B	04/20-04/23/09	K93JF1AD
		Dilution Factor: 1		Analysis Time..: 14:27	MDL.....: 0.30	
Beryllium	ND	0.50	ug	SW846 6010B	04/20-04/23/09	K93JF1AE
		Dilution Factor: 1		Analysis Time..: 14:27	MDL.....: 0.16	
Cadmium	ND	0.50	ug	SW846 6010B	04/20-04/23/09	K93JF1AF
		Dilution Factor: 1		Analysis Time..: 14:27	MDL.....: 0.063	
Chromium	10.5	1.0	ug	SW846 6010B	04/20-04/23/09	K93JF1AG
		Dilution Factor: 1		Analysis Time..: 14:27	MDL.....: 0.31	
Cobalt	ND	5.0	ug	SW846 6010B	04/20-04/23/09	K93JF1AH
		Dilution Factor: 1		Analysis Time..: 14:27	MDL.....: 0.50	
Copper	3.8	2.5	ug	SW846 6010B	04/20-04/23/09	K93JF1AJ
		Dilution Factor: 1		Analysis Time..: 14:27	MDL.....: 0.59	
Lead	1.2	1.0	ug	SW846 6010B	04/20-04/23/09	K93JF1AK
		Dilution Factor: 1		Analysis Time..: 14:27	MDL.....: 0.35	
Manganese	2.4 J	1.5	ug	SW846 6010B	04/20-04/23/09	K93JF1AL
		Dilution Factor: 1		Analysis Time..: 14:27	MDL.....: 0.15	
Nickel	10.9	4.0	ug	SW846 6010B	04/20-04/23/09	K93JF1AM
		Dilution Factor: 1		Analysis Time..: 14:27	MDL.....: 0.40	
Phosphorus	16.9 B	30.0	ug	SW846 6010B	04/20-04/23/09	K93JF1AN
		Dilution Factor: 1		Analysis Time..: 14:27	MDL.....: 1.9	
Selenium	0.54 B	1.0	ug	SW846 6010B	04/20-04/23/09	K93JF1AP
		Dilution Factor: 1		Analysis Time..: 14:27	MDL.....: 0.43	

(Continued on next page)

URS Corporation

Client Sample ID: M29 RUN 1 BH

TOTAL Metals

Lot-Sample #...: H9D140169-002 Matrix.....: AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Silver	ND	2.0	ug	SW846 6010B	04/20-04/23/09	K93JF1AQ
		Dilution Factor: 1		Analysis Time..: 14:27	MDL.....: 0.95	
Thallium	ND	3.5	ug	SW846 6010B	04/20-04/23/09	K93JF1AR
		Dilution Factor: 1		Analysis Time..: 14:27	MDL.....: 0.85	
Zinc	31.9 J	2.0	ug	SW846 6010B	04/20-04/23/09	K93JF1AT
		Dilution Factor: 1		Analysis Time..: 14:27	MDL.....: 0.45	

NOTE(S):

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

URS Corporation

Client Sample ID: M29 RUN 2 FH

TOTAL Metals

Lot-Sample #...: H9D140169-003 Matrix.....: AIR
Date Sampled...: 04/07/09 Date Received..: 04/13/09

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9110031						
Antimony	4.7 B	6.0	ug	SW846 6010B	04/20-04/23/09	K93JH1AA
		Dilution Factor: 1		Analysis Time..: 15:23	MDL.....: 0.85	
Arsenic	0.91 B	1.0	ug	SW846 6010B	04/20-04/23/09	K93JH1AC
		Dilution Factor: 1		Analysis Time..: 15:23	MDL.....: 0.35	
Barium	3.1 B	20.0	ug	SW846 6010B	04/20-04/23/09	K93JH1AD
		Dilution Factor: 1		Analysis Time..: 15:23	MDL.....: 0.35	
Beryllium	ND	0.50	ug	SW846 6010B	04/20-04/23/09	K93JH1AE
		Dilution Factor: 1		Analysis Time..: 15:23	MDL.....: 0.16	
Cadmium	ND	1.0	ug	SW846 6010B	04/20-04/23/09	K93JH1AF
		Dilution Factor: 1		Analysis Time..: 15:23	MDL.....: 1.0	
Chromium	18.8	1.0	ug	SW846 6010B	04/20-04/23/09	K93JH1AG
		Dilution Factor: 1		Analysis Time..: 15:23	MDL.....: 0.31	
Cobalt	ND	5.0	ug	SW846 6010B	04/20-04/23/09	K93JH1AH
		Dilution Factor: 1		Analysis Time..: 15:23	MDL.....: 0.50	
Copper	4.3	2.5	ug	SW846 6010B	04/20-04/23/09	K93JH1AJ
		Dilution Factor: 1		Analysis Time..: 15:23	MDL.....: 0.59	
Lead	ND	2.0	ug	SW846 6010B	04/20-04/23/09	K93JH1AK
		Dilution Factor: 1		Analysis Time..: 15:23	MDL.....: 2.0	
Manganese	5.5 J	1.5	ug	SW846 6010B	04/20-04/23/09	K93JH1AL
		Dilution Factor: 1		Analysis Time..: 15:23	MDL.....: 0.15	
Nickel	22.0	4.0	ug	SW846 6010B	04/20-04/23/09	K93JH1AM
		Dilution Factor: 1		Analysis Time..: 15:23	MDL.....: 0.44	
Phosphorus	14.5 B	30.0	ug	SW846 6010B	04/20-04/23/09	K93JH1AN
		Dilution Factor: 1		Analysis Time..: 15:23	MDL.....: 1.9	
Selenium	3.1	1.0	ug	SW846 6010B	04/20-04/23/09	K93JH1AP
		Dilution Factor: 1		Analysis Time..: 15:23	MDL.....: 0.35	

(Continued on next page)

URS Corporation

Client Sample ID: M29 RUN 2 FH

TOTAL Metals

Lot-Sample #...: H9D140169-003 Matrix.....: AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Silver	1.1 B	2.0	ug	SW846 6010B	04/20-04/23/09	K93JH1AQ
		Dilution Factor: 1		Analysis Time..: 15:23	MDL.....: 0.95	
Thallium	ND	5.0	ug	SW846 6010B	04/20-04/23/09	K93JH1AR
		Dilution Factor: 1		Analysis Time..: 15:23	MDL.....: 5.0	
Zinc	49.1 J	2.0	ug	SW846 6010B	04/20-04/23/09	K93JH1AT
		Dilution Factor: 1		Analysis Time..: 15:23	MDL.....: 0.23	

NOTE(S):

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

URS Corporation

Client Sample ID: M29 RUN 2 BH

TOTAL Metals

Lot-Sample #...: H9D140169-004 Matrix.....: AIR
Date Sampled...: 04/07/09 Date Received..: 04/13/09

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9110032						
Antimony	0.93 B	6.0	ug	SW846 6010B	04/20-04/23/09	K93JK1AA
		Dilution Factor: 1		Analysis Time..: 14:40	MDL.....: 0.85	
Arsenic	ND	1.0	ug	SW846 6010B	04/20-04/23/09	K93JK1AC
		Dilution Factor: 1		Analysis Time..: 14:40	MDL.....: 0.33	
Barium	1.5 B	20.0	ug	SW846 6010B	04/20-04/23/09	K93JK1AD
		Dilution Factor: 1		Analysis Time..: 14:40	MDL.....: 0.30	
Beryllium	ND	0.50	ug	SW846 6010B	04/20-04/23/09	K93JK1AE
		Dilution Factor: 1		Analysis Time..: 14:40	MDL.....: 0.16	
Cadmium	0.43 B	0.50	ug	SW846 6010B	04/20-04/23/09	K93JK1AF
		Dilution Factor: 1		Analysis Time..: 14:40	MDL.....: 0.063	
Chromium	4.5	1.0	ug	SW846 6010B	04/20-04/23/09	K93JK1AG
		Dilution Factor: 1		Analysis Time..: 14:40	MDL.....: 0.31	
Cobalt	ND	5.0	ug	SW846 6010B	04/20-04/23/09	K93JK1AH
		Dilution Factor: 1		Analysis Time..: 14:40	MDL.....: 0.50	
Copper	3.0	2.5	ug	SW846 6010B	04/20-04/23/09	K93JK1AJ
		Dilution Factor: 1		Analysis Time..: 14:40	MDL.....: 0.59	
Lead	1.2	1.0	ug	SW846 6010B	04/20-04/23/09	K93JK1AK
		Dilution Factor: 1		Analysis Time..: 14:40	MDL.....: 0.35	
Manganese	13.4 J	1.5	ug	SW846 6010B	04/20-04/23/09	K93JK1AL
		Dilution Factor: 1		Analysis Time..: 14:40	MDL.....: 0.15	
Nickel	8.3	4.0	ug	SW846 6010B	04/20-04/23/09	K93JK1AM
		Dilution Factor: 1		Analysis Time..: 14:40	MDL.....: 0.40	
Phosphorus	26.1 B	30.0	ug	SW846 6010B	04/20-04/23/09	K93JK1AN
		Dilution Factor: 1		Analysis Time..: 14:40	MDL.....: 1.9	
Selenium	ND	1.0	ug	SW846 6010B	04/20-04/23/09	K93JK1AP
		Dilution Factor: 1		Analysis Time..: 14:40	MDL.....: 0.43	

(Continued on next page)

URS Corporation

Client Sample ID: M29 RUN 2 BH

TOTAL Metals

Lot-Sample #...: H9D140169-004 Matrix.....: AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Silver	ND	2.0	ug	SW846 6010B	04/20-04/23/09	K93JK1AQ
		Dilution Factor: 1		Analysis Time..: 14:40	MDL.....: 0.95	
Thallium	ND	3.5	ug	SW846 6010B	04/20-04/23/09	K93JK1AR
		Dilution Factor: 1		Analysis Time..: 14:40	MDL.....: 0.85	
Zinc	38.1 J	2.0	ug	SW846 6010B	04/20-04/23/09	K93JK1AT
		Dilution Factor: 1		Analysis Time..: 14:40	MDL.....: 0.45	

NOTE(S):

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

URS Corporation

Client Sample ID: M29 RUN 4 FH

TOTAL Metals

Lot-Sample #...: H9D140169-005 Matrix.....: AIR
Date Sampled...: 04/09/09 Date Received..: 04/13/09

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9110031						
Antimony	4.6 B	6.0	ug	SW846 6010B	04/20-04/23/09	K93JL1AA
		Dilution Factor: 1		Analysis Time..: 15:29	MDL.....: 0.85	
Arsenic	0.77 B	1.0	ug	SW846 6010B	04/20-04/23/09	K93JL1AC
		Dilution Factor: 1		Analysis Time..: 15:29	MDL.....: 0.35	
Barium	3.1 B	20.0	ug	SW846 6010B	04/20-04/23/09	K93JL1AD
		Dilution Factor: 1		Analysis Time..: 15:29	MDL.....: 0.35	
Beryllium	ND	0.50	ug	SW846 6010B	04/20-04/23/09	K93JL1AE
		Dilution Factor: 1		Analysis Time..: 15:29	MDL.....: 0.16	
Cadmium	ND	1.0	ug	SW846 6010B	04/20-04/23/09	K93JL1AF
		Dilution Factor: 1		Analysis Time..: 15:29	MDL.....: 1.0	
Chromium	7.9	1.0	ug	SW846 6010B	04/20-04/23/09	K93JL1AG
		Dilution Factor: 1		Analysis Time..: 15:29	MDL.....: 0.31	
Cobalt	ND	5.0	ug	SW846 6010B	04/20-04/23/09	K93JL1AH
		Dilution Factor: 1		Analysis Time..: 15:29	MDL.....: 0.50	
Copper	2.1 B	2.5	ug	SW846 6010B	04/20-04/23/09	K93JL1AJ
		Dilution Factor: 1		Analysis Time..: 15:29	MDL.....: 0.59	
Lead	ND	2.0	ug	SW846 6010B	04/20-04/23/09	K93JL1AK
		Dilution Factor: 1		Analysis Time..: 15:29	MDL.....: 2.0	
Manganese	7.0 J	1.5	ug	SW846 6010B	04/20-04/23/09	K93JL1AL
		Dilution Factor: 1		Analysis Time..: 15:29	MDL.....: 0.15	
Nickel	11.8	4.0	ug	SW846 6010B	04/20-04/23/09	K93JL1AM
		Dilution Factor: 1		Analysis Time..: 15:29	MDL.....: 0.44	
Phosphorus	11.7 B	30.0	ug	SW846 6010B	04/20-04/23/09	K93JL1AN
		Dilution Factor: 1		Analysis Time..: 15:29	MDL.....: 1.9	
Selenium	3.1	1.0	ug	SW846 6010B	04/20-04/23/09	K93JL1AP
		Dilution Factor: 1		Analysis Time..: 15:29	MDL.....: 0.35	

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URS Corporation

Client Sample ID: M29 RUN 4 FH

TOTAL Metals

Lot-Sample #...: H9D140169-005 Matrix.....: AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Silver	ND	2.0	ug	SW846 6010B	04/20-04/23/09	K93JL1AQ
		Dilution Factor: 1		Analysis Time..: 15:29	MDL.....: 0.95	
Thallium	ND	5.0	ug	SW846 6010B	04/20-04/23/09	K93JL1AR
		Dilution Factor: 1		Analysis Time..: 15:29	MDL.....: 5.0	
Zinc	7.4 J	2.0	ug	SW846 6010B	04/20-04/23/09	K93JL1AT
		Dilution Factor: 1		Analysis Time..: 15:29	MDL.....: 0.23	

NOTE(S):

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

URS Corporation

Client Sample ID: M29 RUN 4 BH

TOTAL Metals

Lot-Sample #...: H9D140169-006 Matrix.....: AIR
Date Sampled...: 04/09/09 Date Received..: 04/13/09

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9110032						
Antimony	ND	6.0	ug	SW846 6010B	04/20-04/23/09	K93JM1AA
		Dilution Factor: 1		Analysis Time..: 15:04	MDL.....: 0.85	
Arsenic	ND	1.0	ug	SW846 6010B	04/20-04/23/09	K93JM1AC
		Dilution Factor: 1		Analysis Time..: 15:04	MDL.....: 0.33	
Barium	0.58 B	20.0	ug	SW846 6010B	04/20-04/23/09	K93JM1AD
		Dilution Factor: 1		Analysis Time..: 15:04	MDL.....: 0.30	
Beryllium	ND	0.50	ug	SW846 6010B	04/20-04/23/09	K93JM1AE
		Dilution Factor: 1		Analysis Time..: 15:04	MDL.....: 0.16	
Cadmium	ND	0.50	ug	SW846 6010B	04/20-04/23/09	K93JM1AF
		Dilution Factor: 1		Analysis Time..: 15:04	MDL.....: 0.063	
Chromium	0.59 B	1.0	ug	SW846 6010B	04/20-04/23/09	K93JM1AG
		Dilution Factor: 1		Analysis Time..: 15:04	MDL.....: 0.31	
Cobalt	ND	5.0	ug	SW846 6010B	04/20-04/23/09	K93JM1AH
		Dilution Factor: 1		Analysis Time..: 15:04	MDL.....: 0.50	
Copper	0.87 B	2.5	ug	SW846 6010B	04/20-04/23/09	K93JM1AJ
		Dilution Factor: 1		Analysis Time..: 15:04	MDL.....: 0.59	
Lead	ND	1.0	ug	SW846 6010B	04/20-04/23/09	K93JM1AK
		Dilution Factor: 1		Analysis Time..: 15:04	MDL.....: 0.35	
Manganese	1.5 J	1.5	ug	SW846 6010B	04/20-04/23/09	K93JM1AL
		Dilution Factor: 1		Analysis Time..: 15:04	MDL.....: 0.15	
Nickel	0.56 B	4.0	ug	SW846 6010B	04/20-04/23/09	K93JM1AM
		Dilution Factor: 1		Analysis Time..: 15:04	MDL.....: 0.40	
Phosphorus	18.7 B	30.0	ug	SW846 6010B	04/20-04/23/09	K93JM1AN
		Dilution Factor: 1		Analysis Time..: 15:04	MDL.....: 1.9	
Selenium	ND	1.0	ug	SW846 6010B	04/20-04/23/09	K93JM1AP
		Dilution Factor: 1		Analysis Time..: 15:04	MDL.....: 0.43	

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URS Corporation

Client Sample ID: M29 RUN 4 BH

TOTAL Metals

Lot-Sample #...: H9D140169-006 Matrix.....: AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Silver	ND	2.0	ug	SW846 6010B	04/20-04/23/09	K93JM1AQ
		Dilution Factor: 1		Analysis Time..: 15:04	MDL.....: 0.95	
Thallium	ND	3.5	ug	SW846 6010B	04/20-04/23/09	K93JM1AR
		Dilution Factor: 1		Analysis Time..: 15:04	MDL.....: 0.85	
Zinc	9.0 J	2.0	ug	SW846 6010B	04/20-04/23/09	K93JM1AT
		Dilution Factor: 1		Analysis Time..: 15:04	MDL.....: 0.45	

NOTE(S):

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

URS Corporation

Client Sample ID: M29 0.1N NITRIC ACID BLANK

TOTAL Metals

Lot-Sample #...: H9D140169-007 Matrix.....: AIR
Date Sampled...: 04/09/09 Date Received..: 04/13/09

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9110031						
Antimony	5.7 B	6.0	ug	SW846 6010B	04/20-04/23/09	K93JP1AA
		Dilution Factor: 1		Analysis Time..: 15:35	MDL.....: 0.85	
Arsenic	0.62 B	1.0	ug	SW846 6010B	04/20-04/23/09	K93JP1AC
		Dilution Factor: 1		Analysis Time..: 15:35	MDL.....: 0.35	
Barium	57.3	20.0	ug	SW846 6010B	04/20-04/23/09	K93JP1AD
		Dilution Factor: 1		Analysis Time..: 15:35	MDL.....: 0.35	
Beryllium	ND	0.50	ug	SW846 6010B	04/20-04/23/09	K93JP1AE
		Dilution Factor: 1		Analysis Time..: 15:35	MDL.....: 0.16	
Cadmium	ND	1.0	ug	SW846 6010B	04/20-04/23/09	K93JP1AF
		Dilution Factor: 1		Analysis Time..: 15:35	MDL.....: 1.0	
Chromium	1.5	1.0	ug	SW846 6010B	04/20-04/23/09	K93JP1AG
		Dilution Factor: 1		Analysis Time..: 15:35	MDL.....: 0.31	
Cobalt	ND	5.0	ug	SW846 6010B	04/20-04/23/09	K93JP1AH
		Dilution Factor: 1		Analysis Time..: 15:35	MDL.....: 0.50	
Copper	0.78 B	2.5	ug	SW846 6010B	04/20-04/23/09	K93JP1AJ
		Dilution Factor: 1		Analysis Time..: 15:35	MDL.....: 0.59	
Lead	ND	2.0	ug	SW846 6010B	04/20-04/23/09	K93JP1AK
		Dilution Factor: 1		Analysis Time..: 15:35	MDL.....: 2.0	
Manganese	0.56 B,J	1.5	ug	SW846 6010B	04/20-04/23/09	K93JP1AL
		Dilution Factor: 1		Analysis Time..: 15:35	MDL.....: 0.15	
Nickel	6.4	4.0	ug	SW846 6010B	04/20-04/23/09	K93JP1AM
		Dilution Factor: 1		Analysis Time..: 15:35	MDL.....: 0.44	
Phosphorus	10.5 B	30.0	ug	SW846 6010B	04/20-04/23/09	K93JP1AN
		Dilution Factor: 1		Analysis Time..: 15:35	MDL.....: 1.9	
Selenium	3.8	1.0	ug	SW846 6010B	04/20-04/23/09	K93JP1AP
		Dilution Factor: 1		Analysis Time..: 15:35	MDL.....: 0.35	

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URS Corporation

Client Sample ID: M29 0.1N NITRIC ACID BLANK

TOTAL Metals

Lot-Sample #...: H9D140169-007 Matrix.....: AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Silver	ND	2.0	ug	SW846 6010B	04/20-04/23/09	K93JP1AQ
		Dilution Factor: 1		Analysis Time..: 15:35	MDL.....: 0.95	
Thallium	ND	5.0	ug	SW846 6010B	04/20-04/23/09	K93JP1AR
		Dilution Factor: 1		Analysis Time..: 15:35	MDL.....: 5.0	
Zinc	26.3 J	2.0	ug	SW846 6010B	04/20-04/23/09	K93JP1AT
		Dilution Factor: 1		Analysis Time..: 15:35	MDL.....: 0.23	

NOTE(S):

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: H9D140169 Matrix.....: AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: H9D200000-031 Prep Batch #...: 9110031						
Antimony	ND	6.0	ug	SW846 6010B	04/20-04/23/09	LADA81AA
		Dilution Factor: 1				
		Analysis Time..: 14:09				
Arsenic	ND	1.0	ug	SW846 6010B	04/20-04/23/09	LADA81AC
		Dilution Factor: 1				
		Analysis Time..: 14:09				
Barium	ND	20.0	ug	SW846 6010B	04/20-04/23/09	LADA81AD
		Dilution Factor: 1				
		Analysis Time..: 14:09				
Beryllium	ND	0.50	ug	SW846 6010B	04/20-04/23/09	LADA81AE
		Dilution Factor: 1				
		Analysis Time..: 14:09				
Cadmium	ND	1.0	ug	SW846 6010B	04/20-04/23/09	LADA81AF
		Dilution Factor: 1				
		Analysis Time..: 14:09				
Chromium	ND	1.0	ug	SW846 6010B	04/20-04/23/09	LADA81AG
		Dilution Factor: 1				
		Analysis Time..: 14:09				
Cobalt	ND	5.0	ug	SW846 6010B	04/20-04/23/09	LADA81AH
		Dilution Factor: 1				
		Analysis Time..: 14:09				
Copper	ND	2.5	ug	SW846 6010B	04/20-04/23/09	LADA81AJ
		Dilution Factor: 1				
		Analysis Time..: 14:09				
Lead	ND	2.0	ug	SW846 6010B	04/20-04/23/09	LADA81AK
		Dilution Factor: 1				
		Analysis Time..: 14:09				
Manganese	0.19 B	1.5	ug	SW846 6010B	04/20-04/23/09	LADA81AL
		Dilution Factor: 1				
		Analysis Time..: 14:09				
Nickel	ND	4.0	ug	SW846 6010B	04/20-04/23/09	LADA81AM
		Dilution Factor: 1				
		Analysis Time..: 14:09				

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METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: H9D140169 Matrix.....: AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Phosphorus	ND	30.0	ug	SW846 6010B	04/20-04/23/09	LADA81AN
		Dilution Factor: 1				
		Analysis Time..: 14:09				
Selenium	ND	1.0	ug	SW846 6010B	04/20-04/23/09	LADA81AP
		Dilution Factor: 1				
		Analysis Time..: 14:09				
Silver	ND	2.0	ug	SW846 6010B	04/20-04/23/09	LADA81AQ
		Dilution Factor: 1				
		Analysis Time..: 14:09				
Thallium	ND	5.0	ug	SW846 6010B	04/20-04/23/09	LADA81AR
		Dilution Factor: 1				
		Analysis Time..: 14:09				
Zinc	0.38 B	2.0	ug	SW846 6010B	04/20-04/23/09	LADA81AT
		Dilution Factor: 1				
		Analysis Time..: 14:09				

MB Lot-Sample #: H9D200000-032 Prep Batch #...: 9110032

Antimony	ND	6.0	ug	SW846 6010B	04/20-04/23/09	LADCA1AA
		Dilution Factor: 1				
		Analysis Time..: 13:51				
Arsenic	ND	1.0	ug	SW846 6010B	04/20-04/23/09	LADCA1AC
		Dilution Factor: 1				
		Analysis Time..: 13:51				
Barium	ND	20.0	ug	SW846 6010B	04/20-04/23/09	LADCA1AD
		Dilution Factor: 1				
		Analysis Time..: 13:51				
Beryllium	ND	0.50	ug	SW846 6010B	04/20-04/23/09	LADCA1AE
		Dilution Factor: 1				
		Analysis Time..: 13:51				
Cadmium	ND	0.50	ug	SW846 6010B	04/20-04/23/09	LADCA1AF
		Dilution Factor: 1				
		Analysis Time..: 13:51				
Chromium	ND	1.0	ug	SW846 6010B	04/20-04/23/09	LADCA1AG
		Dilution Factor: 1				
		Analysis Time..: 13:51				

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METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: H9D140169 Matrix.....: AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Cobalt	ND	5.0	ug	SW846 6010B	04/20-04/23/09	LADCA1AH
		Dilution Factor: 1				
		Analysis Time..: 13:51				
Copper	ND	2.5	ug	SW846 6010B	04/20-04/23/09	LADCA1AJ
		Dilution Factor: 1				
		Analysis Time..: 13:51				
Lead	ND	1.0	ug	SW846 6010B	04/20-04/23/09	LADCA1AK
		Dilution Factor: 1				
		Analysis Time..: 13:51				
Manganese	0.21 B	1.5	ug	SW846 6010B	04/20-04/23/09	LADCA1AL
		Dilution Factor: 1				
		Analysis Time..: 13:51				
Nickel	ND	4.0	ug	SW846 6010B	04/20-04/23/09	LADCA1AM
		Dilution Factor: 1				
		Analysis Time..: 13:51				
Phosphorus	ND	30.0	ug	SW846 6010B	04/20-04/23/09	LADCA1AN
		Dilution Factor: 1				
		Analysis Time..: 13:51				
Selenium	ND	1.0	ug	SW846 6010B	04/20-04/23/09	LADCA1AP
		Dilution Factor: 1				
		Analysis Time..: 13:51				
Silver	ND	2.0	ug	SW846 6010B	04/20-04/23/09	LADCA1AQ
		Dilution Factor: 1				
		Analysis Time..: 13:51				
Thallium	ND	3.5	ug	SW846 6010B	04/20-04/23/09	LADCA1AR
		Dilution Factor: 1				
		Analysis Time..: 13:51				
Zinc	0.55 B	2.0	ug	SW846 6010B	04/20-04/23/09	LADCA1AT
		Dilution Factor: 1				
		Analysis Time..: 13:51				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

B Estimated result. Result is less than RL.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Lot-Sample #...: H9D140169 Matrix.....: AIR

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP-BATCH #
Antimony	95	(80 - 120)			SW846 6010B	04/20-04/23/09	9110031
	94	(80 - 120)	0.80	(0-20)	SW846 6010B	04/20-04/23/09	9110031
		Dilution Factor: 1			Analysis Time..: 14:15		
Arsenic	98	(80 - 120)			SW846 6010B	04/20-04/23/09	9110031
	99	(80 - 120)	0.66	(0-20)	SW846 6010B	04/20-04/23/09	9110031
		Dilution Factor: 1			Analysis Time..: 14:15		
Barium	102	(80 - 120)			SW846 6010B	04/20-04/23/09	9110031
	101	(80 - 120)	1.1	(0-20)	SW846 6010B	04/20-04/23/09	9110031
		Dilution Factor: 1			Analysis Time..: 14:15		
Beryllium	96	(80 - 120)			SW846 6010B	04/20-04/23/09	9110031
	96	(80 - 120)	0.0	(0-20)	SW846 6010B	04/20-04/23/09	9110031
		Dilution Factor: 1			Analysis Time..: 14:15		
Cadmium	101	(80 - 120)			SW846 6010B	04/20-04/23/09	9110031
	101	(80 - 120)	0.05	(0-20)	SW846 6010B	04/20-04/23/09	9110031
		Dilution Factor: 1			Analysis Time..: 14:15		
Chromium	100	(80 - 120)			SW846 6010B	04/20-04/23/09	9110031
	99	(80 - 120)	1.0	(0-20)	SW846 6010B	04/20-04/23/09	9110031
		Dilution Factor: 1			Analysis Time..: 14:15		
Cobalt	98	(80 - 120)			SW846 6010B	04/20-04/23/09	9110031
	98	(80 - 120)	0.76	(0-20)	SW846 6010B	04/20-04/23/09	9110031
		Dilution Factor: 1			Analysis Time..: 14:15		
Copper	97	(80 - 120)			SW846 6010B	04/20-04/23/09	9110031
	96	(80 - 120)	1.0	(0-20)	SW846 6010B	04/20-04/23/09	9110031
		Dilution Factor: 1			Analysis Time..: 14:15		
Lead	99	(80 - 120)			SW846 6010B	04/20-04/23/09	9110031
	98	(80 - 120)	0.59	(0-20)	SW846 6010B	04/20-04/23/09	9110031
		Dilution Factor: 1			Analysis Time..: 14:15		
Manganese	103	(80 - 120)			SW846 6010B	04/20-04/23/09	9110031
	102	(80 - 120)	0.91	(0-20)	SW846 6010B	04/20-04/23/09	9110031
		Dilution Factor: 1			Analysis Time..: 14:15		

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LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Lot-Sample #...: H9D140169 Matrix.....: AIR

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP-BATCH #
Nickel	102	(80 - 120)			SW846 6010B	04/20-04/23/09	9110031
	101	(80 - 120)	0.36	(0-20)	SW846 6010B	04/20-04/23/09	9110031
		Dilution Factor: 1			Analysis Time..: 14:15		
Phosphorus	96	(80 - 120)			SW846 6010B	04/20-04/23/09	9110031
	95	(80 - 120)	0.99	(0-20)	SW846 6010B	04/20-04/23/09	9110031
		Dilution Factor: 1			Analysis Time..: 14:15		
Selenium	99	(80 - 120)			SW846 6010B	04/20-04/23/09	9110031
	99	(80 - 120)	0.20	(0-20)	SW846 6010B	04/20-04/23/09	9110031
		Dilution Factor: 1			Analysis Time..: 14:15		
Silver	101	(80 - 120)			SW846 6010B	04/20-04/23/09	9110031
	100	(80 - 120)	1.1	(0-20)	SW846 6010B	04/20-04/23/09	9110031
		Dilution Factor: 1			Analysis Time..: 14:15		
Thallium	98	(80 - 120)			SW846 6010B	04/20-04/23/09	9110031
	97	(80 - 120)	0.70	(0-20)	SW846 6010B	04/20-04/23/09	9110031
		Dilution Factor: 1			Analysis Time..: 14:15		
Zinc	104	(80 - 120)			SW846 6010B	04/20-04/23/09	9110031
	103	(80 - 120)	0.62	(0-20)	SW846 6010B	04/20-04/23/09	9110031
		Dilution Factor: 1			Analysis Time..: 14:15		
Antimony	92	(80 - 120)			SW846 6010B	04/20-04/23/09	9110032
	92	(80 - 120)	0.05	(0-20)	SW846 6010B	04/20-04/23/09	9110032
		Dilution Factor: 1			Analysis Time..: 13:57		
Arsenic	98	(80 - 120)			SW846 6010B	04/20-04/23/09	9110032
	98	(80 - 120)	0.26	(0-20)	SW846 6010B	04/20-04/23/09	9110032
		Dilution Factor: 1			Analysis Time..: 13:57		
Barium	100	(80 - 120)			SW846 6010B	04/20-04/23/09	9110032
	101	(80 - 120)	1.3	(0-20)	SW846 6010B	04/20-04/23/09	9110032
		Dilution Factor: 1			Analysis Time..: 13:57		
Beryllium	98	(80 - 120)			SW846 6010B	04/20-04/23/09	9110032
	97	(80 - 120)	0.92	(0-20)	SW846 6010B	04/20-04/23/09	9110032
		Dilution Factor: 1			Analysis Time..: 13:57		

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Lot-Sample #...: H9D140169 Matrix.....: AIR

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP-BATCH #
Cadmium	102	(80 - 120)			SW846 6010B	04/20-04/23/09	9110032
	101	(80 - 120)	0.63	(0-20)	SW846 6010B	04/20-04/23/09	9110032
		Dilution Factor: 1			Analysis Time..: 13:57		
Chromium	100	(80 - 120)			SW846 6010B	04/20-04/23/09	9110032
	100	(80 - 120)	0.26	(0-20)	SW846 6010B	04/20-04/23/09	9110032
		Dilution Factor: 1			Analysis Time..: 13:57		
Cobalt	98	(80 - 120)			SW846 6010B	04/20-04/23/09	9110032
	97	(80 - 120)	1.0	(0-20)	SW846 6010B	04/20-04/23/09	9110032
		Dilution Factor: 1			Analysis Time..: 13:57		
Copper	95	(80 - 120)			SW846 6010B	04/20-04/23/09	9110032
	96	(80 - 120)	1.1	(0-20)	SW846 6010B	04/20-04/23/09	9110032
		Dilution Factor: 1			Analysis Time..: 13:57		
Lead	100	(80 - 120)			SW846 6010B	04/20-04/23/09	9110032
	101	(80 - 120)	0.94	(0-20)	SW846 6010B	04/20-04/23/09	9110032
		Dilution Factor: 1			Analysis Time..: 13:57		
Manganese	104	(80 - 120)			SW846 6010B	04/20-04/23/09	9110032
	103	(80 - 120)	0.39	(0-20)	SW846 6010B	04/20-04/23/09	9110032
		Dilution Factor: 1			Analysis Time..: 13:57		
Nickel	102	(80 - 120)			SW846 6010B	04/20-04/23/09	9110032
	102	(80 - 120)	0.09	(0-20)	SW846 6010B	04/20-04/23/09	9110032
		Dilution Factor: 1			Analysis Time..: 13:57		
Phosphorus	93	(80 - 120)			SW846 6010B	04/20-04/23/09	9110032
	92	(80 - 120)	1.6	(0-20)	SW846 6010B	04/20-04/23/09	9110032
		Dilution Factor: 1			Analysis Time..: 13:57		
Selenium	94	(80 - 120)			SW846 6010B	04/20-04/23/09	9110032
	93	(80 - 120)	0.90	(0-20)	SW846 6010B	04/20-04/23/09	9110032
		Dilution Factor: 1			Analysis Time..: 13:57		
Silver	99	(80 - 120)			SW846 6010B	04/20-04/23/09	9110032
	96	(80 - 120)	3.5	(0-20)	SW846 6010B	04/20-04/23/09	9110032
		Dilution Factor: 1			Analysis Time..: 13:57		

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Lot-Sample #...: H9D140169 Matrix.....: AIR

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP-BATCH #
Thallium	96	(80 - 120)			SW846 6010B	04/20-04/23/09	9110032
	95	(80 - 120)	1.2	(0-20)	SW846 6010B	04/20-04/23/09	9110032
		Dilution Factor: 1			Analysis Time..: 13:57		
Zinc	103	(80 - 120)			SW846 6010B	04/20-04/23/09	9110032
	102	(80 - 120)	0.72	(0-20)	SW846 6010B	04/20-04/23/09	9110032
		Dilution Factor: 1			Analysis Time..: 13:57		

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Lot-Sample #...: H9D140169 Matrix.....: AIR

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Antimony	50.0	47.4	ug	95		SW846 6010B	04/20-04/23/09	9110031
	50.0	47.0	ug	94	0.80	SW846 6010B	04/20-04/23/09	9110031
			Dilution Factor: 1			Analysis Time..: 14:15		
Arsenic	10.0	9.83	ug	98		SW846 6010B	04/20-04/23/09	9110031
	10.0	9.90	ug	99	0.66	SW846 6010B	04/20-04/23/09	9110031
			Dilution Factor: 1			Analysis Time..: 14:15		
Barium	10.0	10.2	ug	102		SW846 6010B	04/20-04/23/09	9110031
	10.0	10.1	ug	101	1.1	SW846 6010B	04/20-04/23/09	9110031
			Dilution Factor: 1			Analysis Time..: 14:15		
Beryllium	5.00	4.79	ug	96		SW846 6010B	04/20-04/23/09	9110031
	5.00	4.79	ug	96	0.0	SW846 6010B	04/20-04/23/09	9110031
			Dilution Factor: 1			Analysis Time..: 14:15		
Cadmium	5.00	5.05	ug	101		SW846 6010B	04/20-04/23/09	9110031
	5.00	5.05	ug	101	0.05	SW846 6010B	04/20-04/23/09	9110031
			Dilution Factor: 1			Analysis Time..: 14:15		
Chromium	20.0	20.1	ug	100		SW846 6010B	04/20-04/23/09	9110031
	20.0	19.9	ug	99	1.0	SW846 6010B	04/20-04/23/09	9110031
			Dilution Factor: 1			Analysis Time..: 14:15		
Cobalt	10.0	9.84	ug	98		SW846 6010B	04/20-04/23/09	9110031
	10.0	9.76	ug	98	0.76	SW846 6010B	04/20-04/23/09	9110031
			Dilution Factor: 1			Analysis Time..: 14:15		
Copper	25.0	24.1	ug	97		SW846 6010B	04/20-04/23/09	9110031
	25.0	23.9	ug	96	1.0	SW846 6010B	04/20-04/23/09	9110031
			Dilution Factor: 1			Analysis Time..: 14:15		
Lead	10.0	9.91	ug	99		SW846 6010B	04/20-04/23/09	9110031
	10.0	9.85	ug	98	0.59	SW846 6010B	04/20-04/23/09	9110031
			Dilution Factor: 1			Analysis Time..: 14:15		
Manganese	10.0	10.3	ug	103		SW846 6010B	04/20-04/23/09	9110031
	10.0	10.2	ug	102	0.91	SW846 6010B	04/20-04/23/09	9110031
			Dilution Factor: 1			Analysis Time..: 14:15		

(Continued on next page)

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Lot-Sample #...: H9D140169 Matrix.....: AIR

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Nickel	50.0	50.9	ug	102		SW846 6010B	04/20-04/23/09	9110031
	50.0	50.7	ug	101	0.36	SW846 6010B	04/20-04/23/09	9110031
			Dilution Factor: 1			Analysis Time..: 14:15		
Phosphorus	500	481	ug	96		SW846 6010B	04/20-04/23/09	9110031
	500	476	ug	95	0.99	SW846 6010B	04/20-04/23/09	9110031
			Dilution Factor: 1			Analysis Time..: 14:15		
Selenium	15.0	14.8	ug	99		SW846 6010B	04/20-04/23/09	9110031
	15.0	14.9	ug	99	0.20	SW846 6010B	04/20-04/23/09	9110031
			Dilution Factor: 1			Analysis Time..: 14:15		
Silver	5.00	5.06	ug	101		SW846 6010B	04/20-04/23/09	9110031
	5.00	5.00	ug	100	1.1	SW846 6010B	04/20-04/23/09	9110031
			Dilution Factor: 1			Analysis Time..: 14:15		
Thallium	40.0	39.1	ug	98		SW846 6010B	04/20-04/23/09	9110031
	40.0	38.9	ug	97	0.70	SW846 6010B	04/20-04/23/09	9110031
			Dilution Factor: 1			Analysis Time..: 14:15		
Zinc	50.0	52.0	ug	104		SW846 6010B	04/20-04/23/09	9110031
	50.0	51.6	ug	103	0.62	SW846 6010B	04/20-04/23/09	9110031
			Dilution Factor: 1			Analysis Time..: 14:15		
Antimony	50.0	46.2	ug	92		SW846 6010B	04/20-04/23/09	9110032
	50.0	46.2	ug	92	0.05	SW846 6010B	04/20-04/23/09	9110032
			Dilution Factor: 1			Analysis Time..: 13:57		
Arsenic	10.0	9.77	ug	98		SW846 6010B	04/20-04/23/09	9110032
	10.0	9.80	ug	98	0.26	SW846 6010B	04/20-04/23/09	9110032
			Dilution Factor: 1			Analysis Time..: 13:57		
Barium	10.0	9.97	ug	100		SW846 6010B	04/20-04/23/09	9110032
	10.0	10.1	ug	101	1.3	SW846 6010B	04/20-04/23/09	9110032
			Dilution Factor: 1			Analysis Time..: 13:57		
Beryllium	5.00	4.90	ug	98		SW846 6010B	04/20-04/23/09	9110032
	5.00	4.86	ug	97	0.92	SW846 6010B	04/20-04/23/09	9110032
			Dilution Factor: 1			Analysis Time..: 13:57		

(Continued on next page)

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Lot-Sample #...: H9D140169 Matrix.....: AIR

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Cadmium	5.00	5.09	ug	102		SW846 6010B	04/20-04/23/09	9110032
	5.00	5.06	ug	101	0.63	SW846 6010B	04/20-04/23/09	9110032
			Dilution Factor: 1			Analysis Time..: 13:57		
Chromium	20.0	20.1	ug	100		SW846 6010B	04/20-04/23/09	9110032
	20.0	20.0	ug	100	0.26	SW846 6010B	04/20-04/23/09	9110032
			Dilution Factor: 1			Analysis Time..: 13:57		
Cobalt	10.0	9.78	ug	98		SW846 6010B	04/20-04/23/09	9110032
	10.0	9.68	ug	97	1.0	SW846 6010B	04/20-04/23/09	9110032
			Dilution Factor: 1			Analysis Time..: 13:57		
Copper	25.0	23.7	ug	95		SW846 6010B	04/20-04/23/09	9110032
	25.0	24.0	ug	96	1.1	SW846 6010B	04/20-04/23/09	9110032
			Dilution Factor: 1			Analysis Time..: 13:57		
Lead	10.0	10.0	ug	100		SW846 6010B	04/20-04/23/09	9110032
	10.0	10.1	ug	101	0.94	SW846 6010B	04/20-04/23/09	9110032
			Dilution Factor: 1			Analysis Time..: 13:57		
Manganese	10.0	10.4	ug	104		SW846 6010B	04/20-04/23/09	9110032
	10.0	10.3	ug	103	0.39	SW846 6010B	04/20-04/23/09	9110032
			Dilution Factor: 1			Analysis Time..: 13:57		
Nickel	50.0	50.8	ug	102		SW846 6010B	04/20-04/23/09	9110032
	50.0	50.8	ug	102	0.09	SW846 6010B	04/20-04/23/09	9110032
			Dilution Factor: 1			Analysis Time..: 13:57		
Phosphorus	500	465	ug	93		SW846 6010B	04/20-04/23/09	9110032
	500	458	ug	92	1.6	SW846 6010B	04/20-04/23/09	9110032
			Dilution Factor: 1			Analysis Time..: 13:57		
Selenium	15.0	14.1	ug	94		SW846 6010B	04/20-04/23/09	9110032
	15.0	14.0	ug	93	0.90	SW846 6010B	04/20-04/23/09	9110032
			Dilution Factor: 1			Analysis Time..: 13:57		
Silver	5.00	4.96	ug	99		SW846 6010B	04/20-04/23/09	9110032
	5.00	4.79	ug	96	3.5	SW846 6010B	04/20-04/23/09	9110032
			Dilution Factor: 1			Analysis Time..: 13:57		

(Continued on next page)

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Lot-Sample #...: H9D140169 Matrix.....: AIR

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Thallium	40.0	38.5	ug	96		SW846 6010B	04/20-04/23/09	9110032
	40.0	38.1	ug	95	1.2	SW846 6010B	04/20-04/23/09	9110032
			Dilution Factor: 1			Analysis Time..: 13:57		
Zinc	50.0	51.4	ug	103		SW846 6010B	04/20-04/23/09	9110032
	50.0	51.0	ug	102	0.72	SW846 6010B	04/20-04/23/09	9110032
			Dilution Factor: 1			Analysis Time..: 13:57		

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

TestAmerica Knoxville

ICP Data Reporting Form

Post Digestion Spike

Units: ug/L (ppb)

Instrument ID: TJA 61-E SuperTrace ICP

Data File Name: t042309.arc

Element	PDS K93H5A	Original Sample K93H5	Spike Added	Percent Recovery
Ag	132.77	84.68	50.0	96.2
As	131.55	32.48	100.0	99.1
Ba	169.08	64.14	100.0	104.9
Be	49.18	0.58	50.0	97.2
Cd	49.55	0.00	50.0	99.1
Co	132.61	32.46	100.0	100.2
Cr	3634.09	3531.29	200.0	51.4
Cu	500.72	250.91	250.0	99.9
Mn	569.52	477.22	100.0	92.3
Ni	3102.51	2660.29	500.0	88.4
P	5164.91	255.29	5000.0	98.2
Pb	188.07	91.98	100.0	96.1
Sb	536.06	56.30	500.0	96.0
Se	179.44	36.31	150.0	95.4
Tl	372.32	0.00	400.0	93.1
Zn	794.79	272.08	500.0	104.5

TestAmerica Knoxville

ICP Data Reporting Form

Post Digestion Spike

Units: ug/L (ppb)

Instrument ID: TJA 61-E SuperTrace ICP

Data File Name: t042309.arc

Element	PDS K93JFA	Original Sample K93JF	Spike Added	Percent Recovery
Ag	52.70	2.75	50.0	99.9
As	99.60	0.00	100.0	99.6
Ba	125.73	21.85	100.0	103.9
Be	50.32	0.38	50.0	99.9
Cd	51.75	0.53	50.0	102.4
Co	102.08	2.17	100.0	99.9
Cr	307.92	105.35	200.0	101.3
Cu	286.02	37.60	250.0	99.4
Mn	129.15	23.84	100.0	105.3
Ni	620.57	108.65	500.0	102.4
P	4825.86	168.53	5000.0	93.1
Pb	110.56	11.84	100.0	98.7
Sb	469.95	9.15	500.0	92.2
Se	151.98	5.39	150.0	97.7
Tl	376.67	0.00	400.0	94.2
Zn	826.97	319.07	500.0	101.6

Sample Receipt Documentation

URS

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

H9D140169

Reference COC No.:

Page 1 of 5

Project Name: Haverhill North Coke Co.
Project Number: 39400492
Test Location: Main Stack

URS Project Manager: Michael Mowery
Purchase Order Number:
Required Report Date: Standard Turnaround

Sample Shipment Date: 4/10/2009
Laboratory Destination: Test America - Knoxville, TN
Laboratory Contact: Kevin Woodcock
Project Contact/Phone: 865-220-8114
Carrier Waybill No.: Hand Delivered by URS

REC. AT 16, 17°C
NO CUSTODY SEALS
2 COOLERS RH 4/13/09
HAND DELIVERED

Bill To: URS Corp.
1093 Commerce Park Dr.
Oak Ridge, TN 37830

Report To: Michael Mowery
URS Corp.
1093 Commerce Park Dr.
Oak Ridge, TN 37830

Sample Number	Sample Type	Date Collected	# of Containers	Sample Matrix	Requested Testing Program
M29 - Run 1	0.1 N Nitric Probe Wash	04/07/09	1	Liquid	Analyze as per EPA Method 29. No mercury analysis.
M29 - Run 1	Filter	04/07/09	1	Filter	Analyze as per EPA Method 29. No mercury analysis.
M29 - Run 1	Impinger Catch	04/07/09	2	Liquid	Analyze as per EPA Method 29. No mercury analysis.
M29 - Run 2	0.1 N Nitric Probe Wash	04/07/09	1	Liquid	Analyze as per EPA Method 29. No mercury analysis.
M29 - Run 2	Filter	04/07/09	1	Filter	Analyze as per EPA Method 29. No mercury analysis.
M29 - Run 2	Impinger Catch	04/07/09	2	Liquid	Analyze as per EPA Method 29. No mercury analysis.
M29 - Run 4	0.1 N Nitric Probe Wash	04/09/09	1	Liquid	Analyze as per EPA Method 29. No mercury analysis.
M29 - Run 4	Filter	04/09/09	1	Filter	Analyze as per EPA Method 29. No mercury analysis.
M29 - Run 4	Impinger Catch	04/09/09	1	Liquid	Analyze as per EPA Method 29. No mercury analysis.
0.1 N Nitric Acid Blank	Reagent Blank	04/09/09	1	Liquid	Analyze as per EPA Method 29. No mercury analysis.
Filter Blank	Reagent Blank	04/09/09	1	Liquid	Analyze as per EPA Method 29. No mercury analysis.

TURNAROUND TIME REQUIRED Normal: X Rush:

POSSIBLE HAZARD IDENTIFICATION:
Nonhazard: X Flammable:
Highly Toxic: Radiological:

Level of QC Required: Standard

SAMPLE DISPOSAL: Return to Client Disposal By Lab X

1. Relinquished by: Signature/Affiliation:	Date: 4/10/09 Time: 1600	1. Received by Signature/Affiliation: Lynn Henry	4/13/09 1600 ~~12/5/2007 10:00~~ RH
2. Relinquished by Signature/Affiliation:	Date: Time:	2. Received by Signature/Affiliation:	Date: Time:
3. Relinquished by Signature/Affiliation:	Date: Time:	3. Received by Signature/Affiliation:	Date: Time:

Comments:

TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Client: URS – Oak Ridge **Project:** HNCC 39400492 **Lot Number:** H9D140169

Review Items	Yes	No	NA	If No, what was the problem?	Comments/Actions Taken
1. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ 1a Do not match COC ☐ 1b Incomplete information ☐ 1c Marking smeared ☐ 1d Label torn ☐ 1e No label ☐ 1f COC not received ☐ 1g Other:	4a ~~5b DID NOT RECEIVE~~ RH
2. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C; NC, 1668, 1613B: 0-4°C; VOST: 10°C; MA: 2-6 °C)			✓	☐ 2a Temp Blank = _____ ☐ 2b Cooler Temp = _____	
3. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ 3a Sample preservative =	
4. Were custody seals present/intact on cooler and/or containers?		✓		☑ 4a Not present ☐ 4b Not intact ☐ 4c Other:	
5. Were all of the samples listed on the COC received?	✓	~~✓~~ RH		☐ 5a Samples received-not on COC RH ☑ 5b Samples not received-on COC	
6. Were all of the sample containers received intact?	✓			☐ 6a Leaking ☐ 6b Broken	
7. Were VOA samples received without headspace?			✓	☐ 7a Headspace (VOA only)	
8. Were samples received in appropriate containers?	✓			☐ 8a Improper container	
9. Did you check for residual chlorine, if necessary?			✓	☐ 9a Could not be determined due to matrix interference	
10. Were samples received within holding time?	✓			☐ 10a Holding time expired	
11. For rad samples, was sample activity info. provided?			✓	☐ Incomplete information	
12. For SOG water samples (1613B, 1668A, 8290, LR PAHs), do samples have visible solids present?			✓	If yes & appears to be >1%, was SOG notified? _____	
13. Are the shipping containers intact?	✓			☐ 13a Leaking ☐ 13b Other:	
14. Was COC relinquished? (Signed/Dated/Timed)	✓			☐ 14a Not relinquished	
15. Are tests/parameters listed for each sample?	✓			☐ 15a Incomplete information	
16. Is the matrix of the samples noted?	✓			☐ 15a Incomplete information	
17. Is the date/time of sample collection noted?	✓			☐ 15a Incomplete information	
18. Is the client and project name/# identified?	✓			☐ 15a Incomplete information	
19. Was the sampler identified on the COC?		✓			

Quote #: 82723 PM Instructions: _____

Sample Receiving Associate: Ryan Henry Date: 4/14/09

QA026R19.doc, 080707

Test America Laboratory Report

Main Stack

ASTM-D6784-02
Mercury

Main Stack
OHM

H9D140175 Analytical Report **1**

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- Raw Data Mercury 85
- Miscellaneous Data 99

Sample Receipt Documentation **108**

Total Number of Pages **111**

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

ANALYTICAL REPORT

PROJECT NO. 39400492

Haverhill North Coke Co.-OHM

Lot #: H9D140175

Michael Mowery

URS Corporation
1093 Commerce Park Drive
Suite 100
Oak Ridge, TN 37830

TESTAMERICA LABORATORIES, INC.

Kevin S. Woodcock
Project Manager

April 30, 2009

ANALYTICAL METHODS SUMMARY

H9D140175

PARAMETER	ANALYTICAL METHOD
Mercury (Ontario Hydro)	ASTM D6784-02

References:

ASTM Annual Book Of ASTM Standards.

SAMPLE SUMMARY

H9D140175

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
K93KH	001	OHM RUN 1 FH	04/07/09	
K93KP	002	OHM RUN 1 KCL	04/07/09	
K93KR	003	OHM RUN 1 HNO3/H2O2	04/07/09	
K93KV	004	OHM RUN 1 KMNO4	04/07/09	
K93K4	005	OHM RUN 2 FH	04/07/09	
K93K9	006	OHM RUN 2 KCL	04/07/09	
K93LA	007	OHM RUN 2 HNO3/H2O2	04/07/09	
K93LD	008	OHM RUN 2 KMNO4	04/07/09	
K93LG	009	OHM RUN 3 FH	04/09/09	
K93LL	010	OHM RUN 3 KCL	04/09/09	
K93LR	011	OHM RUN 3 HNO3/H2O2	04/09/09	
K93LX	012	OHM RUN 3 KMNO4	04/09/09	
K93L4	013	OHM REAGENT BLANK ACE,HNO3,FILTER	04/09/09	
K93MH	014	OHM REAGENT BLANK PERM SOL	04/09/09	
K93MM	015	OHM REAGENT BLANK KCL	04/09/09	
K93MQ	016	OHM REAGENT BLANK 10% HNO3	04/09/09	

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

PROJECT NARRATIVE
H9D140175

The results reported herein are applicable to the samples submitted for analysis only.

This report shall not be reproduced except in full, without the written approval of the laboratory.

The original chain of custody documentation is included with this report.

Sample Receipt

Custody seals were not present.

Sample OHM-Reagent Blank Filter was received on April 21, 2009.

The chain of custody documentation listed the collection date for Run 2 samples as 4-9-09. The correct date was 4-7-09.

The chain of custody documentation listed the collection date for Run 4 samples as 4-7-09. The correct date was 4-9-09.

Quality Control and Data Interpretation

Unless otherwise noted, all holding times and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

These stack gas samples were prepared and analyzed using TestAmerica Knoxville standard operating procedure KNOX-IP-0006 which is based on ASTM Method D6784-02, "Standard Test Method for Elemental, Oxidized, Particle-Bound and Total Mercury in Flue Gas Generated from Coal-Fired Stationary Sources (Ontario Hydro Method)" with modifications from EPA Method 29. SW-846 Method 7470A, as incorporated in TestAmerica Knoxville standard operating procedure KNOX-MT-0009, was used to perform the final instrument analysis.

TestAmerica Knoxville maintains the following certifications, approvals and accreditations: Arkansas DEQ Lab #88-0688, California DHS ELAP Cert. #2423, Colorado DPHE, Connecticut DPH Lab #PH-0223, Florida DOH Lab #E87177, Georgia DNR Lab #906, Hawaii DOH, Illinois EPA Lab #200012, Indiana DOH Lab #C-TN-02, Iowa DNR Lab #375, Kansas DHE Cert. #E-10349, Kentucky DEP Lab #90101, Louisiana DEQ Cert. #03079, Louisiana DOHH, Maryland DOE Cert. #277, Michigan DEQ Lab #9933, Nevada DEP, New Jersey DEP Lab #TN001, New York DOH Lab #10781, North Carolina DPH Lab #21705, North Carolina DEHNR Cert. #64, Ohio EPA VAP Lab #CL0059, Oklahoma DEQ Lab #9415, Pennsylvania DEP Lab #68-00576, South Carolina DHEC Cert #84001001, Tennessee DOH Lab #02014, Texas CEQ, Utah DOH Lab # QUAN3, Virginia DGS Lab #00165, Washington DOE Lab #C1314, West Virginia DEP Cert. #345, West Virginia DHHR Cert #9955C, Wisconsin DNR Lab #998044300, Naval Facilities Engineering Service Center and USDA Soil Permit #S-46424. This list of approvals is subject to change and does not imply that laboratory certification is available for all parameters reported in this environmental sample data report.

PROJECT NARRATIVE
H9D140175

Acid digestion was performed on the front half particulate filter and the nitric acid probe rinse fractions separately using HNO_3, HCl and HF. After digestion, these two fractions were combined, and the HF was sequestered using H_3BO_3 followed by another heating cycle. This digestate was adjusted to final volume and a portion was digested for CVAA analysis in order to determine the particle-bound mercury. Results were calculated using the following equation:

$$Hg,\ ug = (Hg,\ ug/L) * (Micr.\ Digestate\ \ Volume, L) * \left(\frac{Final\ Volume\ Hg\ Digestate\ \ (mL)}{Volume\ Micr.\ Digestate\ \ Used\ (mL)} \right) * Bench\ Dilution$$

For the 5%HNO_3/10%H_2O_2 impinger samples, a 10 milliliter portion of the sample as received was processed for mercury. The KCl and 4% $KMnO_4$/10%H_2SO_4 impinger samples were treated with hydroxylamine hydrochloride, followed by removal of a 25 mL portion of sample for mercury processing. Results were calculated using the equation listed below. For the KCl and 4% $KMnO_4$/10%H_2SO_4 impinger samples, the sample volume includes the volume of hydroxylamine hydrochloride added to the sample.

$$Hg,\ ug = (Hg, ug/L) * (Sample\ Volume, L) * \left(\frac{Final Volume\ Hg\ Digestate\ (mL)}{Volume\ Sample\ Digested\ (mL)} \right) * Bench\ Dilution$$

Please note that the dilution factor reported on the sample result form is actually the combination of preparation factors (not just a dilution factor) required by the method to convert the Hg reporting limits and method detection limits in concentration units from ug/L to a total ug unit:

$$Dilution Factor = (Volume, L) * \left(\frac{Final Volume\ Hg\ Digestate\ (mL)}{Volume\ Sample\ Digested\ (mL)} \right) * Bench\ Dilution$$

QC DATA ASSOCIATION SUMMARY

H9D140175

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	AIR	ASTM D6784-02		9111339	
002	AIR	ASTM D6784-02		9114147	9114072
003	AIR	ASTM D6784-02		9114132	9114068
004	AIR	ASTM D6784-02		9114153	9114074
005	AIR	ASTM D6784-02		9111339	
006	AIR	ASTM D6784-02		9114147	
007	AIR	ASTM D6784-02		9114132	
008	AIR	ASTM D6784-02		9114153	
009	AIR	ASTM D6784-02		9111339	
010	AIR	ASTM D6784-02		9114147	
011	AIR	ASTM D6784-02		9114132	
012	AIR	ASTM D6784-02		9114153	
013	AIR	ASTM D6784-02		9111339	
014	AIR	ASTM D6784-02		9114153	
015	AIR	ASTM D6784-02		9114147	
016	AIR	ASTM D6784-02		9114132	

Sample Data Summary

URS Corporation

Client Sample ID: OHM RUN 1 FH

TOTAL Metals

Lot-Sample #...: H9D140175-001 Matrix.....: AIR
Date Sampled...: 04/07/09 Date Received..: 04/13/09

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9111339						
Mercury	ND	0.010	ug	ASTM D6784-02	04/28/09	K93KH1AA
		Dilution Factor: 0.1		Analysis Time..: 13:20	MDL.....: 0.0060	

URS Corporation

Client Sample ID: OHM RUN 1 KCL

TOTAL Metals

Lot-Sample #...: H9D140175-002 Matrix.....: AIR
Date Sampled...: 04/07/09 Date Received..: 04/13/09

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9114147						
Mercury	ND	0.17	ug	ASTM D6784-02	04/28/09	K93KP1AA
		Dilution Factor: 1.66		Analysis Time..: 15:00	MDL.....: 0.10	

URS Corporation

Client Sample ID: OHM RUN 1 HNO3/H2O2

TOTAL Metals

Lot-Sample #...: H9D140175-003 Matrix.....: AIR
Date Sampled...: 04/07/09 Date Received..: 04/13/09

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9114132						
Mercury	ND	0.068	ug	ASTM D6784-02	04/28/09	K93KR1AA
		Dilution Factor: 0.68		Analysis Time..: 14:02	MDL.....: 0.041	

URS Corporation

Client Sample ID: OHM RUN 1 KMNO4

TOTAL Metals

Lot-Sample #...: H9D140175-004 Matrix.....: AIR
Date Sampled...: 04/07/09 Date Received..: 04/13/09

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9114153						
Mercury	1.1	0.11	ug	ASTM D6784-02	04/28/09	K93KV1AA
		Dilution Factor: 1.07		Analysis Time..: 14:31	MDL.....: 0.064	

URS Corporation

Client Sample ID: OHM RUN 2 FH

TOTAL Metals

Lot-Sample #...: H9D140175-005 Matrix.....: AIR
Date Sampled...: 04/07/09 Date Received..: 04/13/09

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9111339						
Mercury	ND	0.010	ug	ASTM D6784-02	04/28/09	K93K41AA
		Dilution Factor: 0.1		Analysis Time..: 13:22	MDL.....: 0.0060	

URS Corporation

Client Sample ID: OHM RUN 2 KCL

TOTAL Metals

Lot-Sample #...: H9D140175-006 Matrix.....: AIR
Date Sampled...: 04/07/09 Date Received..: 04/13/09

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9114147						
Mercury	ND	0.17	ug	ASTM D6784-02	04/28/09	K93K91AA
		Dilution Factor: 1.7		Analysis Time..: 15:02	MDL.....: 0.10	

URS Corporation

Client Sample ID: OHM RUN 2 HNO3/H2O2

TOTAL Metals

Lot-Sample #...: H9D140175-007 Matrix.....: AIR
Date Sampled...: 04/07/09 Date Received..: 04/13/09

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9114132						
Mercury	ND	0.080	ug	ASTM D6784-02	04/28/09	K93LA1AA
		Dilution Factor: 0.8		Analysis Time..: 14:04	MDL.....: 0.048	

URS Corporation

Client Sample ID: OHM RUN 2 KMNO4

TOTAL Metals

Lot-Sample #...: H9D140175-008 Matrix.....: AIR
Date Sampled...: 04/07/09 Date Received..: 04/13/09

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9114153						
Mercury	2.2	0.10	ug	ASTM D6784-02	04/28/09	K93LD1AA
		Dilution Factor: 1		Analysis Time..: 14:33	MDL.....: 0.060	

URS Corporation

Client Sample ID: OHM RUN 3 FH

TOTAL Metals

Lot-Sample #...: H9D140175-009 Matrix.....: AIR
Date Sampled...: 04/09/09 Date Received..: 04/13/09

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9111339						
Mercury	0.0099 B	0.010	ug	ASTM D6784-02	04/28/09	K93LG1AA
		Dilution Factor: 0.1		Analysis Time..: 13:28	MDL.....: 0.0060	

NOTE(S):

B Estimated result. Result is less than RL.

URS Corporation

Client Sample ID: OHM RUN 3 KCL

TOTAL Metals

Lot-Sample #...: H9D140175-010 Matrix.....: AIR
Date Sampled...: 04/09/09 Date Received..: 04/13/09

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9114147						
Mercury	ND	0.15	ug	ASTM D6784-02	04/28/09	K93LL1AA
		Dilution Factor: 1.5		Analysis Time..: 15:05	MDL.....: 0.090	

URS Corporation

Client Sample ID: OHM RUN 3 HNO3/H2O2

TOTAL Metals

Lot-Sample #...: H9D140175-011 Matrix.....: AIR
Date Sampled...: 04/09/09 Date Received..: 04/13/09

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9114132						
Mercury	ND	0.080	ug	ASTM D6784-02	04/28/09	K93LR1AA
		Dilution Factor: 0.8		Analysis Time..: 14:06	MDL.....: 0.048	

URS Corporation

Client Sample ID: OHM RUN 3 KMNO4

TOTAL Metals

Lot-Sample #...: H9D140175-012 Matrix.....: AIR
Date Sampled...: 04/09/09 Date Received..: 04/13/09

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9114153						
Mercury	0.30	0.11	ug	ASTM D6784-02	04/28/09	K93LX1AA
		Dilution Factor: 1.08		Analysis Time..: 14:35	MDL.....: 0.065	

URS Corporation

Client Sample ID: OHM REAGENT BLANK ACE,HNO3,FILTER

TOTAL Metals

Lot-Sample #...: H9D140175-013 Matrix.....: AIR
Date Sampled...: 04/09/09 Date Received..: 04/13/09

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9111339						
Mercury	ND	0.010	ug	ASTM D6784-02	04/28/09	K93L41AA
		Dilution Factor: 0.1		Analysis Time..: 13:30	MDL.....: 0.0060	

URS Corporation

Client Sample ID: OHM REAGENT BLANK PERM SOL

TOTAL Metals

Lot-Sample #...: H9D140175-014 Matrix.....: AIR
Date Sampled...: 04/09/09 Date Received..: 04/13/09

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9114153						
Mercury	ND	0.024	ug	ASTM D6784-02	04/28/09	K93MH1AA
		Dilution Factor: 0.24		Analysis Time..: 14:37	MDL.....: 0.014	

URS Corporation

Client Sample ID: OHM REAGENT BLANK KCL

TOTAL Metals

Lot-Sample #...: H9D140175-015 Matrix.....: AIR
Date Sampled...: 04/09/09 Date Received..: 04/13/09

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9114147						
Mercury	ND	0.020	ug	ASTM D6784-02	04/28/09	K93MM1AA
		Dilution Factor: 0.2		Analysis Time..: 15:07	MDL.....: 0.012	

URS Corporation

Client Sample ID: OHM REAGENT BLANK 10% HNO3

TOTAL Metals

Lot-Sample #...: H9D140175-016 Matrix.....: AIR
Date Sampled...: 04/09/09 Date Received..: 04/13/09

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9114132						
Mercury	ND	0.045	ug	ASTM D6784-02	04/28/09	K93MQ1AA
		Dilution Factor: 0.45		Analysis Time..: 14:08	MDL.....: 0.027	

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: H9D140175 Matrix.....: AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: H9D210000-339 Prep Batch #...: 9111339						
Mercury	ND	0.010	ug	ASTM D6784-02	04/28/09	LAF571AA
		Dilution Factor: 0.1				
		Analysis Time..: 13:15				
MB Lot-Sample #: H9D240000-132 Prep Batch #...: 9114132						
Mercury	ND	0.025	ug	ASTM D6784-02	04/28/09	LANTM1AA
		Dilution Factor: 0.25				
		Analysis Time..: 13:54				
MB Lot-Sample #: H9D240000-147 Prep Batch #...: 9114147						
Mercury	ND	0.010	ug	ASTM D6784-02	04/28/09	LANVA1AA
		Dilution Factor: 0.1				
		Analysis Time..: 14:56				
MB Lot-Sample #: H9D240000-153 Prep Batch #...: 9114153						
Mercury	ND	0.010	ug	ASTM D6784-02	04/28/09	LANVK1AA
		Dilution Factor: 0.1				
		Analysis Time..: 14:26				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Lot-Sample #...: H9D140175 Matrix.....: AIR

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP-BATCH #
Mercury	102	(80 - 120)			ASTM D6784-02	04/28/09	9111339
	100	(80 - 120)	2.4	(0-20)	ASTM D6784-02	04/28/09	9111339

Dilution Factor: 0.1 Analysis Time...: 13:17

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Lot-Sample #...: H9D140175

Matrix.....: AIR

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Mercury	0.500	0.511	ug	102		ASTM D6784-02	04/28/09	9111339
	0.500	0.499	ug	100	2.4	ASTM D6784-02	04/28/09	9111339

Dilution Factor: 0.1 Analysis Time..: 13:17

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: H9D140175 Matrix.....: AIR

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: H9D240000-132 Prep Batch #...: 9114132					
Mercury	91	(80 - 120)	ASTM D6784-02	04/28/09	LANTM1AC
		Dilution Factor: 0.25	Analysis Time..: 13:56		
LCS Lot-Sample#: H9D240000-147 Prep Batch #...: 9114147					
Mercury	98	(80 - 120)	ASTM D6784-02	04/28/09	LANVA1AC
		Dilution Factor: 0.1	Analysis Time..: 14:58		
LCS Lot-Sample#: H9D240000-153 Prep Batch #...: 9114153					
Mercury	99	(80 - 120)	ASTM D6784-02	04/28/09	LANVK1AC
		Dilution Factor: 0.1	Analysis Time..: 14:28		

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: H9D140175 Matrix.....: AIR

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: H9D240000-132 Prep Batch #...: 9114132							
Mercury	1.25	1.14	ug	91	ASTM D6784-02	04/28/09	LANTM1AC
			Dilution Factor: 0.25		Analysis Time..: 13:56		
LCS Lot-Sample#: H9D240000-147 Prep Batch #...: 9114147							
Mercury	0.500	0.491	ug	98	ASTM D6784-02	04/28/09	LANVA1AC
			Dilution Factor: 0.1		Analysis Time..: 14:58		
LCS Lot-Sample#: H9D240000-153 Prep Batch #...: 9114153							
Mercury	0.500	0.494	ug	99	ASTM D6784-02	04/28/09	LANVK1AC
			Dilution Factor: 0.1		Analysis Time..: 14:28		

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: H9D140175 Matrix.....: AIR
Date Sampled...: 04/16/09 Date Received..: 04/21/09

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: H9D210178-007 Prep Batch #...: 9114132							
Mercury	94	(80 - 120)			ASTM D6784-02	04/28/09	LAFJ21AC
	94	(80 - 120)	0.0	(0-20)	ASTM D6784-02	04/28/09	LAFJ21AD
		Dilution Factor: 0.85					
		Analysis Time..: 14:15					

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: H9D140175 Matrix.....: AIR
Date Sampled...: 04/16/09 Date Received..: 04/21/09

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: H9D210178-007 Prep Batch #...: 9114132									
Mercury									
	0.068	0.850	0.867	ug	94		ASTM D6784-02	04/28/09	LAFJ21AC
	0.068	0.850	0.867	ug	94	0.0	ASTM D6784-02	04/28/09	LAFJ21AD

Dilution Factor: 0.85
Analysis Time..: 14:15

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: H9D140175 Matrix.....: AIR
Date Sampled...: 04/16/09 Date Received..: 04/21/09

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: H9D210178-006 Prep Batch #...: 9114147							
Mercury	106	(80 - 120)			ASTM D6784-02	04/28/09	LAFJ01AC
	104	(80 - 120)	0.82	(0-20)	ASTM D6784-02	04/28/09	LAFJ01AD
		Dilution Factor: 1.37					
		Analysis Time..: 15:16					

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: H9D140175 Matrix.....: AIR
Date Sampled...: 04/16/09 Date Received..: 04/21/09

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: H9D210178-006 Prep Batch #...: 9114147									
Mercury									
	1.9	1.37	3.36	ug	106		ASTM D6784-02	04/28/09	LAFJ01AC
	1.9	1.37	3.33	ug	104	0.82	ASTM D6784-02	04/28/09	LAFJ01AD

Dilution Factor: 1.37
Analysis Time..: 15:16

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: H9D140175 Matrix.....: AIR
Date Sampled...: 04/16/09 Date Received..: 04/21/09

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: H9D210178-008 Prep Batch #...: 9114153							
Mercury	92	(80 - 120)			ASTM D6784-02	04/28/09	LAFJ41AC
	82	(80 - 120)	1.1	(0-20)	ASTM D6784-02	04/28/09	LAFJ41AD

Dilution Factor: 0.96
Analysis Time..: 14:43

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE DATA REPORT

TOTAL Metals

Client Lot #...: H9D140175 Matrix.....: AIR
Date Sampled...: 04/16/09 Date Received..: 04/21/09

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: H9D210178-008 Prep Batch #...: 9114153									
Mercury									
	7.9	0.960	8.79	ug	92		ASTM D6784-02	04/28/09	LAFJ41AC
	7.9	0.960	8.70	ug	82	1.1	ASTM D6784-02	04/28/09	LAFJ41AD

Dilution Factor: 0.96
Analysis Time..: 14:43

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

TestAmerica Knoxville

Mercury Data Reporting Form

Post Digestion Spike

Units: ug/L (ppb)

Instrument ID: Leeman HydraAA Hg

Data File Name: M042809A. PRN

Element	PDS K93KHA	Original Sample K93KH	Spike Added	Percent Recovery
Hg	1.05	ND	1.0	105

TestAmerica Knoxville

Mercury Data Reporting Form

Post Digestion Spike

Units: ug/L (ppb)

Instrument ID: Leeman HydraAA Hg

Data File Name: M042809A. PRN

Element	PDSD K93KHA	Original Sample K93KH	Spike Added	Percent Recovery
Hg	1.05	ND	1.0	105

Form 5B Equivalent

Sample Receipt Documentation

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

H9D140175

Reference COC No.: _____

Project Name: Haverhill North Coke Co.
Project Number: 39400492
Test Location: Main Stack

URS Project Manager: Michael Mowery
Purchase Order Number:
Required Report Date: Standard Turnaround

Sample Shipment Date: 4/10/2009
Laboratory Destination: Test America - Knoxville, TN
Laboratory Contact: Kevin Woodcock
Project Contact/Phone: 865-220-8114
Carrier Waybill No.: Hand Delivered by URS

Bill To: URS Corp.
1093 Commerce Park Dr.
Oak Ridge, TN 37830

Report To: Michael Mowery
URS Corp.
1093 Commerce Park Dr.
Oak Ridge, TN 37830

Sample Number	Sample Type	Date Collected	# of Containers	Sample Matrix	Requested Testing Program
OHM - Run 1	Acetone Probe Wash	04/07/09	1	Liquid	Analyze as per ASTM
OHM - Run 1	0.1 N Nitric Probe Rinse	04/07/09	1	Liquid	Analyze as per EPA Method 29. No mercury analysis.
OHM - Run 1	Filter	04/07/09	1	Filter	Analyze as per EPA Method 29. No mercury analysis.
OHM - Run 1	Impingers 1-3 Catch	04/07/09	2	Liquid	Analyze as per EPA Method 29. No mercury analysis.
OHM - Run 1	Impinger 4 Rinse	04/07/09	1	Liquid	Analyze as per EPA Method 29. No mercury analysis.
OHM - Run 1	Impingers 5-7 Catch	04/07/09	1	Liquid	Analyze as per EPA Method 29. No mercury analysis.
OHM - Run 2	Acetone Probe Wash	04/09/09	1	Liquid	Analyze as per EPA Method 29. No mercury analysis.
OHM - Run 2	0.1 N Nitric Probe Rinse	04/09/09	1	Liquid	Analyze as per EPA Method 29. No mercury analysis.
OHM - Run 2	Filter	04/09/09	1	Filter	Analyze as per EPA Method 29. No mercury analysis.
OHM - Run 2	Impingers 1-3 Catch	04/09/09	2	Liquid	Analyze as per EPA Method 29. No mercury analysis.
OHM - Run 2	Impinger 4 Rinse	04/09/09	1	Liquid	
OHM - Run 2	Impingers 5-7 Catch	04/09/09	1	Liquid	

TURNAROUND TIME REQUIRED Normal: X Rush: _____

POSSIBLE HAZARD IDENTIFICATION:
Nonhazard: X
Highly Toxic: _____
Flammable: _____
Radiological: _____

Level of QC Required: Standard

SAMPLE DISPOSAL: Return to Client _____ Disposal By Lab X

1. Relinquished by: Signature/Affiliation: [signature]	Date: 4/13/09 Time: 1600	1. Received by Signature/Affiliation: Lynn Henry	4/13/09 1600
2. Relinquished by Signature/Affiliation:	Date: Time:	2. Received by Signature/Affiliation:	Date: Time:
3. Relinquished by Signature/Affiliation:	Date: Time:	3. Received by Signature/Affiliation:	Date: Time:

Comments:

12/5/2007 10:00

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

H9D140175

Reference COC No.: _____

Project Name: Haverhill North Coke Co.
Project Number: 39400492
Test Location: Main Stack

Sample Shipment Date: 4/10/2009
Laboratory Destination: Test America - Knoxville, TN
Laboratory Contact: Kevin Woodcock
Project Contact/Phone: 865-220-8114
Carrier Waybill No.: Hand Delivered by URS

Bill To: URS Corp.
1093 Commerce Park Dr.
Oak Ridge, TN 37830

URS Project Manager: Michael Mowery
Purchase Order Number:
Required Report Date: Standard Turnaround

Report To: Michael Mowery
URS Corp.
1093 Commerce Park Dr.
Oak Ridge, TN 37830

Sample Number	Sample Type	Date Collected	# of Containers	Sample Matrix	Requested Testing Program
OHM - Run 4	Acetone Probe Wash	04/07/09	1	Liquid	Analyze as per ASTM D-6784-02
OHM - Run 4	0.1 N Nitric Probe Rinse	04/07/09	1	Liquid	Analyze as per ASTM D-6784-02
OHM - Run 4	Filter	04/07/09	1	Filter	Analyze as per ASTM D-6784-02
OHM - Run 4	Impingers 1-3 Catch	04/07/09	2	Liquid	Analyze as per ASTM D-6784-02
OHM - Run 4	Impinger 4 Rinse	04/07/09	1	Liquid	Analyze as per ASTM D-6784-02
OHM - Run 4	Impingers 5-7 Catch	04/07/09	1	Liquid	Analyze as per ASTM D-6784-02
OHM - Reagent Blank	Acetone	04/09/09	1	Liquid	Analyze as per ASTM D-6784-02
OHM - Reagent Blank	0.1 N Nitric	04/09/09	1	Liquid	Analyze as per ASTM D-6784-02
OHM - Reagent Blank	Filter	04/09/09	1	Filter	Analyze as per ASTM D-6784-02
OHM - Reagent Blank	Permangenate Solution	04/09/09	1	Liquid	Analyze as per ASTM D-6784-02
OHM - Reagent Blank	KCl Solution	04/09/09	1	Liquid	Analyze as per ASTM D-6784-02
OHM - Reagent Blank	10% Nitric Solution	04/09/09	1	Liquid	Analyze as per ASTM D-6784-02

TURNAROUND TIME REQUIRED Normal: X Rush: _____

POSSIBLE HAZARD IDENTIFICATION:
Nonhazard: X
Highly Toxic: _____
Flammable: _____
Radiological: _____

Level of QC Required: Standard

SAMPLE DISPOSAL: Return to Client _____ Disposal By Lab X

1. Relinquished by: Signature/Affiliation: [signature]	Date: 4/13/09 Time: 1600	1. Received by Signature/Affiliation: Ryan Henry	4/13/09 1600
2. Relinquished by Signature/Affiliation:	Date: Time:	2. Received by Signature/Affiliation:	Date: Time:
3. Relinquished by Signature/Affiliation:	Date: Time:	3. Received by Signature/Affiliation:	Date: Time:

Comments:

12/5/2007 10:00

TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Client: URS **Project:** HNCC OHM **Lot Number:** H9D140175

Review Items	Yes	No	NA	If No, what was the problem?	Comments/Actions Taken
1. Do sample container labels match COC? (IDs, Dates, Times)			✓	☑ 1a Do not match COC ☐ 1b Incomplete information ☐ 1c Marking smeared ☐ 1d Label torn ☐ 1e No label ☐ 1f COC not received ☐ 1g Other:	1A, RUN 2, COC LIST COLLECTION DATE AS 4-9-09, LABELED AS 4-7-09 1A, RUN 4, COC LIST COLLECTION DATE AS 4-7-09, LABELED AS 4-9-09
2. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C; NC, 1668, 1613B: 0-4°C; VOST: 10°C; MA: 2-6 °C)			✓	☐ 2a Temp Blank = ____ ☐ 2b Cooler Temp = ____	4A SB, OHM - REAGENT BLANK FILTER
3. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ 3a Sample preservative =	Rec'd 4/20/09
4. Were custody seals present/intact on cooler and/or containers?		✓		☑ 4a Not present ☐ 4b Not intact ☐ 4c Other:	4/21/09
5. Were all of the samples listed on the COC received?		✓		☐ 5a Samples received-not on COC ☑ 5b Samples not received-on COC	
6. Were all of the sample containers received intact?	✓			☐ 6a Leaking ☐ 6b Broken	
7. Were VOA samples received without headspace?	✓		✓	☐ 7a Headspace (VOA only)	
8. Were samples received in appropriate containers?	✓			☑ 8a Improper container	
9. Did you check for residual chlorine, if necessary?		✓	✓	☐ 9a Could not be determined due to matrix interference	
10. Were samples received within holding time?	✓			☐ 10a Holding time expired	
11. For rad samples, was sample activity info. provided?			✓	☐ Incomplete information	
12. For SOG water samples (1613B, 1668A, 8290, LR PAHs), do samples have visible solids present?		✓	✓	If yes & appears to be >1%, was SOG notified? ____	
13. Are the shipping containers intact?	✓			☐ 13a Leaking ☐ 13b Other:	
14. Was COC relinquished? (Signed/Dated/Timed)	✓			☐ 14a Not relinquished	
15. Are tests/parameters listed for each sample?	✓			☐ 15a Incomplete information	
16. Is the matrix of the samples noted?	✓			☐ 15a Incomplete information	
17. Is the date/time of sample collection noted?	✓			☐ 15a Incomplete information	
18. Is the client and project name/# identified?	✓			☐ 15a Incomplete information	
19. Was the sampler identified on the COC?		✓			

Quote #: 82723 PM Instructions: ____

Sample Receiving Associate: [signature] Date: 4-13-09

QA026R19.doc, 080707

Test America Laboratory Report

Main Stack

Dioxin/Furan

H9D140159 Analytical Report **1**

Sample Receipt Documentation **23**

Trace Level Organics **27**
- Raw Sample Data 28
- Standards Data 205
- Raw QC Data 712
- Miscellaneous Data 816

Sample Receipt Documentation **827**

Total Number of Pages **830**

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

ANALYTICAL REPORT

PROJECT NO. 39400492

Haverhill North Coke Co.-M23

Lot #: H9D140159

Michael Mowery

URS Corporation
1093 Commerce Park Drive
Suite 100
Oak Ridge, TN 37830

TESTAMERICA LABORATORIES, INC.

Kevin S. Woodcock
Project Manager

May 21, 2009

ANALYTICAL METHODS SUMMARY

H9D140159

PARAMETER	ANALYTICAL METHOD
Determination of PCDD's and PCDF's	CFR60A 23

References:

CFR60A "Test Methods", 40 CFR, Part 60, Appendix A, July 1, 1993.

SAMPLE SUMMARY

H9D140159

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
K93F6	001	M23 RUN 1	04/07/09	
K93GA	002	M23 RUN 2	04/07/09	
K93GE	003	M23 RUN 4	04/09/09	
K93GM	004	A-6366,A-6367 MEDIA CHECK	04/07/09	

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

PROJECT NARRATIVE
H9D140159

The results reported herein are applicable to the samples submitted for analysis only.

This report shall not be reproduced except in full, without the written approval of the laboratory.

The original chain of custody documentation is included with this report.

Sample Receipt

All Method 23 sample fractions were received intact. The XAD resin modules were received at 6°C, and all remaining sample fractions were received outside recommended temperature specifications at 17°C.

An XAD module labeled as M23 Run 3 was received, but was not listed on the chain of custody documentation. This sample was archived at the lab.

The Method 23 Reagent Blank sample fractions were not received, but were listed on the chain of custody documentation.

The collection date listed on the chain of custody documentation for Run 2 Toluene Probe Wash, Filter and XAD Trap was 04/09/09. The date listed on each sample label was 04/07/09.

Quality Control and Data Interpretation

Unless otherwise noted, all holding times and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

TestAmerica Knoxville maintains the following certifications, approvals and accreditations: Arkansas DEQ Lab #88-0688, California DHS ELAP Cert. #2423, Colorado DPHE, Connecticut DPH Lab #PH-0223, Florida DOH Lab #E87177, Georgia DNR Lab #906, Hawaii DOH, Illinois EPA Lab #200012, Indiana DOH Lab #C-TN-02, Iowa DNR Lab #375, Kansas DHE Cert. #E-10349, Kentucky DEP Lab #90101, Louisiana DEQ Cert. #03079, Louisiana DOHH, Maryland DOE Cert. #277, Michigan DEQ Lab #9933, Nevada DEP, New Jersey DEP Lab #TN001, New York DOH Lab #10781, North Carolina DPH Lab #21705, North Carolina DEHNR Cert. #64, Ohio EPA VAP Lab #CL0059, Oklahoma DEQ Lab #9415, Pennsylvania DEP Lab #68-00576, South Carolina DHEC Cert #84001001, Tennessee DOH Lab #02014, Texas CEQ, Utah DOH Lab # QUAN3, Virginia DGS Lab #00165, Washington DOE Lab #C1314, West Virginia DEP Cert. #345, West Virginia DHHR Cert #9955C, Wisconsin DNR Lab #998044300, Naval Facilities Engineering Service Center and USDA Soil Permit #S-46424. This list of approvals is subject to change and does not imply that laboratory certification is available for all parameters reported in this environmental sample data report.

PROJECT NARRATIVE
H9D140159

The following flags are used to qualify results for chlorinated dioxin and furan results:

J – The reported result is an estimate. The amount reported is below the Minimum Level (ML). The qualitative definition of the ML is "the lowest level at which the analytical system must give a reliable signal and an acceptable calibration point". The ML was introduced in EPA Methods 1624 and 1625 in 1980 and was promulgated in these methods in 1984 at 40 CFR Part 136, Appendix A. For the purposes of this report the ML is qualitatively defined as described above, and quantitatively defined as follows:
Minimum Level: The concentration or mass of analyte in the sample that corresponds to the lowest calibration level in the initial calibration. It represents a concentration (in the sample extract) equivalent to that of the lowest calibration standard, after corrections for method-specified sample weights, volumes and cleanup procedures has been employed.

Example: The lowest calibration level for TCDD in the initial calibration is 0.5 pg/uL. A mass of 10 pg of 2,3,7,8-TCDD in the sample would result in a concentration of 0.5 pg/uL in the sample extract (at a final volume of 20 uL). Since the concentration in the sample extract corresponds to the concentration in the lowest calibration standard, the 10 pg mass in the sample components is the ML. If the sample extract is further diluted, the ML will increase by the dilution factor.

Example: A 1/10 dilution is performed on the sample extract described above. The ML for 2,3,7,8-TCDD becomes 100 pg rather than the default of 10 pg.

E – The reported result is an estimate. The amount reported is above the UCL described below.
The E qualifier is applied on the basis of the Upper Calibration Level (UCL). The quantitative definition of the UCL is listed below:
Upper Calibration Level: The concentration or mass of analyte in the sample that corresponds to the highest calibration level in the initial calibration. It is equivalent to the concentration of the highest calibration standard, assuming that all method-specified sample weights, volumes, and cleanup procedures have been employed.

Example:
The maximum calibration level for TCDD in the initial calibration is 200 pg/uL. A mass of 4000 pg of 2,3,7,8-TCDD in the sampling components would result in a concentration of 200 pg/uL in the sample extract (at a final volume of 20 uL). Since the concentration in the sample extract corresponds to the concentration in the highest calibration standard, the 4000 pg mass in the sample components is the UCL. If the sample extract is further diluted, the ML will increase by the dilution factor.

PROJECT NARRATIVE
H9D140159

Example:
A 1/10 dilution is performed on the sample extract described above. The UCL for 2,3,7,8-TCDD becomes 40,000 pg rather than the default of 4000 pg. In this examples all positive 2,3,7,8-TCDD results above 40,000 pg are flagged with an E.

B – The analyte is present in the associated method blank at a reportable level. For this analysis, there is no method specified reporting level, other than the qualitative criterion that peaks must exhibit a signal-to-noise ratio of 2.5-to-1. Therefore, the presence of any amount of the analyte present in the blank will result a B qualifier on all associated samples.
If the blank has analytes present above the ML (described above) the need for corrective action beyond qualifying the associated data is evaluated. The determination is made whether the amount in the blank is less than 5% of the lowest amount in associated client samples or regulatory limit. If this is the case, sample processing may continue with the qualification of the data. If the amount in the blank is greater than 5% of the lowest amount in associated client samples or regulatory limit, corrective action must be taken. The corrective actions may include extracting a second aliquot of sample if available, or notifying the client to assess the impact on the project objectives.
Note: Some laboratories do not report contamination in the blank unless it is above their lower calibration limit, or an established percentage of the level in the samples, or an established percentage of the regulatory limit. Likewise, some laboratories set a reporting limit at one half the lower calibration limit.

Q – Estimated maximum possible concentration. This qualifier is used when the result is generated from chromatographic data that does not meet all the qualitative criteria for a positive identification given in the method. The criteria include the following areas:
- Ion abundance ratios must be within specified limits (+/-15% of theoretical ion abundance ratio.)
- Retention time criteria (relative to the method-specified isotope labeled retention time standard).
- Co-maximization criterion. The two quantitation ion peaks must reach their maxima within 2 seconds of each other.
- Polychlorinated dibenzofuran purity. No peak can be identified as a polychlorinated dibenzofuran if a polychlorinated diphenyl ether peak maximizes within +/- 2 seconds of the furan candidate.

S – Ion suppression evident. The trace indicating the signal from the lock mass of the calibration compound shows a deflection at the retention time of the analyte. This may indicate a temporary suppression of the instrument sensitivity, due to a matrix-borne interference.

PROJECT NARRATIVE
H9D140159

C – Coeluting Isomer. The isomer is known to coelute with another member of its homologue group, or the peak shape is shouldered, indicating the likelihood of a coeluting isomer

X – Other. See explanation in narrative.

Laboratory studies supporting risk assessment and TMDL evaluations frequently use qualified data reported as low as the MDL, or the Estimated Detection Limit (EDL). Several of EPA's isotope dilution methods employ the EDL[1,2,3]. The EDL is based on a direct measurement of the signal-to-noise ratio acquired during sample analysis. This s/n measurement is used to calculate the concentration in the sample corresponding to the minimum intensity of the smallest quantifiable peak. The EDL reflects the amount of the particular analyte which would be required to cause a positive result for the particular analysis. Because the s/n obtained covaries with recovery, instrument sensitivity and sample-specific cleanup efficacy, the EDL is a more valid measure of the sensitivity of the entire analytical process for the specific sample, than is an MDL run periodically on a reference matrix.

The EDL is typically calculated according to the following equation:

$$\text{Estimated Detection Limit} = \frac{N \times 2.5 \times Qis}{His \times RRF \times W \times S}$$

where:

N	=	peak to peak noise of quantitation ion signal in the region of the ion chromatogram where the compound of interest is expected to elute
His	=	peak height of quantitation ion for appropriate internal standard
Qis	=	ng of internal standard added to sample
RRF	=	mean relative response factor of compound obtained during initial calibration
W	=	amount of sample extracted (grams or liters)
S	=	percent solids (optional, if results are requested to be reported on dry weight basis)

(The area of the internal standard is sometimes used instead of height, along with an area-to-height conversion factor)

This method of estimating the detection limit differs from the MDL in that it does not carry the requirement that the sample be statistically distinguished as being from a contaminated population. As results approach the EDL, the risk of false positives and the analytical uncertainty increase significantly. However, a low false positive well below the ML or MDL is often more accurate than the assumption is that contamination is present at the DL or ML. For relatively clean samples, MDL studies may give an elevated estimate

of the detection limit. Additionally, on contaminated samples, the MDL may give a falsely low estimate of the detection limit.

$$\text{Analyte Concentration} = \frac{As \times Qis}{Ais \times RRF \times W \times S}$$

where:

As	=	Sum of areas of the target peaks
Qis	=	ng of internal standard added to sample
Ais	=	Sum of areas of the internal standard peaks
RRF	=	mean relative response factor of compound obtained during initial calibration
W	=	amount of sample extracted (grams or liters)
S	=	percent solids (optional, if results are requested to be reported on dry weight basis)

(The area of the internal standard is sometimes used instead of height, along with an area-to-height conversion factor)

In sample data, peaks must have an intensity of 2.5 times the height of the background noise in order to be considered. Careful examination of the two equations above, and a bit of high school algebra reveals that for the concentration of the smallest peak detectable (per the EDL equation) to exactly equal the smallest peaks that are calculated, requires that the average height to area ratio obtained during the calibration must equal the area to height ratio for every peak obtained near 2.5 times the noise. When the area to height ratio on a peak in a sample is less than the average obtained during calibration, the calculated result will correspond to a peak that would have been less than 2.5 X the noise on the calibration. This is the result of normal variability. Because the source method for the EDL (SW-846 8290 and 8280A) does not provide for censoring of results by any other magnitude standard than being 2.5 times the noise, the laboratory does not censor at the calculated EDL. Hence, detections may be reported below the estimated detection limits.

1. Code of Federal Regulations, Part 136, Chapter 1, Appendix 1, October 1994: Method 1613 Tetra- Through Octa-Chlorinated Dioxins and Furans by Isotope Dilution High Resolution Gas Chromatography/High Resolution Mass Spectrometry.
2. U.S. EPA. Test Methods for Evaluating Solid Waste, Volume II, SW-846, Update III, December 1996. Method 8280A: The Analysis of Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by High Resolution Gas Chromatography/Low Resolution Mass Spectrometry.
3. U.S. EPA. Test Methods for Evaluating Solid Waste, SW-846. Third Edition. March 1995 Method 8290: Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by High Resolution Gas Chromatography/High Resolution Mass Spectrometry.

QC DATA ASSOCIATION SUMMARY

H9D140159

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	AIR	CFR60A 23		9118146	
002	AIR	CFR60A 23		9118146	
003	AIR	CFR60A 23		9118146	
004	AIR	CFR60A 23		9118146	

Sample Data Summary

URS Corporation

Sample ID: M23 RUN 1

Trace Level Organic Compounds

Lot - Sample #....:	H9D140159 - 001	**Work Order #....:**	K93F61AA	**Matrix....:**	AIR
Date Sampled....:	04/07/09	**Date Received....:**	04/13/09	**Dilution Factor:**	1
Prep Date....:	04/28/09	**Analysis Date....:**	05/17/09		
Prep Batch # ....:	9118146				
Initial Wgt/Vol :	1 Sample	**Instrument ID....:**	M2A	**Method:**	CFR60A 23
Analyst ID....:	Melissa A. Davidson				

PARAMETER	RESULT		MINIMUM LEVEL	ESTIMATED DETECTION LIMIT	UNITS
2,3,7,8-TCDD	ND		10	4.0	pg/sample
Total TCDD	ND		10	4.0	pg/sample
1,2,3,7,8-PeCDD	ND		50	1.9	pg/sample
Total PeCDD	ND		50	1.9	pg/sample
1,2,3,4,7,8-HxCDD	ND		50	1.3	pg/sample
1,2,3,6,7,8-HxCDD	ND		50	1.3	pg/sample
1,2,3,7,8,9-HxCDD	ND		50	1.2	pg/sample
Total HxCDD	**5.3**	**Q J**	**50**	**1.2**	**pg/sample**
1,2,3,4,6,7,8-HpCDD	**6.3**	**J**	**50**	**1.7**	**pg/sample**
Total HpCDD	**14**	**J**	**50**	**1.7**	**pg/sample**
OCDD	**52**	**B J**	**100**	**2.6**	**pg/sample**
2,3,7,8-TCDF	ND		10	2.3	pg/sample
Total TCDF	**1.9**	**Q J**	**10**	**2.3**	**pg/sample**
1,2,3,7,8-PeCDF	ND		50	1.6	pg/sample
2,3,4,7,8-PeCDF	ND		50	1.5	pg/sample
Total PeCDF	ND		50	1.6	pg/sample
1,2,3,4,7,8-HxCDF	ND		50	0.64	pg/sample
1,2,3,6,7,8-HxCDF	ND		50	0.61	pg/sample
2,3,4,6,7,8-HxCDF	ND		50	0.70	pg/sample
1,2,3,7,8,9-HxCDF	ND		50	0.72	pg/sample
Total HxCDF	ND		50	0.67	pg/sample
1,2,3,4,6,7,8-HpCDF	ND		50	1.2	pg/sample
1,2,3,4,7,8,9-HpCDF	ND		50	1.4	pg/sample
Total HpCDF	ND		50	1.3	pg/sample
OCDF	ND		100	3.0	pg/sample

URS Corporation

Sample ID: M23 RUN 1

Trace Level Organic Compounds

Lot - Sample #....:	H9D140159 - 001	**Work Order #....:**	K93F61AA	**Matrix....:**	AIR
Date Sampled....:	04/07/09	**Date Received....:**	04/13/09	**Dilution Factor:**	1
Prep Date....:	04/28/09	**Analysis Date....:**	05/17/09		
Prep Batch # ....:	9118146				
Initial Wgt/Vol :	1 Sample	**Instrument ID....:**	M2A	**Method:**	CFR60A 23
Analyst ID....:	Melissa A. Davidson				

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	90	40 - 130
13C-1,2,3,7,8-PeCDD	95	40 - 130
13C-1,2,3,6,7,8-HxCDD	98	40 - 130
13C-1,2,3,4,6,7,8-HpCDD	85	25 - 130
13C-OCDD	70	25 - 130
13C-2,3,7,8-TCDF	90	40 - 130
13C-1,2,3,7,8-PeCDF	90	40 - 130
13C-1,2,3,6,7,8-HxCDF	103	40 - 130
13C-1,2,3,4,6,7,8-HpCDF	89	25 - 130

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
13C-1,2,3,4,7,8-HxCDD	91	70 - 130
13C-2,3,4,7,8-PeCDF	97	70 - 130
13C-1,2,3,4,7,8-HxCDF	72	70 - 130
13C-1,2,3,4,7,8,9-HpCDF	81	70 - 130
37Cl4-2,3,7,8-TCDD	86	70 - 130

QUALIFIERS

Results and reporting limits have been adjusted for dry weight.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated Result.

Q Estimated maximum possible concentration (EMPC).

URS Corporation

Sample ID: M23 RUN 2

Trace Level Organic Compounds

Lot - Sample #....:	H9D140159 - 002	Work Order #....:	K93GA1AA	Matrix....:	AIR
Date Sampled....:	04/07/09	Date Received....:	04/13/09	Dilution Factor:	1
Prep Date....:	04/28/09	Analysis Date....:	05/17/09		
Prep Batch # ....:	9118146				
Initial Wgt/Vol :	1 Sample	Instrument ID....:	M2A	Method:	CFR60A 23
Analyst ID....:	Melissa A. Davidson				

PARAMETER	RESULT		MINIMUM LEVEL	ESTIMATED DETECTION LIMIT	UNITS
2,3,7,8-TCDD	ND		10	4.0	pg/sample
Total TCDD	ND		10	4.0	pg/sample
1,2,3,7,8-PeCDD	ND		50	1.9	pg/sample
Total PeCDD	ND		50	1.9	pg/sample
1,2,3,4,7,8-HxCDD	ND		50	1.4	pg/sample
1,2,3,6,7,8-HxCDD	ND		50	1.4	pg/sample
1,2,3,7,8,9-HxCDD	ND		50	1.3	pg/sample
Total HxCDD	ND		50	1.4	pg/sample
1,2,3,4,6,7,8-HpCDD	**3.3**	**Q J**	**50**	**1.7**	**pg/sample**
Total HpCDD	**7.4**	**Q J**	**50**	**1.7**	**pg/sample**
OCDD	**34**	**B J**	**100**	**2.0**	**pg/sample**
2,3,7,8-TCDF	ND		10	2.8	pg/sample
Total TCDF	**3.8**	**Q J**	**10**	**2.8**	**pg/sample**
1,2,3,7,8-PeCDF	ND		50	1.6	pg/sample
2,3,4,7,8-PeCDF	ND		50	1.6	pg/sample
Total PeCDF	ND		50	1.6	pg/sample
1,2,3,4,7,8-HxCDF	ND		50	0.70	pg/sample
1,2,3,6,7,8-HxCDF	ND		50	0.67	pg/sample
2,3,4,6,7,8-HxCDF	ND		50	0.76	pg/sample
1,2,3,7,8,9-HxCDF	ND		50	0.79	pg/sample
Total HxCDF	ND		50	0.73	pg/sample
1,2,3,4,6,7,8-HpCDF	ND		50	1.3	pg/sample
1,2,3,4,7,8,9-HpCDF	ND		50	1.5	pg/sample
Total HpCDF	ND		50	1.4	pg/sample
OCDF	ND		100	2.4	pg/sample

URS Corporation

Sample ID: M23 RUN 2

Trace Level Organic Compounds

Lot - Sample #....:	H9D140159 - 002	**Work Order #....:**	K93GA1AA	**Matrix....:**	AIR
Date Sampled....:	04/07/09	**Date Received....:**	04/13/09	**Dilution Factor:**	1
Prep Date....:	04/28/09	**Analysis Date....:**	05/17/09		
Prep Batch # ....:	9118146				
Initial Wgt/Vol :	1 Sample	**Instrument ID....:**	M2A	**Method:**	CFR60A 23
Analyst ID....:	Melissa A. Davidson				

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	84	40 - 130
13C-1,2,3,7,8-PeCDD	95	40 - 130
13C-1,2,3,6,7,8-HxCDD	90	40 - 130
13C-1,2,3,4,6,7,8-HpCDD	83	25 - 130
13C-OCDD	76	25 - 130
13C-2,3,7,8-TCDF	83	40 - 130
13C-1,2,3,7,8-PeCDF	90	40 - 130
13C-1,2,3,6,7,8-HxCDF	92	40 - 130
13C-1,2,3,4,6,7,8-HpCDF	84	25 - 130

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
13C-1,2,3,4,7,8-HxCDD	87	70 - 130
13C-2,3,4,7,8-PeCDF	90	70 - 130
13C-1,2,3,4,7,8-HxCDF	70	70 - 130
13C-1,2,3,4,7,8,9-HpCDF	81	70 - 130
37Cl4-2,3,7,8-TCDD	83	70 - 130

QUALIFIERS

Results and reporting limits have been adjusted for dry weight.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated Result.

Q Estimated maximum possible concentration (EMPC).

URS Corporation

Sample ID: M23 RUN 4

Trace Level Organic Compounds

Lot - Sample #....:	H9D140159 - 003	**Work Order #....:**	K93GE1AA	**Matrix....:**	AIR
Date Sampled....:	04/09/09	**Date Received....:**	04/13/09	**Dilution Factor:**	1
Prep Date....:	04/28/09	**Analysis Date....:**	05/18/09		
Prep Batch # ....:	9118146				
Initial Wgt/Vol :	1 Sample	**Instrument ID....:**	M2A	**Method:**	CFR60A 23
Analyst ID....:	Jon M. Nordquist				

PARAMETER	RESULT		MINIMUM LEVEL	ESTIMATED DETECTION LIMIT	UNITS
2,3,7,8-TCDD	ND		10	4.0	pg/sample
Total TCDD	ND		10	4.0	pg/sample
1,2,3,7,8-PeCDD	ND		50	1.9	pg/sample
Total PeCDD	ND		50	1.9	pg/sample
1,2,3,4,7,8-HxCDD	ND		50	1.4	pg/sample
1,2,3,6,7,8-HxCDD	ND		50	1.4	pg/sample
1,2,3,7,8,9-HxCDD	ND		50	1.3	pg/sample
Total HxCDD	ND		50	1.3	pg/sample
1,2,3,4,6,7,8-HpCDD	**3.2**	**J**	**50**	**1.9**	**pg/sample**
Total HpCDD	**7.3**	**Q J**	**50**	**1.9**	**pg/sample**
OCDD	**29**	**Q B J**	**100**	**1.8**	**pg/sample**
2,3,7,8-TCDF	ND		10	2.4	pg/sample
Total TCDF	ND		10	2.4	pg/sample
1,2,3,7,8-PeCDF	ND		50	1.8	pg/sample
2,3,4,7,8-PeCDF	ND		50	1.7	pg/sample
Total PeCDF	ND		50	1.8	pg/sample
1,2,3,4,7,8-HxCDF	ND		50	0.78	pg/sample
1,2,3,6,7,8-HxCDF	ND		50	0.74	pg/sample
2,3,4,6,7,8-HxCDF	ND		50	0.84	pg/sample
1,2,3,7,8,9-HxCDF	ND		50	0.87	pg/sample
Total HxCDF	ND		50	0.80	pg/sample
1,2,3,4,6,7,8-HpCDF	ND		50	1.1	pg/sample
1,2,3,4,7,8,9-HpCDF	ND		50	1.3	pg/sample
Total HpCDF	ND		50	1.2	pg/sample
OCDF	ND		100	2.1	pg/sample

URS Corporation

Sample ID: M23 RUN 4

Trace Level Organic Compounds

Lot - Sample #....:	H9D140159 - 003	Work Order #....:	K93GE1AA	Matrix....:	AIR
Date Sampled....:	04/09/09	Date Received....:	04/13/09	Dilution Factor:	1
Prep Date....:	04/28/09	Analysis Date....:	05/18/09		
Prep Batch # ....:	9118146				
Initial Wgt/Vol :	1 Sample	Instrument ID....:	M2A	Method:	CFR60A 23
Analyst ID....:	Jon M. Nordquist				

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	89	40 - 130
13C-1,2,3,7,8-PeCDD	97	40 - 130
13C-1,2,3,6,7,8-HxCDD	96	40 - 130
13C-1,2,3,4,6,7,8-HpCDD	92	25 - 130
13C-OCDD	86	25 - 130
13C-2,3,7,8-TCDF	90	40 - 130
13C-1,2,3,7,8-PeCDF	88	40 - 130
13C-1,2,3,6,7,8-HxCDF	97	40 - 130
13C-1,2,3,4,6,7,8-HpCDF	100	25 - 130

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
13C-1,2,3,4,7,8-HxCDD	88	70 - 130
13C-2,3,4,7,8-PeCDF	95	70 - 130
13C-1,2,3,4,7,8-HxCDF	72	70 - 130
13C-1,2,3,4,7,8,9-HpCDF	82	70 - 130
37Cl4-2,3,7,8-TCDD	84	70 - 130

QUALIFIERS

Results and reporting limits have been adjusted for dry weight.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated Result.

Q Estimated maximum possible concentration (EMPC).

URS Corporation

Sample ID: A-6366,A-6367 MEDIA CHECK

Trace Level Organic Compounds

Lot - Sample #....:	H9D140159 - 004	Work Order #....:	K93GM1AA	Matrix....:	AIR
Date Sampled....:	04/07/09	Date Received....:	04/13/09	Dilution Factor:	1
Prep Date....:	04/28/09	Analysis Date....:	05/17/09		
Prep Batch # ....:	9118146				
Initial Wgt/Vol :	1 Sample	Instrument ID....:	M2A	Method:	CFR60A 23
Analyst ID....:	Melissa A. Davidson				

PARAMETER	RESULT		MINIMUM LEVEL	ESTIMATED DETECTION LIMIT	UNITS
2,3,7,8-TCDD	ND		10	2.5	pg/sample
Total TCDD	ND		10	2.5	pg/sample
1,2,3,7,8-PeCDD	ND		50	1.2	pg/sample
Total PeCDD	ND		50	1.2	pg/sample
1,2,3,4,7,8-HxCDD	ND		50	0.85	pg/sample
1,2,3,6,7,8-HxCDD	ND		50	0.84	pg/sample
1,2,3,7,8,9-HxCDD	ND		50	0.79	pg/sample
Total HxCDD	ND		50	0.82	pg/sample
1,2,3,4,6,7,8-HpCDD	**3.2**	**J**	**50**	**1.2**	**pg/sample**
Total HpCDD	**5.6**	**Q J**	**50**	**1.2**	**pg/sample**
OCDD	**23**	**B J**	**100**	**1.6**	**pg/sample**
2,3,7,8-TCDF	ND		10	1.6	pg/sample
Total TCDF	ND		10	1.6	pg/sample
1,2,3,7,8-PeCDF	ND		50	1.1	pg/sample
2,3,4,7,8-PeCDF	ND		50	1.1	pg/sample
Total PeCDF	ND		50	1.1	pg/sample
1,2,3,4,7,8-HxCDF	**1.8**	**Q J**	**50**	**0.59**	**pg/sample**
1,2,3,6,7,8-HxCDF	ND		50	0.57	pg/sample
2,3,4,6,7,8-HxCDF	ND		50	0.65	pg/sample
1,2,3,7,8,9-HxCDF	ND		50	0.67	pg/sample
Total HxCDF	**2.6**	**Q J**	**50**	**0.62**	**pg/sample**
1,2,3,4,6,7,8-HpCDF	**8.2**	**Q J**	**50**	**0.90**	**pg/sample**
1,2,3,4,7,8,9-HpCDF	ND		50	1.1	pg/sample
Total HpCDF	**8.2**	**Q J**	**50**	**0.98**	**pg/sample**
OCDF	**11**	**J**	**100**	**1.8**	**pg/sample**

URS Corporation

Sample ID: A-6366,A-6367 MEDIA CHECK

Trace Level Organic Compounds

Lot - Sample #....:	H9D140159 - 004	**Work Order #....:**	K93GM1AA	**Matrix....:**	AIR
Date Sampled....:	04/07/09	**Date Received....:**	04/13/09	**Dilution Factor:**	1
Prep Date....:	04/28/09	**Analysis Date....:**	05/17/09		
Prep Batch # ....:	9118146				
Initial Wgt/Vol :	1 Sample	**Instrument ID....:**	M2A	**Method:**	CFR60A 23
Analyst ID....:	Melissa A. Davidson				

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	86	40 - 130
13C-1,2,3,7,8-PeCDD	93	40 - 130
13C-1,2,3,6,7,8-HxCDD	93	40 - 130
13C-1,2,3,4,6,7,8-HpCDD	87	25 - 130
13C-OCDD	76	25 - 130
13C-2,3,7,8-TCDF	85	40 - 130
13C-1,2,3,7,8-PeCDF	88	40 - 130
13C-1,2,3,6,7,8-HxCDF	79	40 - 130
13C-1,2,3,4,6,7,8-HpCDF	85	25 - 130

QUALIFIERS

Results and reporting limits have been adjusted for dry weight.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated Result.

Q Estimated maximum possible concentration (EMPC).

Method Blank Report

Trace Level Organic Compounds

Lot - Sample #....:	H9D280000 - 146B	**Work Order #....:**	LAWF61AA	**Matrix....:**	AIR
Dilution Factor:	1				
Prep Date....:	04/28/09	**Analysis Date....:**	05/16/09		
Prep Batch # ....:	9118146				
Initial Wgt/Vol :	1 Sample	**Instrument ID....:**	M2A	**Method:**	CFR60A 23
Analyst ID....:	Jon M. Nordquist				

PARAMETER	RESULT		MINIMUM LEVEL	ESTIMATED DETECTION LIMIT	UNITS
2,3,7,8-TCDD	ND		10	4.5	pg/sample
Total TCDD	ND		10	4.5	pg/sample
1,2,3,7,8-PeCDD	ND		50	1.8	pg/sample
Total PeCDD	ND		50	1.8	pg/sample
1,2,3,4,7,8-HxCDD	ND		50	1.3	pg/sample
1,2,3,6,7,8-HxCDD	ND		50	1.3	pg/sample
1,2,3,7,8,9-HxCDD	ND		50	1.2	pg/sample
Total HxCDD	ND		50	1.3	pg/sample
1,2,3,4,6,7,8-HpCDD	ND		50	1.7	pg/sample
Total HpCDD	ND		50	1.7	pg/sample
OCDD	**3.9**	**J**	**100**	**2.1**	**pg/sample**
2,3,7,8-TCDF	ND		10	2.8	pg/sample
Total TCDF	ND		10	2.8	pg/sample
1,2,3,7,8-PeCDF	ND		50	1.8	pg/sample
2,3,4,7,8-PeCDF	ND		50	1.8	pg/sample
Total PeCDF	ND		50	1.8	pg/sample
1,2,3,4,7,8-HxCDF	ND		50	0.97	pg/sample
1,2,3,6,7,8-HxCDF	ND		50	0.92	pg/sample
2,3,4,6,7,8-HxCDF	ND		50	1.1	pg/sample
1,2,3,7,8,9-HxCDF	ND		50	1.1	pg/sample
Total HxCDF	ND		50	1.0	pg/sample
1,2,3,4,6,7,8-HpCDF	ND		50	0.90	pg/sample
1,2,3,4,7,8,9-HpCDF	ND		50	1.1	pg/sample
Total HpCDF	ND		50	0.98	pg/sample
OCDF	ND		100	2.2	pg/sample

Method Blank Report

Trace Level Organic Compounds

Lot - Sample #....:	H9D280000 - 146B	**Work Order #....:**	LAWF61AA	**Matrix....:**	AIR
Dilution Factor:	1				
Prep Date....:	04/28/09	**Analysis Date....:**	05/16/09		
Prep Batch # ....:	9118146				
Initial Wgt/Vol :	1 Sample	**Instrument ID....:**	M2A	**Method:**	CFR60A 23
Analyst ID....:	Jon M. Nordquist				

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	82	40 - 130
13C-1,2,3,7,8-PeCDD	88	40 - 130
13C-1,2,3,6,7,8-HxCDD	89	40 - 130
13C-1,2,3,4,6,7,8-HpCDD	86	25 - 130
13C-OCDD	82	25 - 130
13C-2,3,7,8-TCDF	80	40 - 130
13C-1,2,3,7,8-PeCDF	83	40 - 130
13C-1,2,3,6,7,8-HxCDF	79	40 - 130
13C-1,2,3,4,6,7,8-HpCDF	91	25 - 130

QUALIFIERS

J Estimated Result

LABORATORY CONTROL SAMPLE DATA REPORT

Trace Level Organic Compounds

Client Lot # ...:	H9D140159	**Work Order # ...:**	LAWF61AC-LCS LAWF61AD-LCSD	**Matrix .....:**	AIR
LCS Lot-Sample# :	H9D280000 - 146				
Prep Date .....:	04/28/09	**Analysis Date ..:**	05/16/09		
Prep Batch # ...:	9118146				
Dilution Factor :	1				
Analyst ID.....:	Jon M. Nordquist	**Instrument ID..:**	M2A	**Method.....:**	CFR60A 23
Initial Wgt/Vol:	1 Sample				

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY		RECOVERY LIMITS	RPD	RPD LIMITS
2,3,7,8-TCDD	200	194	pg/sample	97		(70 - 130)		
	200	187	pg/sample	94		(70 - 130)	3.6	(0 - 50)
1,2,3,7,8-PeCDD	1000	912	pg/sample	91		(70 - 130)		
	1000	883	pg/sample	88		(70 - 130)	3.2	(0 - 50)
1,2,3,4,7,8-HxCDD	1000	899	pg/sample	90		(70 - 130)		
	1000	849	pg/sample	85		(70 - 130)	5.7	(0 - 50)
1,2,3,6,7,8-HxCDD	1000	931	pg/sample	93		(70 - 130)		
	1000	903	pg/sample	90		(70 - 130)	3.1	(0 - 50)
1,2,3,7,8,9-HxCDD	1000	925	pg/sample	93		(70 - 130)		
	1000	896	pg/sample	90		(70 - 130)	3.2	(0 - 50)
1,2,3,4,6,7,8-HpCDD	1000	995	pg/sample	99		(70 - 130)		
	1000	987	pg/sample	99		(70 - 130)	0.85	(0 - 50)
OCDD	2000	2040	pg/sample	102	B	(70 - 130)		
	2000	2080	pg/sample	104	B	(70 - 130)	1.9	(0 - 50)
2,3,7,8-TCDF	200	187	pg/sample	93		(70 - 130)		
	200	191	pg/sample	96		(70 - 130)	2.2	(0 - 50)
1,2,3,7,8-PeCDF	1000	1030	pg/sample	103		(70 - 130)		
	1000	1040	pg/sample	104		(70 - 130)	0.99	(0 - 50)
2,3,4,7,8-PeCDF	1000	931	pg/sample	93		(70 - 130)		
	1000	945	pg/sample	95		(70 - 130)	1.5	(0 - 50)
1,2,3,4,7,8-HxCDF	1000	1030	pg/sample	103		(70 - 130)		
	1000	1050	pg/sample	105		(70 - 130)	2.2	(0 - 50)
1,2,3,6,7,8-HxCDF	1000	1080	pg/sample	108		(70 - 130)		
	1000	1050	pg/sample	105		(70 - 130)	3.6	(0 - 50)
2,3,4,6,7,8-HxCDF	1000	1080	pg/sample	108		(70 - 130)		
	1000	1110	pg/sample	111		(70 - 130)	2.5	(0 - 50)
1,2,3,7,8,9-HxCDF	1000	1020	pg/sample	102		(70 - 130)		
	1000	1000	pg/sample	100		(70 - 130)	1.9	(0 - 50)
1,2,3,4,6,7,8-HpCDF	1000	971	pg/sample	97		(70 - 130)		
	1000	964	pg/sample	96		(70 - 130)	0.67	(0 - 50)
1,2,3,4,7,8,9-HpCDF	1000	857	pg/sample	86		(70 - 130)		
	1000	848	pg/sample	85		(70 - 130)	1.1	(0 - 50)
OCDF	2000	1920	pg/sample	96		(70 - 130)		
	2000	2100	pg/sample	105		(70 - 130)	9.2	(0 - 50)

INTERNAL STANDARD	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	86	(40 - 130)
	80	(40 - 130)
13C-1,2,3,7,8-PeCDD	93	(40 - 130)
	88	(40 - 130)
13C-1,2,3,6,7,8-HxCDD	88	(40 - 130)

LABORATORY CONTROL SAMPLE DATA REPORT

Trace Level Organic Compounds

Client Lot # ...: H9D140159 **Work Order # ...:** LAWF61AC-LCS **Matrix .....:** AIR
LCS Lot-Sample# : H9D280000 - 146 LAWF61AD-LCSD

INTERNAL STANDARD	PERCENT RECOVERY	RECOVERY LIMITS
	84	(40 - 130)
13C-1,2,3,4,6,7,8-HpCDD	82	(25 - 130)
	73	(25 - 130)
13C-OCDD	80	(25 - 130)
	69	(25 - 130)
13C-2,3,7,8-TCDF	83	(40 - 130)
	76	(40 - 130)
13C-1,2,3,7,8-PeCDF	86	(40 - 130)
	82	(40 - 130)
13C-1,2,3,6,7,8-HxCDF	77	(40 - 130)
	72	(40 - 130)
13C-1,2,3,4,6,7,8-HpCDF	89	(25 - 130)
	80	(25 - 130)

Notes:

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Sample Receipt Documentation

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

H9D140159

Reference COC No.:

Project Name: Haverhill North Coke Co.
Project Number: 39400492
Test Location: Main Stack

URS Project Manager: Michael Mowery
Purchase Order Number:
Required Report Date: Standard Turnaround

Sample Shipment Date: 4/10/2009
Laboratory Destination: Test American - Knoxville, TN
Laboratory Contact: Kevin Woodcock
Project Contact/Phone: 865-220-8114
Carrier Waybill No.: Hand Delivered by URS

REC. AT 6°, 17°C
NO CUSTODY SEALS
HAND DELIVERED
2 COOLERS

Bill To: URS Corp.
1093 Commerce Park Dr.
Oak Ridge, TN 37830

Report To: Michael Mowery
URS Corp.
1093 Commerce Park Dr.
Oak Ridge, TN 37830

Sample Number	Sample Type	Date Collected	# of Containers	Sample Matrix	Requested Testing Program
M23 - Run 1	Acetone Probe Wash	04/07/09	1	Liquid	Analyze as per EPA Method 23 for dioxin/furans.
M23 - Run 1	Toluene Probe Wash	04/07/09	1	Liquid	Analyze as per EPA Method 23 for dioxin/furans.
M23 - Run 1	Filter	04/07/09	1	Filter	Analyze as per EPA Method 23 for dioxin/furans.
M23 - Run 1	XAD Trap	04/07/09	1	Resin	Analyze as per EPA Method 23 for dioxin/furans.
M23 - Run 2	Acetone Probe Wash	04/07/09	1	Liquid	Analyze as per EPA Method 23 for dioxin/furans.
M23 - Run 2	Toluene Probe Wash	04/09/09	1	Liquid	Analyze as per EPA Method 23 for dioxin/furans.
M23 - Run 2	Filter	04/09/09	1	Filter	Analyze as per EPA Method 23 for dioxin/furans.
M23 - Run 2	XAD Trap	04/09/09	1	Resin	Analyze as per EPA Method 23 for dioxin/furans.

TURNAROUND TIME REQUIRED — Normal: X — Rush:

POSSIBLE HAZARD IDENTIFICATION:
Nonhazard: X
Highly Toxic:
Flammable:
Radiological:

Level of QC Required: Standard

SAMPLE DISPOSAL: Return to Client — Disposal By Lab: X

1. Relinquished by: Signature/Affiliation: [signature]	Date: 4/13/09 Time: 1600	1. Received by Signature/Affiliation: Ryan Henry	4/13/09 1600
2. Relinquished by Signature/Affiliation:	Date: Time:	2. Received by Signature/Affiliation:	Date: Time:
3. Relinquished by Signature/Affiliation:	Date: Time:	3. Received by Signature/Affiliation:	Date: Time:

Comments:

12/5/2007 10:00

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

179D140159

Reference COC No.:

Project Name: Haverhill North Coke Co.
Project Number: 39400492
Test Location: Main Stack

URS Project Manager: Michael Mowery
Purchase Order Number:
Required Report Date: Standard Turnaround

Sample Shipment Date: 4/10/2009
Laboratory Destination: Test America - Knoxville, TN
Laboratory Contact: Kevin Woodcock
Project Contact/Phone: 865-220-8114
Carrier Waybill No.: Hand Delivered by URS

Bill To: URS Corp.
1093 Commerce Park Dr.
Oak Ridge, TN 37830

Report To: Michael Mowery
URS Corp.
1093 Commerce Park Dr.
Oak Ridge, TN 37830

Sample Number	Sample Type	Date Collected	# of Containers	Sample Matrix	Requested Testing Program
M23 - Run 4	Acetone Probe Wash	04/09/09	1	Liquid	Analyze as per EPA Method 23 for dioxin/furans.
M23 - Run 4	Toluene Probe Wash	04/09/09	1	Liquid	Analyze as per EPA Method 23 for dioxin/furans.
M23 - Run 4	Filter	04/09/09	1	Filter	Analyze as per EPA Method 23 for dioxin/furans.
M23 - Run 4	XAD Trap	04/09/09	1	Resin	Analyze as per EPA Method 23 for dioxin/furans.
M23 - Reagent Blank	Acetone	04/09/09	1	Liquid	Analyze as per EPA Method 23 for dioxin/furans. Combine as blank train.
M23 - Reagent Blank	Toluene	04/09/09	1	Liquid	Analyze as per EPA Method 23 for dioxin/furans. Combine as blank train.
M23 - Reagent Blank	Filter	04/09/09	1	Filter	Analyze as per EPA Method 23 for dioxin/furans. Combine as blank train.
M23 - Reagent Blank	XAD Trap	04/09/09	1	Resin	Analyze as per EPA Method 23 for dioxin/furans. Combine as blank train.

TURNAROUND TIME REQUIRED Normal: X Rush:

POSSIBLE HAZARD IDENTIFICATION:
Nonhazard: X Flammable:
Highly Toxic: Radiological:

Level of QC Required: Standard

SAMPLE DISPOSAL: Return to Client Disposal By Lab X

1. Relinquished by: Signature/Affiliation:	Date: 4/13/09 Time: 1600	1. Received by Signature/Affiliation: Ryan Henry	4/13/09 1600
2. Relinquished by Signature/Affiliation:	Date: Time:	2. Received by Signature/Affiliation:	Date: Time:
3. Relinquished by Signature/Affiliation:	Date: Time:	3. Received by Signature/Affiliation:	Date: Time:

Comments:

12/5/2007 10:00

TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Client: URS **Project:** HNCC - M23 **Lot Number:** H9D140159

Review Items	Yes	No	NA	If No, what was the problem?	Comments/Actions Taken
1. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ 1a Do not match COC ☐ 1b Incomplete information ☐ 1c Marking smeared ☐ 1d Label torn ☐ 1e No label ☐ 1f COC not received ☑ 1g Other:	2B, XAD'S RECEIVED AT 6°C, ALL OTHER FRACTIONS RECEIVED AT 17°C 4A — HAND DELIVERED 5A, RUN 3 XAD 5B, M23 REAGENT BLANK RUN
2. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C; NC, 1668, 1613B: 0-4°C; VOST: 10°C; MA: 2-6 °C)		✓		☐ 2a Temp Blank = ____ ☑ 2b Cooler Temp = 17°C	
3. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ 3a Sample preservative =	1C, RUN 2 TO LVENE PROBE WASH, FILTER, XAD TRAP, COC ~~LISTED~~ LIST COLLECTION AS 4-9-09, SHOULD BE 4-7-09 PER LABELS
4. Were custody seals present/intact on cooler and/or containers?		✓		☑ 4a Not present ☐ 4b Not intact ☐ 4c Other:	
5. Were all of the samples listed on the COC received?		✓		☑ 5a Samples received-not on COC ☑ 5b Samples not received-on COC	
6. Were all of the sample containers received intact?	✓			☐ 6a Leaking ☐ 6b Broken	
7. Were VOA samples received without headspace?			✓	☐ 7a Headspace (VOA only)	
8. Were samples received in appropriate containers?	✓			☐ 8a Improper container	
9. Did you check for residual chlorine, if necessary?			✓	☐ 9a Could not be determined due to matrix interference	
10. Were samples received within holding time?	✓			☐ 10a Holding time expired	
11. For rad samples, was sample activity info. provided?			✓	☐ Incomplete information	
12. For SOG water samples (1613B, 1668A, 8290, LR PAHs), do samples have visible solids present?			✓	If yes & appears to be >1%, was SOG notified? ____	
13. Are the shipping containers intact?	✓			☐ 13a Leaking ☐ 13b Other:	
14. Was COC relinquished? (Signed/Dated/Timed)	✓			☐ 14a Not relinquished	
15. Are tests/parameters listed for each sample?	✓			☐ 15a Incomplete information	
16. Is the matrix of the samples noted?	✓			☐ 15a Incomplete information	
17. Is the date/time of sample collection noted?	✓			☐ 15a Incomplete information	
18. Is the client and project name/# identified?	✓			☐ 15a Incomplete information	
19. Was the sampler identified on the COC?		✓			

Quote #: 82723 PM Instructions: ____

Sample Receiving Associate: [signature] Date: 4-13-09

QA026R19.doc, 080707

Test America Laboratory Report

Hot Car

Lead

Hot Car

H9D280112 Analytical Report **1**

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Sample Receipt Documentation **263**

Total Number of Pages **265**

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

ANALYTICAL REPORT

PROJECT NO. 39400492

Haverhill North Coke Co.

Lot #: H9D280112

Michael Mowery

URS Corporation
1093 Commerce Park Drive
Suite 100
Oak Ridge, TN 37830

TESTAMERICA LABORATORIES, INC.

Kevin S. Woodcock
Project Manager

May 13, 2009

ANALYTICAL METHODS SUMMARY

H9D280112

PARAMETER	ANALYTICAL METHOD
Inorganic Lead Emissions	CFR60A 12

References:

CFR60A "Test Methods", 40 CFR, Part 60, Appendix A, July 1, 1993.

SAMPLE SUMMARY

H9D280112

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
LAWG7	001	HOT CAR - RUN 1	04/15/09	
LAWG9	002	HOT CAR - RUN 2	04/16/09	
LAWHA	003	HOT CAR - RUN 3	04/17/09	
LAWHD	004	REAGENT BLANK	04/17/09	

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

PROJECT NARRATIVE
H9D280112

The results reported herein are applicable to the samples submitted for analysis only.

This report shall not be reproduced except in full, without the written approval of the laboratory.

The original chain of custody documentation is included with this report.

Sample Receipt

There were no problems with the condition of the samples received.

Quality Control and Data Interpretation

Unless otherwise noted, all holding times and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

These stack gas samples were prepared and analyzed using TestAmerica Knoxville standard operating procedure KNOX-MT-0016 which is based on Method 12, "Determination of Inorganic Lead Emissions from Stationary Sources". SW-846 Method 6010B as incorporated in TestAmerica Knoxville standard operating procedure KNOX-MT-0007 was used to perform the final instrument analysis.

Acid digestion was performed on the front half particulate filter, the nitric acid probe rinse and the nitric acid impinger solution as a combined sample using HNO_3 and H_2O_2. This digestate was adjusted to final volume and analyzed for lead by ICP.

Lead results were calculated using the following equation:

$$Total\ \mu g = \begin{pmatrix} Raw\ Sample \\ Concentration,\ \mu g/L \end{pmatrix} \times \begin{pmatrix} Bench \\ Dilution \\ Factor \end{pmatrix} \times \begin{pmatrix} Final\ Volume \\ ICP\ Digestate,\ L \end{pmatrix}$$

The post digestion spike/post digestion spike duplicate recoveries for sample Hot Car-Run1 were outside control limits for lead. However, the laboratory control sample showed acceptable results indicating that the analysis was in control. Results outside of limits do not necessarily reflect poor method performance due to high analyte concentrations in the sample relative to the spike level.

TestAmerica Knoxville maintains the following certifications, approvals and accreditations: Arkansas DEQ Lab #88-0688, California DHS ELAP Cert. #2423, Colorado DPHE, Connecticut DPH Lab #PH-0223, Florida DOH Lab #E87177, Georgia DNR Lab #906, Hawaii DOH, Illinois EPA Lab #200012, Indiana DOH Lab #C-TN-02, Iowa DNR Lab #375, Kansas DHE Cert. #E-10349, Kentucky DEP Lab #90101, Louisiana DEQ Cert. #03079, Louisiana DOHH, Maryland DOE Cert. #277, Michigan DEQ Lab #9933, Nevada DEP, New Jersey DEP Lab #TN001, New York DOH Lab #10781, North Carolina DPH Lab #21705, North Carolina DEHNR Cert. #64, Ohio EPA VAP Lab #CL0059, Oklahoma DEQ Lab #9415, Pennsylvania DEP Lab #68-00576, South Carolina DHEC Cert #84001001, Tennessee DOH Lab #02014, Texas CEQ, Utah DOH Lab # QUAN3, Virginia DGS Lab #00165, Washington DOE Lab #C1314, West Virginia DEP Cert. #345, West Virginia DHHR Cert #9955C, Wisconsin DNR Lab #998044300, Naval Facilities Engineering Service Center and USDA Soil Permit #S-46424. This list of approvals is subject to change and does not imply that laboratory certification is available for all parameters reported in this environmental sample data report.

QC DATA ASSOCIATION SUMMARY

H9D280112

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	AIR	CFR60A 12		9124055	
002	AIR	CFR60A 12		9124055	
003	AIR	CFR60A 12		9124055	
004	AIR	CFR60A 12		9124055	

Sample Data Summary

URS Corporation

Client Sample ID: HOT CAR - RUN 1

TOTAL Metals

Lot-Sample #...: H9D280112-001 Matrix.....: AIR
Date Sampled...: 04/15/09 Date Received..: 04/27/09

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9124055						
Lead	195	1.0	ug	CFR60A 12	05/04-05/06/09	LAWG71AA
		Dilution Factor: 1		Analysis Time..: 14:16	MDL.....: 0.35	

URS Corporation

Client Sample ID: HOT CAR - RUN 2

TOTAL Metals

Lot-Sample #...: H9D280112-002 Matrix.....: AIR
Date Sampled...: 04/16/09 Date Received..: 04/27/09

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9124055						
Lead	131	1.0	ug	CFR60A 12	05/04-05/06/09	LAWG91AA
		Dilution Factor: 1		Analysis Time..: 14:34	MDL.....: 0.35	

URS Corporation

Client Sample ID: HOT CAR - RUN 3

TOTAL Metals

Lot-Sample #...: H9D280112-003 Matrix.....: AIR
Date Sampled...: 04/17/09 Date Received..: 04/27/09

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9124055						
Lead	254	1.0	ug	CFR60A 12	05/04-05/06/09	LAWHA1AA
		Dilution Factor: 1		Analysis Time..: 14:40	MDL.....: 0.35	

URS Corporation

Client Sample ID: REAGENT BLANK

TOTAL Metals

Lot-Sample #...: H9D280112-004 Matrix.....: AIR
Date Sampled...: 04/17/09 Date Received..: 04/27/09

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9124055						
Lead	21.6	1.0	ug	CFR60A 12	05/04-05/06/09	LAWHD1AA
		Dilution Factor: 1		Analysis Time..: 14:47	MDL.....: 0.35	

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: H9D280112 Matrix.....: AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: H9E040000-055 Prep Batch #...: 9124055						
Lead	ND	1.0	ug	CFR60A 12	05/04-05/06/09	LA9GH1AA
		Dilution Factor: 1				
		Analysis Time..: 13:58				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Lot-Sample #...: H9D280112

Matrix.....: AIR

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP-BATCH #
Lead	88	(80 - 120)			CFR60A 12	05/04-05/06/09	9124055
	98	(80 - 120)	11	(0-20)	CFR60A 12	05/04-05/06/09	9124055

Dilution Factor: 1 Analysis Time..: 14:04

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Lot-Sample #...: H9D280112 Matrix.....: AIR

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Lead	10.0	8.80	ug	88		CFR60A 12	05/04-05/06/09	9124055
	10.0	9.83	ug	98	11	CFR60A 12	05/04-05/06/09	9124055

Dilution Factor: 1 Analysis Time..: 14:04

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

TestAmerica Knoxville

ICP Data Reporting Form

Post Digestion Spike

Units: ug/L (ppb)

Instrument ID: TJA 61-E SuperTrace ICP

Data File Name: t050609.arc

Element	PDS LAWG7A	Original Sample LAWG7	Spike Added	Percent Recovery
Pb	2009.78	1951.80	100.0	58.0

TestAmerica Knoxville

ICP Data Reporting Form

Post Digestion Spike

Units: ug/L (ppb)

Instrument ID: TJA 61-E SuperTrace ICP

Data File Name: t050609.arc

Element	PDS LAWG7A	Original Sample LAWG7	Spike Added	Percent Recovery
Pb	2021.03	1951.80	100.0	69.2

Sample Receipt Documentation

URS

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

H4D280112 Reference COC No.: _____

Page 1 of 1

Project Name: HNCC Unit 2 Compliance
Project Number: 39400492
URS Sample Team: Mike Mowery

URS Project Manager: Mike Mowery
Purchase Order Number:
Required Report Date: Standard Turnaround

Sample Shipment Date: 4/23/2009
Laboratory Destination: Test America - Knoxville, TN
Laboratory Contact: Kevin Woodcock
Project Contact/Phone: 865-220-8101
Carrier Waybill No.: Hand Delivered by URS

REC. AT AMBIENT
NO CUSTODY SEAL
1 BOX KH 4/27/09
HAND DELIVERED

Bill To: URS Corp.
1093 Commerce Park Dr.
Oak Ridge, TN 37830

Report To: Mike Mowery
URS Corp.
1093 Commerce Park Dr.
Oak Ridge, TN 37830

Sample Number	Sample Type	Date Collected	# of Containers	Sample Matrix	Requested Testing Program
Hot Car - Run 1	Probe Wash	04/15/09	1	Liquid	Combine Probe Wash, Impingers and Filter and analyze by EPA Method 12
Hot Car - Run 1	Impinger Catch	04/15/09	1	Liquid	
Hot Car - Run 1	Filter	04/15/09	1	Solid	
Hot Car - Run 2	Probe Wash	04/16/09	1	Liquid	Combine Probe Wash, Impingers and Filter and analyze by EPA Method 12
Hot Car - Run 2	Impinger Catch	04/16/09	1	Liquid	
Hot Car - Run 2	Filter	04/16/09	1	Solid	
Hot Car - Run 3	Probe Wash	04/17/09	1	Liquid	Combine Probe Wash, Impingers and Filter and analyze by EPA Method 12
Hot Car - Run 3	Impinger Catch	04/17/09	1	Liquid	
Hot Car - Run 3	Filter	04/17/09	1	Solid	
Reagent Blank	0.1 N Nitric Acid	04/17/09	1	Liquid	Combine Nitric Acid and Filter and analyze by EPA Method 12
Reagent Blank	Filter	04/17/09	1	Solid	

TURNAROUND TIME REQUIRED Normal: X Rush: _____

POSSIBLE HAZARD IDENTIFICATION:
Nonhazard: X
Highly Toxic:
Flammable:
Radiological:

Level of QC Required: No lab blank or spikes

SAMPLE DISPOSAL: Return to Client _____ Disposal By Lab X

1. Relinquished by: Signature/Affiliation: Thomas Brado	Date: 4/27/09 Time: 0845	1. Received by Signature/Affiliation: Ryan Henry	Date: 4/27/09 Time: 0845
2. Relinquished by Signature/Affiliation:	Date: Time:	2. Received by Signature/Affiliation:	Date: Time:
3. Relinquished by Signature/Affiliation:	Date: Time:	3. Received by Signature/Affiliation:	Date: Time:

Comments:

TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Client: URS Oak Ridge **Project:** HNCC MP **Lot Number:** 1490280112

Review Items	Yes	No	NA	If No, what was the problem?	Comments/Actions Taken
1. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ 1a Do not match COC ☐ 1b Incomplete information ☐ 1c Marking smeared ☐ 1d Label torn ☐ 1e No label ☐ 1f COC not received ☐ 1g Other:	4a – HAND DELIVERED
2. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C; NC, 1668, 1613B: 0-4°C; VOST: 10°C; MA: 2-6 °C)			✓	☐ 2a Temp Blank = _____ ☐ 2b Cooler Temp = _____	
3. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ 3a Sample preservative =	
4. Were custody seals present/intact on cooler and/or containers?		✓		☑ 4a Not present ☐ 4b Not intact ☑ 4c Other: HAND DEL.	
5. Were all of the samples listed on the COC received?	✓			☐ 5a Samples received-not on COC ☐ 5b Samples not received-on COC	
6. Were all of the sample containers received intact?	✓			☐ 6a Leaking ☐ 6b Broken	
7. Were VOA samples received without headspace?			✓	☐ 7a Headspace (VOA only)	
8. Were samples received in appropriate containers?	✓			☐ 8a Improper container	
9. Did you check for residual chlorine, if necessary?			✓	☐ 9a Could not be determined due to matrix interference	
10. Were samples received within holding time?	✓			☐ 10a Holding time expired	
11. For rad samples, was sample activity info. provided?			✓	☐ Incomplete information	
12. For SOG water samples (1613B, 1668A, 8290, LR PAHs), do samples have visible solids present?			✓	If yes & appears to be >1%, was SOG notified? _____	
13. Are the shipping containers intact?	✓			☐ 13a Leaking ☐ 13b Other:	
14. Was COC relinquished? (Signed/Dated/Timed)	✓			☐ 14a Not relinquished	
15. Are tests/parameters listed for each sample?	✓			☐ 15a Incomplete information	
16. Is the matrix of the samples noted?	✓			☐ 15a Incomplete information	
17. Is the date/time of sample collection noted?	✓			☐ 15a Incomplete information	
18. Is the client and project name/# identified?	✓			☐ 15a Incomplete information	
19. Was the sampler identified on the COC?	✓				

Quote #: 82723 PM Instructions: _____

Sample Receiving Associate: Ryan Henry Date: 4/28/09

QA026R19.doc, 080707

Test America Laboratory Report

Main Stack

Dioxin/Furan

H9D140159 Analytical Report **1**

Sample Receipt Documentation **23**

Trace Level Organics **27**
- Raw Sample Data 28
- Standards Data 205
- Raw QC Data 712
- Miscellaneous Data 816

Sample Receipt Documentation **827**

Total Number of Pages **830**

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

ANALYTICAL REPORT

PROJECT NO. 39400492

Haverhill North Coke Co.-M23

Lot #: H9D140159

Michael Mowery

URS Corporation
1093 Commerce Park Drive
Suite 100
Oak Ridge, TN 37830

TESTAMERICA LABORATORIES, INC.

Kevin S. Woodcock
Project Manager

May 21, 2009

ANALYTICAL METHODS SUMMARY

H9D140159

PARAMETER	ANALYTICAL METHOD
Determination of PCDD's and PCDF's	CFR60A 23

References:

CFR60A "Test Methods", 40 CFR, Part 60, Appendix A, July 1, 1993.

SAMPLE SUMMARY

H9D140159

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
K93F6	001	M23 RUN 1	04/07/09	
K93GA	002	M23 RUN 2	04/07/09	
K93GE	003	M23 RUN 4	04/09/09	
K93GM	004	A-6366,A-6367 MEDIA CHECK	04/07/09	

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

PROJECT NARRATIVE
H9D140159

The results reported herein are applicable to the samples submitted for analysis only.

This report shall not be reproduced except in full, without the written approval of the laboratory.

The original chain of custody documentation is included with this report.

Sample Receipt

All Method 23 sample fractions were received intact. The XAD resin modules were received at 6°C, and all remaining sample fractions were received outside recommended temperature specifications at 17°C.

An XAD module labeled as M23 Run 3 was received, but was not listed on the chain of custody documentation. This sample was archived at the lab.

The Method 23 Reagent Blank sample fractions were not received, but were listed on the chain of custody documentation.

The collection date listed on the chain of custody documentation for Run 2 Toluene Probe Wash, Filter and XAD Trap was 04/09/09. The date listed on each sample label was 04/07/09.

Quality Control and Data Interpretation

Unless otherwise noted, all holding times and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

TestAmerica Knoxville maintains the following certifications, approvals and accreditations: Arkansas DEQ Lab #88-0688, California DHS ELAP Cert. #2423, Colorado DPHE, Connecticut DPH Lab #PH-0223, Florida DOH Lab #E87177, Georgia DNR Lab #906, Hawaii DOH, Illinois EPA Lab #200012, Indiana DOH Lab #C-TN-02, Iowa DNR Lab #375, Kansas DHE Cert. #E-10349, Kentucky DEP Lab #90101, Louisiana DEQ Cert. #03079, Louisiana DOHH, Maryland DOE Cert. #277, Michigan DEQ Lab #9933, Nevada DEP, New Jersey DEP Lab #TN001, New York DOH Lab #10781, North Carolina DPH Lab #21705, North Carolina DEHNR Cert. #64, Ohio EPA VAP Lab #CL0059, Oklahoma DEQ Lab #9415, Pennsylvania DEP Lab #68-00576, South Carolina DHEC Cert #84001001, Tennessee DOH Lab #02014, Texas CEQ, Utah DOH Lab # QUAN3, Virginia DGS Lab #00165, Washington DOE Lab #C1314, West Virginia DEP Cert. #345, West Virginia DHHR Cert #9955C, Wisconsin DNR Lab #998044300, Naval Facilities Engineering Service Center and USDA Soil Permit #S-46424. This list of approvals is subject to change and does not imply that laboratory certification is available for all parameters reported in this environmental sample data report.

PROJECT NARRATIVE
H9D140159

The following flags are used to qualify results for chlorinated dioxin and furan results:

J – The reported result is an estimate. The amount reported is below the Minimum Level (ML). The qualitative definition of the ML is "the lowest level at which the analytical system must give a reliable signal and an acceptable calibration point". The ML was introduced in EPA Methods 1624 and 1625 in 1980 and was promulgated in these methods in 1984 at 40 CFR Part 136, Appendix A. For the purposes of this report the ML is qualitatively defined as described above, and quantitatively defined as follows:
Minimum Level: The concentration or mass of analyte in the sample that corresponds to the lowest calibration level in the initial calibration. It represents a concentration (in the sample extract) equivalent to that of the lowest calibration standard, after corrections for method-specified sample weights, volumes and cleanup procedures has been employed.

Example: The lowest calibration level for TCDD in the initial calibration is 0.5 pg/uL. A mass of 10 pg of 2,3,7,8-TCDD in the sample would result in a concentration of 0.5 pg/uL in the sample extract (at a final volume of 20 uL). Since the concentration in the sample extract corresponds to the concentration in the lowest calibration standard, the 10 pg mass in the sample components is the ML. If the sample extract is further diluted, the ML will increase by the dilution factor.

Example: A 1/10 dilution is performed on the sample extract described above. The ML for 2,3,7,8-TCDD becomes 100 pg rather than the default of 10 pg.

E – The reported result is an estimate. The amount reported is above the UCL described below.
The E qualifier is applied on the basis of the Upper Calibration Level (UCL). The quantitative definition of the UCL is listed below:
Upper Calibration Level: The concentration or mass of analyte in the sample that corresponds to the highest calibration level in the initial calibration. It is equivalent to the concentration of the highest calibration standard, assuming that all method-specified sample weights, volumes, and cleanup procedures have been employed.

Example:
The maximum calibration level for TCDD in the initial calibration is 200 pg/uL. A mass of 4000 pg of 2,3,7,8-TCDD in the sampling components would result in a concentration of 200 pg/uL in the sample extract (at a final volume of 20 uL). Since the concentration in the sample extract corresponds to the concentration in the highest calibration standard, the 4000 pg mass in the sample components is the UCL. If the sample extract is further diluted, the ML will increase by the dilution factor.

PROJECT NARRATIVE
H9D140159

Example:
A 1/10 dilution is performed on the sample extract described above. The UCL for 2,3,7,8-TCDD becomes 40,000 pg rather than the default of 4000 pg. In this examples all positive 2,3,7,8-TCDD results above 40,000 pg are flagged with an E.

B – The analyte is present in the associated method blank at a reportable level. For this analysis, there is no method specified reporting level, other than the qualitative criterion that peaks must exhibit a signal-to-noise ratio of 2.5-to-1. Therefore, the presence of any amount of the analyte present in the blank will result a B qualifier on all associated samples.
If the blank has analytes present above the ML (described above) the need for corrective action beyond qualifying the associated data is evaluated. The determination is made whether the amount in the blank is less than 5% of the lowest amount in associated client samples or regulatory limit. If this is the case, sample processing may continue with the qualification of the data. If the amount in the blank is greater than 5% of the lowest amount in associated client samples or regulatory limit, corrective action must be taken. The corrective actions may include extracting a second aliquot of sample if available, or notifying the client to assess the impact on the project objectives.
Note: Some laboratories do not report contamination in the blank unless it is above their lower calibration limit, or an established percentage of the level in the samples, or an established percentage of the regulatory limit. Likewise, some laboratories set a reporting limit at one half the lower calibration limit.

Q – Estimated maximum possible concentration. This qualifier is used when the result is generated from chromatographic data that does not meet all the qualitative criteria for a positive identification given in the method. The criteria include the following areas:
- Ion abundance ratios must be within specified limits (+/-15% of theoretical ion abundance ratio.)
- Retention time criteria (relative to the method-specified isotope labeled retention time standard).
- Co-maximization criterion. The two quantitation ion peaks must reach their maxima within 2 seconds of each other.
- Polychlorinated dibenzofuran purity. No peak can be identified as a polychlorinated dibenzofuran if a polychlorinated diphenyl ether peak maximizes within +/- 2 seconds of the furan candidate.

S – Ion suppression evident. The trace indicating the signal from the lock mass of the calibration compound shows a deflection at the retention time of the analyte. This may indicate a temporary suppression of the instrument sensitivity, due to a matrix-borne interference.

PROJECT NARRATIVE
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C – Coeluting Isomer. The isomer is known to coelute with another member of its homologue group, or the peak shape is shouldered, indicating the likelihood of a coeluting isomer

X – Other. See explanation in narrative.

Laboratory studies supporting risk assessment and TMDL evaluations frequently use qualified data reported as low as the MDL, or the Estimated Detection Limit (EDL). Several of EPA's isotope dilution methods employ the EDL[1,2,3]. The EDL is based on a direct measurement of the signal-to-noise ratio acquired during sample analysis. This s/n measurement is used to calculate the concentration in the sample corresponding to the minimum intensity of the smallest quantifiable peak. The EDL reflects the amount of the particular analyte which would be required to cause a positive result for the particular analysis. Because the s/n obtained covaries with recovery, instrument sensitivity and sample-specific cleanup efficacy, the EDL is a more valid measure of the sensitivity of the entire analytical process for the specific sample, than is an MDL run periodically on a reference matrix.

The EDL is typically calculated according to the following equation:

$$\text{Estimated Detection Limit} = \frac{N \times 2.5 \times Qis}{His \times RRF \times W \times S}$$

where:

N	=	peak to peak noise of quantitation ion signal in the region of the ion chromatogram where the compound of interest is expected to elute
His	=	peak height of quantitation ion for appropriate internal standard
Qis	=	ng of internal standard added to sample
RRF	=	mean relative response factor of compound obtained during initial calibration
W	=	amount of sample extracted (grams or liters)
S	=	percent solids (optional, if results are requested to be reported on dry weight basis)

(The area of the internal standard is sometimes used instead of height, along with an area-to-height conversion factor)

This method of estimating the detection limit differs from the MDL in that it does not carry the requirement that the sample be statistically distinguished as being from a contaminated population. As results approach the EDL, the risk of false positives and the analytical uncertainty increase significantly. However, a low false positive well below the ML or MDL is often more accurate than the assumption is that contamination is present at the DL or ML. For relatively clean samples, MDL studies may give an elevated estimate

of the detection limit. Additionally, on contaminated samples, the MDL may give a falsely low estimate of the detection limit.

$$\text{Analyte Concentration} = \frac{As \times Qis}{Ais \times RRF \times W \times S}$$

where:

As	=	Sum of areas of the target peaks
Qis	=	ng of internal standard added to sample
Ais	=	Sum of areas of the internal standard peaks
RRF	=	mean relative response factor of compound obtained during initial calibration
W	=	amount of sample extracted (grams or liters)
S	=	percent solids (optional, if results are requested to be reported on dry weight basis)

(The area of the internal standard is sometimes used instead of height, along with an area-to-height conversion factor)

In sample data, peaks must have an intensity of 2.5 times the height of the background noise in order to be considered. Careful examination of the two equations above, and a bit of high school algebra reveals that for the concentration of the smallest peak detectable (per the EDL equation) to exactly equal the smallest peaks that are calculated, requires that the average height to area ratio obtained during the calibration must equal the area to height ratio for every peak obtained near 2.5 times the noise. When the area to height ratio on a peak in a sample is less than the average obtained during calibration, the calculated result will correspond to a peak that would have been less than 2.5 X the noise on the calibration. This is the result of normal variability. Because the source method for the EDL (SW-846 8290 and 8280A) does not provide for censoring of results by any other magnitude standard than being 2.5 times the noise, the laboratory does not censor at the calculated EDL. Hence, detections may be reported below the estimated detection limits.

1. Code of Federal Regulations, Part 136, Chapter 1, Appendix 1, October 1994: Method 1613 Tetra- Through Octa-Chlorinated Dioxins and Furans by Isotope Dilution High Resolution Gas Chromatography/High Resolution Mass Spectrometry.
2. U.S. EPA. Test Methods for Evaluating Solid Waste, Volume II, SW-846, Update III, December 1996. Method 8280A: The Analysis of Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by High Resolution Gas Chromatography/Low Resolution Mass Spectrometry.
3. U.S. EPA. Test Methods for Evaluating Solid Waste, SW-846. Third Edition. March 1995 Method 8290: Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by High Resolution Gas Chromatography/High Resolution Mass Spectrometry.

QC DATA ASSOCIATION SUMMARY

H9D140159

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	AIR	CFR60A 23		9118146	
002	AIR	CFR60A 23		9118146	
003	AIR	CFR60A 23		9118146	
004	AIR	CFR60A 23		9118146	

Sample Data Summary

URS Corporation

Sample ID: M23 RUN 1

Trace Level Organic Compounds

Lot - Sample #....:	H9D140159 - 001	**Work Order #....:**	K93F61AA	**Matrix....:**	AIR
Date Sampled....:	04/07/09	**Date Received....:**	04/13/09	**Dilution Factor:**	1
Prep Date....:	04/28/09	**Analysis Date....:**	05/17/09		
Prep Batch # ....:	9118146				
Initial Wgt/Vol :	1 Sample	**Instrument ID....:**	M2A	**Method:**	CFR60A 23
Analyst ID....:	Melissa A. Davidson				

PARAMETER	RESULT		MINIMUM LEVEL	ESTIMATED DETECTION LIMIT	UNITS
2,3,7,8-TCDD	ND		10	4.0	pg/sample
Total TCDD	ND		10	4.0	pg/sample
1,2,3,7,8-PeCDD	ND		50	1.9	pg/sample
Total PeCDD	ND		50	1.9	pg/sample
1,2,3,4,7,8-HxCDD	ND		50	1.3	pg/sample
1,2,3,6,7,8-HxCDD	ND		50	1.3	pg/sample
1,2,3,7,8,9-HxCDD	ND		50	1.2	pg/sample
Total HxCDD	**5.3**	**Q J**	**50**	**1.2**	**pg/sample**
1,2,3,4,6,7,8-HpCDD	**6.3**	**J**	**50**	**1.7**	**pg/sample**
Total HpCDD	**14**	**J**	**50**	**1.7**	**pg/sample**
OCDD	**52**	**B J**	**100**	**2.6**	**pg/sample**
2,3,7,8-TCDF	ND		10	2.3	pg/sample
Total TCDF	**1.9**	**Q J**	**10**	**2.3**	**pg/sample**
1,2,3,7,8-PeCDF	ND		50	1.6	pg/sample
2,3,4,7,8-PeCDF	ND		50	1.5	pg/sample
Total PeCDF	ND		50	1.6	pg/sample
1,2,3,4,7,8-HxCDF	ND		50	0.64	pg/sample
1,2,3,6,7,8-HxCDF	ND		50	0.61	pg/sample
2,3,4,6,7,8-HxCDF	ND		50	0.70	pg/sample
1,2,3,7,8,9-HxCDF	ND		50	0.72	pg/sample
Total HxCDF	ND		50	0.67	pg/sample
1,2,3,4,6,7,8-HpCDF	ND		50	1.2	pg/sample
1,2,3,4,7,8,9-HpCDF	ND		50	1.4	pg/sample
Total HpCDF	ND		50	1.3	pg/sample
OCDF	ND		100	3.0	pg/sample

URS Corporation

Sample ID: M23 RUN 1

Trace Level Organic Compounds

Lot - Sample #....:	H9D140159 - 001	**Work Order #....:**	K93F61AA	**Matrix....:**	AIR
Date Sampled....:	04/07/09	**Date Received....:**	04/13/09	**Dilution Factor:**	1
Prep Date....:	04/28/09	**Analysis Date....:**	05/17/09		
Prep Batch # ....:	9118146				
Initial Wgt/Vol :	1 Sample	**Instrument ID....:**	M2A	**Method:**	CFR60A 23
Analyst ID....:	Melissa A. Davidson				

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	90	40 - 130
13C-1,2,3,7,8-PeCDD	95	40 - 130
13C-1,2,3,6,7,8-HxCDD	98	40 - 130
13C-1,2,3,4,6,7,8-HpCDD	85	25 - 130
13C-OCDD	70	25 - 130
13C-2,3,7,8-TCDF	90	40 - 130
13C-1,2,3,7,8-PeCDF	90	40 - 130
13C-1,2,3,6,7,8-HxCDF	103	40 - 130
13C-1,2,3,4,6,7,8-HpCDF	89	25 - 130

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
13C-1,2,3,4,7,8-HxCDD	91	70 - 130
13C-2,3,4,7,8-PeCDF	97	70 - 130
13C-1,2,3,4,7,8-HxCDF	72	70 - 130
13C-1,2,3,4,7,8,9-HpCDF	81	70 - 130
37Cl4-2,3,7,8-TCDD	86	70 - 130

QUALIFIERS

Results and reporting limits have been adjusted for dry weight.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated Result.

Q Estimated maximum possible concentration (EMPC).

URS Corporation

Sample ID: M23 RUN 2

Trace Level Organic Compounds

Lot - Sample #....:	H9D140159 - 002	Work Order #....:	K93GA1AA	Matrix....:	AIR
Date Sampled....:	04/07/09	Date Received....:	04/13/09	Dilution Factor:	1
Prep Date....:	04/28/09	Analysis Date....:	05/17/09		
Prep Batch # ....:	9118146				
Initial Wgt/Vol :	1 Sample	Instrument ID....:	M2A	Method:	CFR60A 23
Analyst ID....:	Melissa A. Davidson				

PARAMETER	RESULT		MINIMUM LEVEL	ESTIMATED DETECTION LIMIT	UNITS
2,3,7,8-TCDD	ND		10	4.0	pg/sample
Total TCDD	ND		10	4.0	pg/sample
1,2,3,7,8-PeCDD	ND		50	1.9	pg/sample
Total PeCDD	ND		50	1.9	pg/sample
1,2,3,4,7,8-HxCDD	ND		50	1.4	pg/sample
1,2,3,6,7,8-HxCDD	ND		50	1.4	pg/sample
1,2,3,7,8,9-HxCDD	ND		50	1.3	pg/sample
Total HxCDD	ND		50	1.4	pg/sample
1,2,3,4,6,7,8-HpCDD	**3.3**	**Q J**	**50**	**1.7**	**pg/sample**
Total HpCDD	**7.4**	**Q J**	**50**	**1.7**	**pg/sample**
OCDD	**34**	**B J**	**100**	**2.0**	**pg/sample**
2,3,7,8-TCDF	ND		10	2.8	pg/sample
Total TCDF	**3.8**	**Q J**	**10**	**2.8**	**pg/sample**
1,2,3,7,8-PeCDF	ND		50	1.6	pg/sample
2,3,4,7,8-PeCDF	ND		50	1.6	pg/sample
Total PeCDF	ND		50	1.6	pg/sample
1,2,3,4,7,8-HxCDF	ND		50	0.70	pg/sample
1,2,3,6,7,8-HxCDF	ND		50	0.67	pg/sample
2,3,4,6,7,8-HxCDF	ND		50	0.76	pg/sample
1,2,3,7,8,9-HxCDF	ND		50	0.79	pg/sample
Total HxCDF	ND		50	0.73	pg/sample
1,2,3,4,6,7,8-HpCDF	ND		50	1.3	pg/sample
1,2,3,4,7,8,9-HpCDF	ND		50	1.5	pg/sample
Total HpCDF	ND		50	1.4	pg/sample
OCDF	ND		100	2.4	pg/sample

URS Corporation

Sample ID: M23 RUN 2

Trace Level Organic Compounds

Lot - Sample #....:	H9D140159 - 002	**Work Order #....:**	K93GA1AA	**Matrix....:**	AIR
Date Sampled....:	04/07/09	**Date Received....:**	04/13/09	**Dilution Factor:**	1
Prep Date....:	04/28/09	**Analysis Date....:**	05/17/09		
Prep Batch # ....:	9118146				
Initial Wgt/Vol :	1 Sample	**Instrument ID....:**	M2A	**Method:**	CFR60A 23
Analyst ID....:	Melissa A. Davidson				

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	84	40 - 130
13C-1,2,3,7,8-PeCDD	95	40 - 130
13C-1,2,3,6,7,8-HxCDD	90	40 - 130
13C-1,2,3,4,6,7,8-HpCDD	83	25 - 130
13C-OCDD	76	25 - 130
13C-2,3,7,8-TCDF	83	40 - 130
13C-1,2,3,7,8-PeCDF	90	40 - 130
13C-1,2,3,6,7,8-HxCDF	92	40 - 130
13C-1,2,3,4,6,7,8-HpCDF	84	25 - 130

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
13C-1,2,3,4,7,8-HxCDD	87	70 - 130
13C-2,3,4,7,8-PeCDF	90	70 - 130
13C-1,2,3,4,7,8-HxCDF	70	70 - 130
13C-1,2,3,4,7,8,9-HpCDF	81	70 - 130
37Cl4-2,3,7,8-TCDD	83	70 - 130

QUALIFIERS

Results and reporting limits have been adjusted for dry weight.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated Result.

Q Estimated maximum possible concentration (EMPC).

URS Corporation

Sample ID: M23 RUN 4

Trace Level Organic Compounds

Lot - Sample #....:	H9D140159 - 003	**Work Order #....:**	K93GE1AA	**Matrix....:**	AIR
Date Sampled....:	04/09/09	**Date Received....:**	04/13/09	**Dilution Factor:**	1
Prep Date....:	04/28/09	**Analysis Date....:**	05/18/09		
Prep Batch # ....:	9118146				
Initial Wgt/Vol :	1 Sample	**Instrument ID....:**	M2A	**Method:**	CFR60A 23
Analyst ID....:	Jon M. Nordquist				

PARAMETER	RESULT		MINIMUM LEVEL	ESTIMATED DETECTION LIMIT	UNITS
2,3,7,8-TCDD	ND		10	4.0	pg/sample
Total TCDD	ND		10	4.0	pg/sample
1,2,3,7,8-PeCDD	ND		50	1.9	pg/sample
Total PeCDD	ND		50	1.9	pg/sample
1,2,3,4,7,8-HxCDD	ND		50	1.4	pg/sample
1,2,3,6,7,8-HxCDD	ND		50	1.4	pg/sample
1,2,3,7,8,9-HxCDD	ND		50	1.3	pg/sample
Total HxCDD	ND		50	1.3	pg/sample
1,2,3,4,6,7,8-HpCDD	**3.2**	**J**	**50**	**1.9**	**pg/sample**
Total HpCDD	**7.3**	**Q J**	**50**	**1.9**	**pg/sample**
OCDD	**29**	**Q B J**	**100**	**1.8**	**pg/sample**
2,3,7,8-TCDF	ND		10	2.4	pg/sample
Total TCDF	ND		10	2.4	pg/sample
1,2,3,7,8-PeCDF	ND		50	1.8	pg/sample
2,3,4,7,8-PeCDF	ND		50	1.7	pg/sample
Total PeCDF	ND		50	1.8	pg/sample
1,2,3,4,7,8-HxCDF	ND		50	0.78	pg/sample
1,2,3,6,7,8-HxCDF	ND		50	0.74	pg/sample
2,3,4,6,7,8-HxCDF	ND		50	0.84	pg/sample
1,2,3,7,8,9-HxCDF	ND		50	0.87	pg/sample
Total HxCDF	ND		50	0.80	pg/sample
1,2,3,4,6,7,8-HpCDF	ND		50	1.1	pg/sample
1,2,3,4,7,8,9-HpCDF	ND		50	1.3	pg/sample
Total HpCDF	ND		50	1.2	pg/sample
OCDF	ND		100	2.1	pg/sample

URS Corporation

Sample ID: M23 RUN 4

Trace Level Organic Compounds

Lot - Sample #....:	H9D140159 - 003	Work Order #....:	K93GE1AA	Matrix....:	AIR
Date Sampled....:	04/09/09	Date Received....:	04/13/09	Dilution Factor:	1
Prep Date....:	04/28/09	Analysis Date....:	05/18/09		
Prep Batch # ....:	9118146				
Initial Wgt/Vol :	1 Sample	Instrument ID....:	M2A	Method:	CFR60A 23
Analyst ID....:	Jon M. Nordquist				

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	89	40 - 130
13C-1,2,3,7,8-PeCDD	97	40 - 130
13C-1,2,3,6,7,8-HxCDD	96	40 - 130
13C-1,2,3,4,6,7,8-HpCDD	92	25 - 130
13C-OCDD	86	25 - 130
13C-2,3,7,8-TCDF	90	40 - 130
13C-1,2,3,7,8-PeCDF	88	40 - 130
13C-1,2,3,6,7,8-HxCDF	97	40 - 130
13C-1,2,3,4,6,7,8-HpCDF	100	25 - 130

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
13C-1,2,3,4,7,8-HxCDD	88	70 - 130
13C-2,3,4,7,8-PeCDF	95	70 - 130
13C-1,2,3,4,7,8-HxCDF	72	70 - 130
13C-1,2,3,4,7,8,9-HpCDF	82	70 - 130
37Cl4-2,3,7,8-TCDD	84	70 - 130

QUALIFIERS

Results and reporting limits have been adjusted for dry weight.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated Result.

Q Estimated maximum possible concentration (EMPC).

URS Corporation

Sample ID: A-6366,A-6367 MEDIA CHECK

Trace Level Organic Compounds

Lot - Sample #....:	H9D140159 - 004	Work Order #....:	K93GM1AA	Matrix....:	AIR
Date Sampled....:	04/07/09	Date Received....:	04/13/09	Dilution Factor:	1
Prep Date....:	04/28/09	Analysis Date....:	05/17/09		
Prep Batch # ....:	9118146				
Initial Wgt/Vol :	1 Sample	Instrument ID....:	M2A	Method:	CFR60A 23
Analyst ID....:	Melissa A. Davidson				

PARAMETER	RESULT		MINIMUM LEVEL	ESTIMATED DETECTION LIMIT	UNITS
2,3,7,8-TCDD	ND		10	2.5	pg/sample
Total TCDD	ND		10	2.5	pg/sample
1,2,3,7,8-PeCDD	ND		50	1.2	pg/sample
Total PeCDD	ND		50	1.2	pg/sample
1,2,3,4,7,8-HxCDD	ND		50	0.85	pg/sample
1,2,3,6,7,8-HxCDD	ND		50	0.84	pg/sample
1,2,3,7,8,9-HxCDD	ND		50	0.79	pg/sample
Total HxCDD	ND		50	0.82	pg/sample
1,2,3,4,6,7,8-HpCDD	**3.2**	**J**	**50**	**1.2**	**pg/sample**
Total HpCDD	**5.6**	**Q J**	**50**	**1.2**	**pg/sample**
OCDD	**23**	**B J**	**100**	**1.6**	**pg/sample**
2,3,7,8-TCDF	ND		10	1.6	pg/sample
Total TCDF	ND		10	1.6	pg/sample
1,2,3,7,8-PeCDF	ND		50	1.1	pg/sample
2,3,4,7,8-PeCDF	ND		50	1.1	pg/sample
Total PeCDF	ND		50	1.1	pg/sample
1,2,3,4,7,8-HxCDF	**1.8**	**Q J**	**50**	**0.59**	**pg/sample**
1,2,3,6,7,8-HxCDF	ND		50	0.57	pg/sample
2,3,4,6,7,8-HxCDF	ND		50	0.65	pg/sample
1,2,3,7,8,9-HxCDF	ND		50	0.67	pg/sample
Total HxCDF	**2.6**	**Q J**	**50**	**0.62**	**pg/sample**
1,2,3,4,6,7,8-HpCDF	**8.2**	**Q J**	**50**	**0.90**	**pg/sample**
1,2,3,4,7,8,9-HpCDF	ND		50	1.1	pg/sample
Total HpCDF	**8.2**	**Q J**	**50**	**0.98**	**pg/sample**
OCDF	**11**	**J**	**100**	**1.8**	**pg/sample**

URS Corporation

Sample ID: A-6366,A-6367 MEDIA CHECK

Trace Level Organic Compounds

Lot - Sample #....:	H9D140159 - 004	**Work Order #....:**	K93GM1AA	**Matrix....:**	AIR
Date Sampled....:	04/07/09	**Date Received....:**	04/13/09	**Dilution Factor:**	1
Prep Date....:	04/28/09	**Analysis Date....:**	05/17/09		
Prep Batch # ....:	9118146				
Initial Wgt/Vol :	1 Sample	**Instrument ID....:**	M2A	**Method:**	CFR60A 23
Analyst ID....:	Melissa A. Davidson				

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	86	40 - 130
13C-1,2,3,7,8-PeCDD	93	40 - 130
13C-1,2,3,6,7,8-HxCDD	93	40 - 130
13C-1,2,3,4,6,7,8-HpCDD	87	25 - 130
13C-OCDD	76	25 - 130
13C-2,3,7,8-TCDF	85	40 - 130
13C-1,2,3,7,8-PeCDF	88	40 - 130
13C-1,2,3,6,7,8-HxCDF	79	40 - 130
13C-1,2,3,4,6,7,8-HpCDF	85	25 - 130

QUALIFIERS

Results and reporting limits have been adjusted for dry weight.

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

J Estimated Result.

Q Estimated maximum possible concentration (EMPC).

Method Blank Report

Trace Level Organic Compounds

Lot - Sample #....:	H9D280000 - 146B	**Work Order #....:**	LAWF61AA	**Matrix....:**	AIR
Dilution Factor:	1				
Prep Date....:	04/28/09	**Analysis Date....:**	05/16/09		
Prep Batch # ....:	9118146				
Initial Wgt/Vol :	1 Sample	**Instrument ID....:**	M2A	**Method:**	CFR60A 23
Analyst ID....:	Jon M. Nordquist				

PARAMETER	RESULT		MINIMUM LEVEL	ESTIMATED DETECTION LIMIT	UNITS
2,3,7,8-TCDD	ND		10	4.5	pg/sample
Total TCDD	ND		10	4.5	pg/sample
1,2,3,7,8-PeCDD	ND		50	1.8	pg/sample
Total PeCDD	ND		50	1.8	pg/sample
1,2,3,4,7,8-HxCDD	ND		50	1.3	pg/sample
1,2,3,6,7,8-HxCDD	ND		50	1.3	pg/sample
1,2,3,7,8,9-HxCDD	ND		50	1.2	pg/sample
Total HxCDD	ND		50	1.3	pg/sample
1,2,3,4,6,7,8-HpCDD	ND		50	1.7	pg/sample
Total HpCDD	ND		50	1.7	pg/sample
OCDD	**3.9**	**J**	**100**	**2.1**	**pg/sample**
2,3,7,8-TCDF	ND		10	2.8	pg/sample
Total TCDF	ND		10	2.8	pg/sample
1,2,3,7,8-PeCDF	ND		50	1.8	pg/sample
2,3,4,7,8-PeCDF	ND		50	1.8	pg/sample
Total PeCDF	ND		50	1.8	pg/sample
1,2,3,4,7,8-HxCDF	ND		50	0.97	pg/sample
1,2,3,6,7,8-HxCDF	ND		50	0.92	pg/sample
2,3,4,6,7,8-HxCDF	ND		50	1.1	pg/sample
1,2,3,7,8,9-HxCDF	ND		50	1.1	pg/sample
Total HxCDF	ND		50	1.0	pg/sample
1,2,3,4,6,7,8-HpCDF	ND		50	0.90	pg/sample
1,2,3,4,7,8,9-HpCDF	ND		50	1.1	pg/sample
Total HpCDF	ND		50	0.98	pg/sample
OCDF	ND		100	2.2	pg/sample

Method Blank Report

Trace Level Organic Compounds

Lot - Sample #....:	H9D280000 - 146B	**Work Order #....:**	LAWF61AA	**Matrix....:**	AIR
Dilution Factor:	1				
Prep Date....:	04/28/09	**Analysis Date....:**	05/16/09		
Prep Batch # ....:	9118146				
Initial Wgt/Vol :	1 Sample	**Instrument ID....:**	M2A	**Method:**	CFR60A 23
Analyst ID....:	Jon M. Nordquist				

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	82	40 - 130
13C-1,2,3,7,8-PeCDD	88	40 - 130
13C-1,2,3,6,7,8-HxCDD	89	40 - 130
13C-1,2,3,4,6,7,8-HpCDD	86	25 - 130
13C-OCDD	82	25 - 130
13C-2,3,7,8-TCDF	80	40 - 130
13C-1,2,3,7,8-PeCDF	83	40 - 130
13C-1,2,3,6,7,8-HxCDF	79	40 - 130
13C-1,2,3,4,6,7,8-HpCDF	91	25 - 130

QUALIFIERS

J Estimated Result

LABORATORY CONTROL SAMPLE DATA REPORT

Trace Level Organic Compounds

Client Lot # ...:	H9D140159	**Work Order # ...:**	LAWF61AC-LCS LAWF61AD-LCSD	**Matrix .....:**	AIR
LCS Lot-Sample# :	H9D280000 - 146				
Prep Date .....:	04/28/09	**Analysis Date ..:**	05/16/09		
Prep Batch # ...:	9118146				
Dilution Factor :	1				
Analyst ID.....:	Jon M. Nordquist	**Instrument ID..:**	M2A	**Method.....:**	CFR60A 23
Initial Wgt/Vol:	1 Sample				

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY		RECOVERY LIMITS	RPD	RPD LIMITS
2,3,7,8-TCDD	200	194	pg/sample	97		(70 - 130)		
	200	187	pg/sample	94		(70 - 130)	3.6	(0 - 50)
1,2,3,7,8-PeCDD	1000	912	pg/sample	91		(70 - 130)		
	1000	883	pg/sample	88		(70 - 130)	3.2	(0 - 50)
1,2,3,4,7,8-HxCDD	1000	899	pg/sample	90		(70 - 130)		
	1000	849	pg/sample	85		(70 - 130)	5.7	(0 - 50)
1,2,3,6,7,8-HxCDD	1000	931	pg/sample	93		(70 - 130)		
	1000	903	pg/sample	90		(70 - 130)	3.1	(0 - 50)
1,2,3,7,8,9-HxCDD	1000	925	pg/sample	93		(70 - 130)		
	1000	896	pg/sample	90		(70 - 130)	3.2	(0 - 50)
1,2,3,4,6,7,8-HpCDD	1000	995	pg/sample	99		(70 - 130)		
	1000	987	pg/sample	99		(70 - 130)	0.85	(0 - 50)
OCDD	2000	2040	pg/sample	102	B	(70 - 130)		
	2000	2080	pg/sample	104	B	(70 - 130)	1.9	(0 - 50)
2,3,7,8-TCDF	200	187	pg/sample	93		(70 - 130)		
	200	191	pg/sample	96		(70 - 130)	2.2	(0 - 50)
1,2,3,7,8-PeCDF	1000	1030	pg/sample	103		(70 - 130)		
	1000	1040	pg/sample	104		(70 - 130)	0.99	(0 - 50)
2,3,4,7,8-PeCDF	1000	931	pg/sample	93		(70 - 130)		
	1000	945	pg/sample	95		(70 - 130)	1.5	(0 - 50)
1,2,3,4,7,8-HxCDF	1000	1030	pg/sample	103		(70 - 130)		
	1000	1050	pg/sample	105		(70 - 130)	2.2	(0 - 50)
1,2,3,6,7,8-HxCDF	1000	1080	pg/sample	108		(70 - 130)		
	1000	1050	pg/sample	105		(70 - 130)	3.6	(0 - 50)
2,3,4,6,7,8-HxCDF	1000	1080	pg/sample	108		(70 - 130)		
	1000	1110	pg/sample	111		(70 - 130)	2.5	(0 - 50)
1,2,3,7,8,9-HxCDF	1000	1020	pg/sample	102		(70 - 130)		
	1000	1000	pg/sample	100		(70 - 130)	1.9	(0 - 50)
1,2,3,4,6,7,8-HpCDF	1000	971	pg/sample	97		(70 - 130)		
	1000	964	pg/sample	96		(70 - 130)	0.67	(0 - 50)
1,2,3,4,7,8,9-HpCDF	1000	857	pg/sample	86		(70 - 130)		
	1000	848	pg/sample	85		(70 - 130)	1.1	(0 - 50)
OCDF	2000	1920	pg/sample	96		(70 - 130)		
	2000	2100	pg/sample	105		(70 - 130)	9.2	(0 - 50)

INTERNAL STANDARD	PERCENT RECOVERY	RECOVERY LIMITS
13C-2,3,7,8-TCDD	86	(40 - 130)
	80	(40 - 130)
13C-1,2,3,7,8-PeCDD	93	(40 - 130)
	88	(40 - 130)
13C-1,2,3,6,7,8-HxCDD	88	(40 - 130)

LABORATORY CONTROL SAMPLE DATA REPORT

Trace Level Organic Compounds

Client Lot # ...: H9D140159 **Work Order # ...:** LAWF61AC-LCS **Matrix .....:** AIR
LCS Lot-Sample# : H9D280000 - 146 LAWF61AD-LCSD

INTERNAL STANDARD	PERCENT RECOVERY	RECOVERY LIMITS
	84	(40 - 130)
13C-1,2,3,4,6,7,8-HpCDD	82	(25 - 130)
	73	(25 - 130)
13C-OCDD	80	(25 - 130)
	69	(25 - 130)
13C-2,3,7,8-TCDF	83	(40 - 130)
	76	(40 - 130)
13C-1,2,3,7,8-PeCDF	86	(40 - 130)
	82	(40 - 130)
13C-1,2,3,6,7,8-HxCDF	77	(40 - 130)
	72	(40 - 130)
13C-1,2,3,4,6,7,8-HpCDF	89	(25 - 130)
	80	(25 - 130)

Notes:

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

Sample Receipt Documentation

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

H9D140159

Reference COC No.:

Project Name: Haverhill North Coke Co.
Project Number: 39400492
Test Location: Main Stack

URS Project Manager: Michael Mowery
Purchase Order Number:
Required Report Date: Standard Turnaround

Sample Shipment Date: 4/10/2009
Laboratory Destination: Test American - Knoxville, TN
Laboratory Contact: Kevin Woodcock
Project Contact/Phone: 865-220-8114
Carrier Waybill No.: Hand Delivered by URS

REC. AT 6°, 17°C
NO CUSTODY SEALS
HAND DELIVERED
2 COOLERS

Bill To: URS Corp.
1093 Commerce Park Dr.
Oak Ridge, TN 37830

Report To: Michael Mowery
URS Corp.
1093 Commerce Park Dr.
Oak Ridge, TN 37830

Sample Number	Sample Type	Date Collected	# of Containers	Sample Matrix	Requested Testing Program
M23 - Run 1	Acetone Probe Wash	04/07/09	1	Liquid	Analyze as per EPA Method 23 for dioxin/furans.
M23 - Run 1	Toluene Probe Wash	04/07/09	1	Liquid	Analyze as per EPA Method 23 for dioxin/furans.
M23 - Run 1	Filter	04/07/09	1	Filter	Analyze as per EPA Method 23 for dioxin/furans.
M23 - Run 1	XAD Trap	04/07/09	1	Resin	Analyze as per EPA Method 23 for dioxin/furans.
M23 - Run 2	Acetone Probe Wash	04/07/09	1	Liquid	Analyze as per EPA Method 23 for dioxin/furans.
M23 - Run 2	Toluene Probe Wash	04/09/09	1	Liquid	Analyze as per EPA Method 23 for dioxin/furans.
M23 - Run 2	Filter	04/09/09	1	Filter	Analyze as per EPA Method 23 for dioxin/furans.
M23 - Run 2	XAD Trap	04/09/09	1	Resin	Analyze as per EPA Method 23 for dioxin/furans.

TURNAROUND TIME REQUIRED — Normal: X — Rush:

POSSIBLE HAZARD IDENTIFICATION:
Nonhazard: X
Highly Toxic:
Flammable:
Radiological:

Level of QC Required: Standard

SAMPLE DISPOSAL: Return to Client — Disposal By Lab: X

1. Relinquished by: Signature/Affiliation: [signature]	Date: 4/13/09 Time: 1600	1. Received by Signature/Affiliation: Ryan Henry	4/13/09 1600
2. Relinquished by Signature/Affiliation:	Date: Time:	2. Received by Signature/Affiliation:	Date: Time:
3. Relinquished by Signature/Affiliation:	Date: Time:	3. Received by Signature/Affiliation:	Date: Time:

Comments:

12/5/2007 10:00

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

179D140159

Reference COC No.:

Project Name: Haverhill North Coke Co.
Project Number: 39400492
Test Location: Main Stack

URS Project Manager: Michael Mowery
Purchase Order Number:
Required Report Date: Standard Turnaround

Sample Shipment Date: 4/10/2009
Laboratory Destination: Test America - Knoxville, TN
Laboratory Contact: Kevin Woodcock
Project Contact/Phone: 865-220-8114
Carrier Waybill No.: Hand Delivered by URS

Bill To: URS Corp.
1093 Commerce Park Dr.
Oak Ridge, TN 37830

Report To: Michael Mowery
URS Corp.
1093 Commerce Park Dr.
Oak Ridge, TN 37830

Sample Number	Sample Type	Date Collected	# of Containers	Sample Matrix	Requested Testing Program
M23 - Run 4	Acetone Probe Wash	04/09/09	1	Liquid	Analyze as per EPA Method 23 for dioxin/furans.
M23 - Run 4	Toluene Probe Wash	04/09/09	1	Liquid	Analyze as per EPA Method 23 for dioxin/furans.
M23 - Run 4	Filter	04/09/09	1	Filter	Analyze as per EPA Method 23 for dioxin/furans.
M23 - Run 4	XAD Trap	04/09/09	1	Resin	Analyze as per EPA Method 23 for dioxin/furans.
M23 - Reagent Blank	Acetone	04/09/09	1	Liquid	Analyze as per EPA Method 23 for dioxin/furans. Combine as blank train.
M23 - Reagent Blank	Toluene	04/09/09	1	Liquid	Analyze as per EPA Method 23 for dioxin/furans. Combine as blank train.
M23 - Reagent Blank	Filter	04/09/09	1	Filter	Analyze as per EPA Method 23 for dioxin/furans. Combine as blank train.
M23 - Reagent Blank	XAD Trap	04/09/09	1	Resin	Analyze as per EPA Method 23 for dioxin/furans. Combine as blank train.

TURNAROUND TIME REQUIRED Normal: X Rush:

POSSIBLE HAZARD IDENTIFICATION:
Nonhazard: X Flammable:
Highly Toxic: Radiological:

Level of QC Required: Standard

SAMPLE DISPOSAL: Return to Client Disposal By Lab X

1. Relinquished by: Signature/Affiliation:	Date: 4/13/09 Time: 1600	1. Received by Signature/Affiliation: Ryan Henry	4/13/09 1600
2. Relinquished by Signature/Affiliation:	Date: Time:	2. Received by Signature/Affiliation:	Date: Time:
3. Relinquished by Signature/Affiliation:	Date: Time:	3. Received by Signature/Affiliation:	Date: Time:

Comments:

12/5/2007 10:00

TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Client: URS **Project:** HNCC - M23 **Lot Number:** H9D140159

Review Items	Yes	No	NA	If No, what was the problem?	Comments/Actions Taken
1. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ 1a Do not match COC ☐ 1b Incomplete information ☐ 1c Marking smeared ☐ 1d Label torn ☐ 1e No label ☐ 1f COC not received ☑ 1g Other:	2B, XAD'S RECEIVED AT 6°C, ALL OTHER FRACTIONS RECEIVED AT 17°C 4A — HAND DELIVERED 5A, RUN 3 XAD 5B, M23 REAGENT BLANK RUN
2. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C; NC, 1668, 1613B: 0-4°C; VOST: 10°C; MA: 2-6 °C)		✓		☐ 2a Temp Blank = ____ ☑ 2b Cooler Temp = 17°C	
3. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ 3a Sample preservative =	1C, RUN 2 TO LVENE PROBE WASH, FILTER, XAD TRAP, COC ~~LISTED~~ LIST COLLECTION AS 4-9-09, SHOULD BE 4-7-09 PER LABELS
4. Were custody seals present/intact on cooler and/or containers?		✓		☑ 4a Not present ☐ 4b Not intact ☐ 4c Other:	
5. Were all of the samples listed on the COC received?		✓		☑ 5a Samples received-not on COC ☑ 5b Samples not received-on COC	
6. Were all of the sample containers received intact?	✓			☐ 6a Leaking ☐ 6b Broken	
7. Were VOA samples received without headspace?			✓	☐ 7a Headspace (VOA only)	
8. Were samples received in appropriate containers?	✓			☐ 8a Improper container	
9. Did you check for residual chlorine, if necessary?			✓	☐ 9a Could not be determined due to matrix interference	
10. Were samples received within holding time?	✓			☐ 10a Holding time expired	
11. For rad samples, was sample activity info. provided?			✓	☐ Incomplete information	
12. For SOG water samples (1613B, 1668A, 8290, LR PAHs), do samples have visible solids present?			✓	If yes & appears to be >1%, was SOG notified? ____	
13. Are the shipping containers intact?	✓			☐ 13a Leaking ☐ 13b Other:	
14. Was COC relinquished? (Signed/Dated/Timed)	✓			☐ 14a Not relinquished	
15. Are tests/parameters listed for each sample?	✓			☐ 15a Incomplete information	
16. Is the matrix of the samples noted?	✓			☐ 15a Incomplete information	
17. Is the date/time of sample collection noted?	✓			☐ 15a Incomplete information	
18. Is the client and project name/# identified?	✓			☐ 15a Incomplete information	
19. Was the sampler identified on the COC?		✓			

Quote #: 82723 PM Instructions: ____

Sample Receiving Associate: [signature] Date: 4-13-09

QA026R19.doc, 080707

Test America Laboratory Report

Hot Car

Lead

Hot Car

H9D280112 Analytical Report **1**

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Total Number of Pages **265**

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

ANALYTICAL REPORT

PROJECT NO. 39400492

Haverhill North Coke Co.

Lot #: H9D280112

Michael Mowery

URS Corporation
1093 Commerce Park Drive
Suite 100
Oak Ridge, TN 37830

TESTAMERICA LABORATORIES, INC.

Kevin S. Woodcock
Project Manager

May 13, 2009

ANALYTICAL METHODS SUMMARY

H9D280112

PARAMETER	ANALYTICAL METHOD
Inorganic Lead Emissions	CFR60A 12

References:

CFR60A "Test Methods", 40 CFR, Part 60, Appendix A, July 1, 1993.

SAMPLE SUMMARY

H9D280112

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
LAWG7	001	HOT CAR - RUN 1	04/15/09	
LAWG9	002	HOT CAR - RUN 2	04/16/09	
LAWHA	003	HOT CAR - RUN 3	04/17/09	
LAWHD	004	REAGENT BLANK	04/17/09	

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

PROJECT NARRATIVE
H9D280112

The results reported herein are applicable to the samples submitted for analysis only.

This report shall not be reproduced except in full, without the written approval of the laboratory.

The original chain of custody documentation is included with this report.

Sample Receipt

There were no problems with the condition of the samples received.

Quality Control and Data Interpretation

Unless otherwise noted, all holding times and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

These stack gas samples were prepared and analyzed using TestAmerica Knoxville standard operating procedure KNOX-MT-0016 which is based on Method 12, "Determination of Inorganic Lead Emissions from Stationary Sources". SW-846 Method 6010B as incorporated in TestAmerica Knoxville standard operating procedure KNOX-MT-0007 was used to perform the final instrument analysis.

Acid digestion was performed on the front half particulate filter, the nitric acid probe rinse and the nitric acid impinger solution as a combined sample using HNO_3 and H_2O_2. This digestate was adjusted to final volume and analyzed for lead by ICP.

Lead results were calculated using the following equation:

$$Total\ \mu g = \begin{pmatrix} Raw\ Sample \\ Concentration,\ \mu g/L \end{pmatrix} \times \begin{pmatrix} Bench \\ Dilution \\ Factor \end{pmatrix} \times \begin{pmatrix} Final\ Volume \\ ICP\ Digestate,\ L \end{pmatrix}$$

The post digestion spike/post digestion spike duplicate recoveries for sample Hot Car-Run1 were outside control limits for lead. However, the laboratory control sample showed acceptable results indicating that the analysis was in control. Results outside of limits do not necessarily reflect poor method performance due to high analyte concentrations in the sample relative to the spike level.

TestAmerica Knoxville maintains the following certifications, approvals and accreditations: Arkansas DEQ Lab #88-0688, California DHS ELAP Cert. #2423, Colorado DPHE, Connecticut DPH Lab #PH-0223, Florida DOH Lab #E87177, Georgia DNR Lab #906, Hawaii DOH, Illinois EPA Lab #200012, Indiana DOH Lab #C-TN-02, Iowa DNR Lab #375, Kansas DHE Cert. #E-10349, Kentucky DEP Lab #90101, Louisiana DEQ Cert. #03079, Louisiana DOHH, Maryland DOE Cert. #277, Michigan DEQ Lab #9933, Nevada DEP, New Jersey DEP Lab #TN001, New York DOH Lab #10781, North Carolina DPH Lab #21705, North Carolina DEHNR Cert. #64, Ohio EPA VAP Lab #CL0059, Oklahoma DEQ Lab #9415, Pennsylvania DEP Lab #68-00576, South Carolina DHEC Cert #84001001, Tennessee DOH Lab #02014, Texas CEQ, Utah DOH Lab # QUAN3, Virginia DGS Lab #00165, Washington DOE Lab #C1314, West Virginia DEP Cert. #345, West Virginia DHHR Cert #9955C, Wisconsin DNR Lab #998044300, Naval Facilities Engineering Service Center and USDA Soil Permit #S-46424. This list of approvals is subject to change and does not imply that laboratory certification is available for all parameters reported in this environmental sample data report.

QC DATA ASSOCIATION SUMMARY

H9D280112

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	AIR	CFR60A 12		9124055	
002	AIR	CFR60A 12		9124055	
003	AIR	CFR60A 12		9124055	
004	AIR	CFR60A 12		9124055	

Sample Data Summary

URS Corporation

Client Sample ID: HOT CAR - RUN 1

TOTAL Metals

Lot-Sample #...: H9D280112-001 Matrix.....: AIR
Date Sampled...: 04/15/09 Date Received..: 04/27/09

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9124055						
Lead	195	1.0	ug	CFR60A 12	05/04-05/06/09	LAWG71AA
		Dilution Factor: 1		Analysis Time..: 14:16	MDL.....: 0.35	

URS Corporation

Client Sample ID: HOT CAR - RUN 2

TOTAL Metals

Lot-Sample #...: H9D280112-002 Matrix.....: AIR
Date Sampled...: 04/16/09 Date Received..: 04/27/09

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9124055						
Lead	131	1.0	ug	CFR60A 12	05/04-05/06/09	LAWG91AA
		Dilution Factor: 1		Analysis Time..: 14:34	MDL.....: 0.35	

URS Corporation

Client Sample ID: HOT CAR - RUN 3

TOTAL Metals

Lot-Sample #...: H9D280112-003 Matrix.....: AIR
Date Sampled...: 04/17/09 Date Received..: 04/27/09

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9124055						
Lead	254	1.0	ug	CFR60A 12	05/04-05/06/09	LAWHA1AA
		Dilution Factor: 1		Analysis Time..: 14:40	MDL.....: 0.35	

URS Corporation

Client Sample ID: REAGENT BLANK

TOTAL Metals

Lot-Sample #...: H9D280112-004 Matrix.....: AIR
Date Sampled...: 04/17/09 Date Received..: 04/27/09

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 9124055						
Lead	21.6	1.0	ug	CFR60A 12	05/04-05/06/09	LAWHD1AA
		Dilution Factor: 1		Analysis Time..: 14:47	MDL.....: 0.35	

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: H9D280112 Matrix.....: AIR

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: H9E040000-055 Prep Batch #...: 9124055						
Lead	ND	1.0	ug	CFR60A 12	05/04-05/06/09	LA9GH1AA
		Dilution Factor: 1				
		Analysis Time..: 13:58				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Lot-Sample #...: H9D280112

Matrix.....: AIR

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP-BATCH #
Lead	88	(80 - 120)			CFR60A 12	05/04-05/06/09	9124055
	98	(80 - 120)	11	(0-20)	CFR60A 12	05/04-05/06/09	9124055

Dilution Factor: 1 Analysis Time..: 14:04

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

TOTAL Metals

Lot-Sample #...: H9D280112 Matrix.....: AIR

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Lead	10.0	8.80	ug	88		CFR60A 12	05/04-05/06/09	9124055
	10.0	9.83	ug	98	11	CFR60A 12	05/04-05/06/09	9124055

Dilution Factor: 1 Analysis Time..: 14:04

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

TestAmerica Knoxville

ICP Data Reporting Form

Post Digestion Spike

Units: ug/L (ppb)

Instrument ID: TJA 61-E SuperTrace ICP

Data File Name: t050609.arc

Element	PDS LAWG7A	Original Sample LAWG7	Spike Added	Percent Recovery
Pb	2009.78	1951.80	100.0	58.0

TestAmerica Knoxville

ICP Data Reporting Form

Post Digestion Spike

Units: ug/L (ppb)

Instrument ID: TJA 61-E SuperTrace ICP

Data File Name: t050609.arc

Element	PDS LAWG7A	Original Sample LAWG7	Spike Added	Percent Recovery
Pb	2021.03	1951.80	100.0	69.2

Sample Receipt Documentation

URS

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

H4D280112 Reference COC No.: _____

Page 1 of 1

Project Name: HNCC Unit 2 Compliance
Project Number: 39400492
URS Sample Team: Mike Mowery

URS Project Manager: Mike Mowery
Purchase Order Number:
Required Report Date: Standard Turnaround

Sample Shipment Date: 4/23/2009
Laboratory Destination: Test America - Knoxville, TN
Laboratory Contact: Kevin Woodcock
Project Contact/Phone: 865-220-8101
Carrier Waybill No.: Hand Delivered by URS

REC. AT AMBIENT
NO CUSTODY SEAL
1 BOX KH 4/27/09
HAND DELIVERED

Bill To: URS Corp.
1093 Commerce Park Dr.
Oak Ridge, TN 37830

Report To: Mike Mowery
URS Corp.
1093 Commerce Park Dr.
Oak Ridge, TN 37830

Sample Number	Sample Type	Date Collected	# of Containers	Sample Matrix	Requested Testing Program
Hot Car - Run 1	Probe Wash	04/15/09	1	Liquid	Combine Probe Wash, Impingers and Filter and analyze by EPA Method 12
Hot Car - Run 1	Impinger Catch	04/15/09	1	Liquid	
Hot Car - Run 1	Filter	04/15/09	1	Solid	
Hot Car - Run 2	Probe Wash	04/16/09	1	Liquid	Combine Probe Wash, Impingers and Filter and analyze by EPA Method 12
Hot Car - Run 2	Impinger Catch	04/16/09	1	Liquid	
Hot Car - Run 2	Filter	04/16/09	1	Solid	
Hot Car - Run 3	Probe Wash	04/17/09	1	Liquid	Combine Probe Wash, Impingers and Filter and analyze by EPA Method 12
Hot Car - Run 3	Impinger Catch	04/17/09	1	Liquid	
Hot Car - Run 3	Filter	04/17/09	1	Solid	
Reagent Blank	0.1 N Nitric Acid	04/17/09	1	Liquid	Combine Nitric Acid and Filter and analyze by EPA Method 12
Reagent Blank	Filter	04/17/09	1	Solid	

TURNAROUND TIME REQUIRED Normal: X Rush: _____

POSSIBLE HAZARD IDENTIFICATION:
Nonhazard: X
Highly Toxic:
Flammable:
Radiological:

Level of QC Required: No lab blank or spikes

SAMPLE DISPOSAL: Return to Client _____ Disposal By Lab X

1. Relinquished by: Signature/Affiliation: Thomas Brado	Date: 4/27/09 Time: 0845	1. Received by Signature/Affiliation: Ryan Henry	Date: 4/27/09 Time: 0845
2. Relinquished by Signature/Affiliation:	Date: Time:	2. Received by Signature/Affiliation:	Date: Time:
3. Relinquished by Signature/Affiliation:	Date: Time:	3. Received by Signature/Affiliation:	Date: Time:

Comments:

TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Client: URS Oak Ridge **Project:** HNCC MP **Lot Number:** 1490280112

Review Items	Yes	No	NA	If No, what was the problem?	Comments/Actions Taken
1. Do sample container labels match COC? (IDs, Dates, Times)	✓			☐ 1a Do not match COC ☐ 1b Incomplete information ☐ 1c Marking smeared ☐ 1d Label torn ☐ 1e No label ☐ 1f COC not received ☐ 1g Other:	4a – HAND DELIVERED
2. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C; NC, 1668, 1613B: 0-4°C; VOST: 10°C; MA: 2-6 °C)			✓	☐ 2a Temp Blank = _____ ☐ 2b Cooler Temp = _____	
3. Were samples received with correct chemical preservative (excluding Encore)?			✓	☐ 3a Sample preservative =	
4. Were custody seals present/intact on cooler and/or containers?		✓		☑ 4a Not present ☐ 4b Not intact ☑ 4c Other: HAND DEL.	
5. Were all of the samples listed on the COC received?	✓			☐ 5a Samples received-not on COC ☐ 5b Samples not received-on COC	
6. Were all of the sample containers received intact?	✓			☐ 6a Leaking ☐ 6b Broken	
7. Were VOA samples received without headspace?			✓	☐ 7a Headspace (VOA only)	
8. Were samples received in appropriate containers?	✓			☐ 8a Improper container	
9. Did you check for residual chlorine, if necessary?			✓	☐ 9a Could not be determined due to matrix interference	
10. Were samples received within holding time?	✓			☐ 10a Holding time expired	
11. For rad samples, was sample activity info. provided?			✓	☐ Incomplete information	
12. For SOG water samples (1613B, 1668A, 8290, LR PAHs), do samples have visible solids present?			✓	If yes & appears to be >1%, was SOG notified? _____	
13. Are the shipping containers intact?	✓			☐ 13a Leaking ☐ 13b Other:	
14. Was COC relinquished? (Signed/Dated/Timed)	✓			☐ 14a Not relinquished	
15. Are tests/parameters listed for each sample?	✓			☐ 15a Incomplete information	
16. Is the matrix of the samples noted?	✓			☐ 15a Incomplete information	
17. Is the date/time of sample collection noted?	✓			☐ 15a Incomplete information	
18. Is the client and project name/# identified?	✓			☐ 15a Incomplete information	
19. Was the sampler identified on the COC?	✓				

Quote #: 82723 PM Instructions: _____

Sample Receiving Associate: Ryan Henry Date: 4/28/09

QA026R19.doc, 080707

Appendix F

CARL KOONTZ ASSOCIATES

of Nashville, Tennessee

This is to acknowledge that

ROBERT RAYMOND

successfully participated in Visible Emissions training on APR 0 6 2009

and is qualified to evaluate Visible Emissions for a period of six (6) months from the date of certification.

Carl Koontz

Instructor

CARL KOONTZ ASSOCIATES

of Nashville, Tennessee

This is to acknowledge that

THOMAS BRADO

successfully participated in Visible Emissions training on APR 0 6 2009

and is qualified to evaluate Visible Emissions for a period of six (6) months from the date of certification.

Carl Koontz

Instructor

URS

Stack Temperature Sensor Calibration Spreadsheet
Primary Standard: NIST Traceable Thermometer
Enclosures Denote Input Data

Thermocouple ID:	2030	Calibrated By:	R. Raymond
Calibration Standard:	PRIMARY	Thermocouple Readout Number	SR 2-0201004
Calibration Standard ID:	15059408	Thermocouple Readout Correlation:	1.00000
Date Calibrated:	3/16/2008	Ambient Temperature (F):	60

Reference Point Number	Source (Specify) See Note 1	Reference Thermometer Temperature F	Reference Thermometer Temperature C
1	Ice Bath	39.0	3.9
2	Ambient	68.0	20.0
3	Hot Sand	429.0	219.4

Thermocouple Potentiometer Temperature F	Corrected Potentiometer Temperature F	Corrected Potentiometer Temperature C	Temperature % Difference See Note 2
40.0	40.0	4.4	0.2
68.0	68.0	20.0	0.0
425.0	425.0	218.3	0.2

Does thermocouple Meet Specifications?

YES at	40 F
YES at	68 F
YES at	425 F

Calibrator Signature: R. Raymond

Note 1 - Type of calibration system used
Note 2 - $\frac{[(\text{ref temp, C} + 273) - (\text{test thermometer temp, C} + 273)]100}{\text{ref temp, C} + 273} < 1.5\%$

URS

Stack Temperature Sensor Calibration Spreadsheet
Primary Standard: NIST Traceable Thermometer
Enclosures Denote Input Data

Thermocouple ID:	AQS 4 001	Calibrated By:	R. Raymond
Calibration Standard:	PRIMARY	Thermocouple Readout Number	SR-27-0201004
Calibration Standard ID:	15059408	Thermocouple Readout Correlation:	1.00000
Date Calibrated:	3/18/2008	Ambient Temperature (F):	68

Reference Point Number	Source (Specify) See Note 1	Reference Thermometer Temperature F	Reference Thermometer Temperature C
1	Ice Bath	43.0	6.1
2	Ambient	67.0	19.4
3	Hot Sand	442.0	227.8

Thermocouple Potentiometer Temperature F	Corrected Potentiometer Temperature F	Corrected Potentiometer Temperature C	Temperature % Difference See Note 2
42.0	42.0	5.6	0.2
67.0	67.0	19.4	0.0
438.0	438.0	225.6	0.4

Does thermocouple Meet Specifications?

YES at 42 F
YES at 67 F
YES at 438 F

Calibrator Signature:

Note 1 - Type of calibration system used
Note 2 - [(ref temp, C + 273) - (test thermometer temp, C + 273)]100 < 1.5%
ref temp, C + 273

URS

Stack Temperature Sensor Calibration Spreadsheet
Primary Standard: NIST Traceable Thermometer
Enclosures Denote Input Data

Thermocouple ID:	AQS 6 003	Calibrated By:	R. Raymond
Calibration Standard:	PRIMARY	Thermocouple Readout Number	SR-I/0201004
Calibration Standard ID:	15059408	Thermocouple Readout Correlation:	1.00000
Date Calibrated:	3/16/2008	Ambient Temperature (F):	60

Reference Point Number	Source (Specify) See Note 1	Reference Thermometer Temperature F	Reference Thermometer Temperature C
1	Ice Bath	39.0	3.9
2	Ambient	68.0	20.0
3	Hot Sand	447.0	230.6

Thermocouple Potentiometer Temperature F	Corrected Potentiometer Temperature F	Corrected Potentiometer Temperature C	Temperature % Difference See Note 2
39.0	39.0	3.9	0.0
69.0	69.0	20.6	0.2
445.0	445.0	229.4	0.2

Does thermocouple Meet Specifications?

YES at 39 F
YES at 69 F
YES at 445 F

Calibrator Signature: _____

Note 1 - Type of calibration system used
Note 2 - $\frac{[(\text{ref temp, C} + 273) - (\text{test thermometer temp, C} + 273)]}{\text{ref temp, C} + 273} 100 < 1.5\%$

URS

Stack Temperature Sensor Calibration Spreadsheet
Primary Standard: NIST Traceable Thermometer
Enclosures Denote Input Data

Thermocouple ID:	AQS 5 004	Calibrated By:	R. Raymond
Calibration Standard:	PRIMARY	Thermocouple Readout Number	SR 2 7 0201004
Calibration Standard ID:	15059408	Thermocouple Readout Correlation:	1.00000
Date Calibrated:	3/18/2009	Ambient Temperature (F):	68

Reference Point Number	Source (Specify) See Note 1	Reference Thermometer Temperature F	Reference Thermometer Temperature C
1	Ice Bath	38.0	3.3
2	Ambient	66.0	18.9
3	Hot Sand	425.0	218.3

Thermocouple Potentiometer Temperature F	Corrected Potentiometer Temperature F	Corrected Potentiometer Temperature C	Temperature % Difference See Note 2
38.0	38.0	3.3	0.0
66.0	66.0	18.9	0.0
427.0	427.0	219.4	0.2

Does thermocouple Meet Specifications?

YES at	38 F
YES at	66 F
YES at	427 F

Calibrator Signature:

Note 1 - Type of calibration system used

Note 2 - $\frac{[(\text{ref temp, C} + 273) - (\text{test thermometer temp, C} + 273)]100}{\text{ref temp, C} + 273} < 1.5\%$

URS

Stack Temperature Sensor Calibration Spreadsheet
Primary Standard: NIST Traceable Thermometer
Enclosures Denote Input Data

Thermocouple ID:	AQS-5-001	Calibrated By:	R. Raymond
Calibration Standard:	PRIMARY	Thermocouple Readout Number	SR-1/-0201004
Calibration Standard ID:	15059408	Thermocouple Readout Correlation:	1.00000
Date Calibrated:	4/3/2009	Ambient Temperature (F):	60

Reference Point Number	Source (Specify) See Note 1	Reference Thermometer Temperature F	Reference Thermometer Temperature C
1	Ice Bath	37.0	2.8
2	Ambient	58.0	14.4
3	Hot Sand	438.0	225.6

Thermocouple Potentiometer Temperature F	Corrected Potentiometer Temperature F	Corrected Potentiometer Temperature C	Temperature % Difference See Note 2
37.0	37.0	2.8	0.0
58.0	58.0	14.4	0.0
437.0	437.0	225.0	0.1

Does thermocouple Meet Specifications?

YES at	37 F
YES at	58 F
YES at	437 F

Calibrator Signature:

Note 1 - Type of calibration system used
Note 2 - $\frac{[(\text{ref temp, C} + 273) - (\text{test thermometer temp, C} + 273)]100}{\text{ref temp, C} + 273} < 1.5\%$

URS

Stack Temperature Sensor Calibration Spreadsheet
Primary Standard: NIST Traceable Thermometer
Enclosures Denote Input Data

Thermocouple ID:	AQS 5 002	Calibrated By:	R. Raymond
Calibration Standard:	PRIMARY	Thermocouple Readout Number	omega
Calibration Standard ID:	15059408	Thermocouple Readout Correlation:	1.00000
Date Calibrated:	3/18/2009	Ambient Temperature (F):	68

Reference Point Number	Source (Specify) See Note 1	Reference Thermometer Temperature F	Reference Thermometer Temperature C
1	Ice Bath	38.0	3.3
2	Ambient	66.0	18.9
3	Hot Sand	425.0	218.3

Thermocouple Potentiometer Temperature F	Corrected Potentiometer Temperature F	Corrected Potentiometer Temperature C	Temperature % Difference See Note 2
38.0	38.0	3.3	0.0
65.0	65.0	18.3	0.2
426.0	426.0	218.9	0.1

Does thermocouple Meet Specifications?

YES at 38 F
YES at 65 F
YES at 426 F

Calibrator Signature:

Note 1 - Type of calibration system used
Note 2 - $\frac{[(\text{ref temp, C} + 273) - (\text{test thermometer temp, C} + 273)]100}{\text{ref temp, C} + 273} < 1.5\%$

APEX INSTRUMENTS REFERENCE METER CALIBRATION
USING WET-TEST METER #11AE6
15-POINT ENGLISH UNITS

Calibration Meter Information	
Wet Test Meter Model #	AL-20
Wet Test Meter Serial #	11-AE-6
Wet Test Meter Gamma	1.00130

Calibration Conditions			
Date	Time	2-Jul-08	8:00
Barometric Pressure		29.80	in Hg
Calibration Technician		EW	
DGM Serial Number		361815	

Factors/Conversions		
Std Temp	528	°R
Std Press	29.92	in Hg
K_1	17.647	°R/in Hg

Calibration Data												Results		
Run Time	Metering Console						Calibration Meter					Dry Gas Meter		
												Calibration Factor		Flowrate
Elapsed	Meter Pressure	Volume Initial	Volume Final	Sample Volume	Outlet Temp Initial	Outlet Temp Final	Volume Initial	Volume Final	Sample Volume	Outlet Temp Initial	Outlet Temp Final	Value	Variation	Std & Corr
(θ)	(P_m)	(V_{mi})	(V_{mf})	(V_m)	(t_{mi})	(t_{mf})	(V_{wi})	(V_{wf})	(V_w)	(t_{wi})	(t_{wf})	(Y)	(ΔY)	($Q_{std(corr)}$)
min	in H_2O	cubic feet	cubic feet	cubic feet	°F	°F	cubic feet	cubic feet	cubic feet	°F	°F			cfm
5	-5.2	23.915	30.903	6.988	77.0	77.0	766.630	773.430	6.800	74.5	74.5	0.9916	-0.00070	1.340
7	-5.2	30.903	40.711	9.808	77.0	78.8	773.430	782.960	9.530	74.5	74.5	0.9918	-0.00051	1.341
6	-5.2	40.711	49.102	8.391	78.8	80.6	782.960	791.100	8.140	74.5	74.5	0.9935	0.00121	1.337
										Passed Calibration Factor Var		0.9923	Averages	1.339
10	-3.5	68.915	79.732	10.817	78.8	80.6	810.600	821.120	10.520	74.5	75.0	0.9914	0.00036	1.036
6	-3.5	79.732	86.230	6.498	80.6	80.6	821.120	827.425	6.305	75.0	75.0	0.9903	-0.00074	1.034
6	-3.5	86.230	92.731	6.501	80.6	80.6	827.425	833.740	6.315	75.0	75.0	0.9914	0.00037	1.036
										Passed Calibration Factor Var		0.9910	Averages	1.035
8	-2.6	92.731	99.772	7.041	80.6	80.6	833.740	840.590	6.850	75.0	75.0	0.9907	-0.00095	0.843
7	-2.6	99.772	105.920	6.148	80.6	80.6	840.590	846.580	5.990	75.0	75.0	0.9921	0.00050	0.842
7	-2.6	105.920	112.058	6.138	80.6	82.4	846.580	852.550	5.970	75.0	75.0	0.9921	0.00045	0.839
										Passed Calibration Factor Var		0.9916	Averages	0.841
10	-1.8	112.058	118.236	6.178	82.4	80.6	852.550	858.595	6.045	75.0	75.0	0.9961	0.00013	0.595
12	-1.8	118.236	125.636	7.400	80.6	80.6	858.595	865.820	7.225	75.0	75.0	0.9923	-0.00368	0.593
10	-1.8	125.636	131.803	6.167	80.6	82.4	865.820	871.875	6.055	75.0	75.0	0.9995	0.00356	0.596
										Passed Calibration Factor Var		0.9959	Averages	0.595
15	-1.6	49.102	55.707	6.605	80.6	80.6	791.100	797.600	6.500	74.5	74.5	1.0006	0.00101	0.427
15	-1.6	55.707	62.291	6.584	80.6	80.6	797.600	804.080	6.480	74.5	74.5	1.0007	0.00111	0.426
15	-1.6	62.291	68.915	6.624	78.8	78.8	804.080	810.600	6.520	74.5	74.5	0.9974	-0.00212	0.428
										Passed Calibration Factor Var		0.9996	Averages	0.427
											Overall Average Y	0.9941		

Note: For Calibration Factor Y, the ratio of the reading of the calibration meter to the dry gas meter, acceptable tolerance of individual values from the average is +-0.02.

I certify that the above Dry Gas Meter was calibrated in accordance with USEPA Methods, CFR 40 Part 60, using the Precision Wet Test Meter # 11AE6, which in turn was calibrated using the American Bell Prover # 3785, certificate # F107, which is traceable to the National Bureau of Standards (N.I.S.T.).

Signature [illegible]

Date 7/2/08

Hot Car
M5 Probe

Pitot Tube Calibration Data Sheet Calculation Printout

Pitot Tube Identification Number: 4-001 **Date:** 4/4/2009

Calibrated by: T.Brado

"A" Side Calibration

Run No.	ΔP_{std}	ΔP_s	$C_{p(s)}$	Absolute Deviation
1	0.22	0.31	0.834	0.0038
2	0.21	0.30	0.828	0.0019
3	0.21	0.30	0.828	0.0019

Average $C_{p(s)}$ (Side A) **0.830** **0.0025**

"B" Side Calibration

Run No.	ΔP_{std}	ΔP_s	$C_{p(s)}$	Absolute Deviation
1	0.21	0.30	0.828	0.0006
2	0.22	0.32	0.821	0.0069
3	0.22	0.31	0.834	0.0063

Average $C_{p(s)}$ (Side B) **0.828** **0.0046**

Average $C_{p(s)}$ Difference **0.0025**

Average $C_{p(s)}$ $(C_{p(s)}(A)+C_{p(s)}(B))/2$ **0.829**

Acceptance Criteria

Average Deviation (Side A) : Must be ≤ 0.01 **PASS**

Average Deviation (Side B) : Must be ≤ 0.01 **PASS**

Average $C_{p(s)}$ Difference : Must be ≤ 0.01 **PASS**

Calibrator: Date: 4/4/09

Supervisor: Date: 4/6/09

Hot Car Pitot

Pitot Tube Calibration Data Sheet Calculation Printout

Pitot Tube Identification Number: 2030 **Date:** 3/5/2009

Calibrated by: T.Brado

"A" Side Calibration

Run No.	ΔP_{std}	ΔP_s	$C_{p(s)}$	Absolute Deviation
1	0.26	0.38	0.819	0.0070
2	0.27	0.40	0.813	0.0015
3	0.27	0.41	0.803	0.0085

Average $C_{p(s)}$ (Side A) **0.812** **0.0057**

"B" Side Calibration

Run No.	ΔP_{std}	ΔP_s	$C_{p(s)}$	Absolute Deviation
1	0.27	0.39	0.824	0.0043
2	0.27	0.39	0.824	0.0043
3	0.28	0.41	0.811	0.0086

Average $C_{p(s)}$ (Side B) **0.819** **0.0057**

Average $C_{p(s)}$ Difference **0.0075**

Average $C_{p(s)}$ $(C_{p(s)}(A)+C_{p(s)}(B))/2$ **0.816**

Acceptance Criteria

Average Deviation (Side A) : Must be ≤ 0.01 **PASS**

Average Deviation (Side B) : Must be ≤ 0.01 **PASS**

Average $C_{p(s)}$ Difference : Must be ≤ 0.01 **PASS**

Calibrator: Date: 3/5/09

Supervisor: Date: 3/6/09

Main Stack
M23
OTM-28

Pitot Tube Calibration Data Sheet Calculation Printout

Pitot Tube Identification Number: 5-001 **Date:** 4/4/2009

Calibrated by: T.Brado

"A" Side Calibration

Run No.	ΔP_{std}	ΔP_s	$C_{p(s)}$	Absolute Deviation
1	0.22	0.33	0.808	0.0039
2	0.23	0.34	0.814	0.0020
3	0.23	0.34	0.814	0.0020

Average $C_{p(s)}$ (Side A) **0.812** **0.0026**

"B" Side Calibration

Run No.	ΔP_{std}	ΔP_s	$C_{p(s)}$	Absolute Deviation
1	0.22	0.33	0.808	0.0020
2	0.22	0.33	0.808	0.0020
3	0.23	0.34	0.814	0.0039

Average $C_{p(s)}$ (Side B) **0.810** **0.0026**

Average $C_{p(s)}$ Difference **0.0020**

Average $C_{p(s)}$ $(C_{p(s)}(A)+C_{p(s)}(B))/2$ **0.811**

Acceptance Criteria

Average Deviation (Side A) : Must be ≤ 0.01 **PASS**

Average Deviation (Side B) : Must be ≤ 0.01 **PASS**

Average $C_{p(s)}$ Difference : Must be ≤ 0.01 **PASS**

Calibrator: Date: 4/4/09

Supervisor: Michael Mowry Date: 4/6/09

Main Stack
M5 HCl
OHM

Pitot Tube Calibration Data Sheet Calculation Printout

Pitot Tube Identification Number: 5-004 **Date:** 4/4/2009

Calibrated by: T.Brado

"A" Side Calibration

Run No.	ΔP_{std}	ΔP_s	$C_{p(s)}$	Absolute Deviation
1	0.23	0.33	0.826	0.0121
2	0.22	0.33	0.808	0.0061
3	0.22	0.33	0.808	0.0061

Average $C_{p(s)}$ (Side A) **0.814** **0.0081**

"B" Side Calibration

Run No.	ΔP_{std}	ΔP_s	$C_{p(s)}$	Absolute Deviation
1	0.21	0.32	0.802	0.0064
2	0.20	0.30	0.808	0.0001
3	0.21	0.31	0.815	0.0064

Average $C_{p(s)}$ (Side B) **0.808** **0.0043**

Average $C_{p(s)}$ Difference **0.0060**

Average $C_{p(s)}$ $(C_{p(s)}(A)+C_{p(s)}(B))/2$ **0.811**

Acceptance Criteria

Average Deviation (Side A) : Must be ≤ 0.01 **PASS**

Average Deviation (Side B) : Must be ≤ 0.01 **PASS**

Average $C_{p(s)}$ Difference : Must be ≤ 0.01 **PASS**

Calibrator: Date: 4/4/09

Supervisor: Date: 4/6/09

Main stack
Metals

Pitot Tube Calibration Data Sheet Calculation Printout

Pitot Tube Identification Number: AQS-6-003 **Date:** 3/5/2009

Calibrated by: T.Brado

"A" Side Calibration

Run No.	ΔP_{std}	ΔP_s	$C_{p(s)}$	Absolute Deviation
1	0.28	0.44	0.790	0.0004
2	0.27	0.43	0.784	0.0048
3	0.27	0.42	0.794	0.0044

Average $C_{p(s)}$ (Side A) **0.789** **0.0032**

"B" Side Calibration

Run No.	ΔP_{std}	ΔP_s	$C_{p(s)}$	Absolute Deviation
1	0.25	0.41	0.773	0.0064
2	0.27	0.43	0.784	0.0050
3	0.28	0.45	0.781	0.0014

Average $C_{p(s)}$ (Side B) **0.779** **0.0043**

Average $C_{p(s)}$ Difference **0.0098**

Average $C_{p(s)}$ $(C_{p(s)}(A)+C_{p(s)}(B))/2$ **0.784**

Acceptance Criteria

Average Deviation (Side A) : Must be ≤ 0.01 **PASS**

Average Deviation (Side B) : Must be ≤ 0.01 **PASS**

Average $C_{p(s)}$ Difference : Must be ≤ 0.01 **PASS**

Calibrator: Date: 3/5/09

Supervisor: Michael Mowery Date: 3/6/09

URS

DRY GAS METER CALIBRATION SPREADSHEET

CONTROL BOX ID:	URS 001	CALIBRATED BY:	R. Raymond
CALIBRATION STANDARD:	Secondary	AMBIENT TEMPERATURE (F):	72
CALIBRATION STANDARD ID:	361815	AMBIENT PRESSURE (In Hg):	29.94
DATE CALIBRATED:	2/2/2009	Secondary Standard Correction Factor	0.9941

GAS VOLUME

Setting (delta H)	Gas Volume Metered (ft3)	Gas Volume Corrected (ft3) Vw	Gas Volume DGM (ft3) Vd
0.5	5	4.971	5.072
1.0	5	4.971	5.121
2.0	10	9.941	10.315
3.0	10	9.941	10.360
4.0	10	9.941	10.415

TEMPERATURE

Calibrator Temperature (F) Tw		Average DGM (F) Td
63.0		63.0
63.0		66.0
63.0		69.0
63.0		72.0
64.0		74.0

CALCULATIONS

Time (min)	Gamma (Y)	Delta H@
12.50	0.9786	1.7511
9.00	0.9738	1.8051
12.43	0.9700	1.7119
10.23	0.9689	1.7295
8.57	0.9632	1.6184
	Avg Y	Avg Delta H@
	0.9710	1.7232
	0.9510	1.5232
Tolerances	0.9910	1.9232

Y - Ratio of Accuracy of Wet Test Meter Tolerance = +/- 0.02

Delta H@ - Orifice Pressure Differential that Yields 0.75 CFM

Is Unit Within Calibration Tolerances? YES

Calibrator: _____ Date: 2-2-09

Approved by: Michael Morris Date: 2-2-09

URS

DRY GAS METER CALIBRATION SPREADSHEET

CONTROL BOX ID:	URS 001	CALIBRATED BY:	R. Raymond
CALIBRATION STANDARD:	Secondary	AMBIENT TEMPERATURE (F):	69
CALIBRATION STANDARD ID:	361815	AMBIENT PRESSURE (In Hg):	29.87
DATE CALIBRATED:	4/22/2009	Secondary Standard Correction Factor	0.9941

GAS VOLUME

Setting (delta H)	Gas Volume Metered (ft3)	Gas Volume Corrected (ft3) Vw	Gas Volume DGM (ft3) Vd
0.5	5	4.971	5.141
1.0	5	4.971	5.154
2.0	10	9.941	10.377
3.0	10	9.941	10.431
4.0	10	9.941	10.436

TEMPERATURE

Calibrator Temperature (F) Tw		Average DGM (F) Td
63.0		66.0
63.0		66.0
64.0		71.0
64.0		73.0
64.0		75.0

CALCULATIONS

Time (min)	Gamma (Y)	Delta H@
12.48	0.9712	1.7396
9.04	0.9675	1.8255
12.52	0.9660	1.7409
10.18	0.9623	1.7200
8.58	0.9631	1.6230
	Avg Y	Avg Delta H@
	0.9660	1.7298
	0.9460	1.5298
Tolerances	0.9860	1.9298

Y - Ratio of Accuracy of Wet Test Meter Tolerance = +/- 0.02

Delta H@ - Orifice Pressure Differential that Yields 0.75 CFM

Is Unit Within Calibration Tolerances? YES

Calibrator: 4-22 OK Date: 4-22-09

Approved by: Date: 4/22/09

URS

DRY GAS METER CALIBRATION SPREADSHEET

CONTROL BOX ID:	URS 002	CALIBRATED BY:	R. Raymond
CALIBRATION STANDARD:	Secondary	AMBIENT TEMPERATURE (F):	68
CALIBRATION STANDARD ID:	361815	AMBIENT PRESSURE (In Hg):	30.03
DATE CALIBRATED:	3/9/2009	Secondary Standard Correction Factor	0.9941

GAS VOLUME

Setting (delta H)	Gas Volume Metered (ft3)	Gas Volume Corrected (ft3) Vw	Gas Volume DGM (ft3) Vd
0.5	5	4.971	4.978
1.0	5	4.971	5.021
2.0	10	9.941	10.131
3.0	10	9.941	10.163
4.0	13	12.923	13.257

Calibrator Temperature (F) Tw	Average DGM (F) Td
64.0	69.0
64.0	70.0
64.0	73.0
64.0	76.0
65.0	78.0

CALCULATIONS

Time (min)	Gamma (Y)	Delta H@
12.40	1.0068	1.7050
8.59	0.9988	1.6333
12.54	0.9932	1.7306
10.26	0.9933	1.7281
11.44	0.9893	1.6951
	Avg Y	Avg Delta H@
	0.9963	1.6984
	0.9763	1.4984
Tolerances	1.0163	1.8984

Y - Ratio of Accuracy of Wet Test Meter Tolerance = +/- 0.02

Delta H@ - Orifice Pressure Differential that Yields 0.75 CFM

Is Unit Within Calibration Tolerances? YES

Calibrator: _____ Date: 3-9-09

Approved by: _____ Date: 3-10-09

URS

DRY GAS METER CALIBRATION SPREADSHEET

CONTROL BOX ID:	URS 002	CALIBRATED BY:	R. Raymond
CALIBRATION STANDARD:	Secondary	AMBIENT TEMPERATURE (F):	66
CALIBRATION STANDARD ID:	361815	AMBIENT PRESSURE (In Hg):	29.66
DATE CALIBRATED:	4/21/2009	Secondary Standard Correction Factor	0.9941

GAS VOLUME

Setting (delta H)	Gas Volume Metered (ft3)	Gas Volume Corrected (ft3) Vw	Gas Volume DGM (ft3) Vd
0.5	5	4.971	5.028
1.0	5	4.971	5.066
2.0	10	9.941	10.214
3.0	11	10.935	11.310
4.0	10	9.941	10.296

Calibrator Temperature (F) Tw		Average DGM (F) Td
63.0		69.0
63.0		70.0
63.0		73.0
63.0		75.0
63.0		77.0

CALCULATIONS

Time (min)	Gamma (Y)	Delta H@
13.02	0.9987	1.8960
9.03	0.9918	1.8205
12.53	0.9870	1.7428
11.25	0.9817	1.7351
9.01	0.9816	1.7886
	Avg Y	Avg Delta H@
	0.9882	1.7966
	0.9682	1.5966
Tolerances	1.0082	1.9966

Y - Ratio of Accuracy of Wet Test Motor Tolerance = +/- 0.02

Delta H@ - Orifice Pressure Differential that Yields 0.75 CFM

Is Unit Within Calibration Tolerances? YES

Calibrator: [signature] Date: 4-21-09

Approved by: [signature] Date: 4/21/09

URS

DRY GAS METER CALIBRATION SPREADSHEET

CONTROL BOX ID:	V	CALIBRATED BY:	R. Raymond
CALIBRATION STANDARD:	Secondary	AMBIENT TEMPERATURE (F):	73
CALIBRATION STANDARD ID:	361815	AMBIENT PRESSURE (In Hg):	30.4
DATE CALIBRATED:	2/23/2009	Secondary Standard Correction Factor	0.9941

GAS VOLUME

Setting (delta H)	Gas Volume Metered (ft3)	Gas Volume Corrected (ft3) Vw	Gas Volume DGM (ft3) Vd
0.5	5	4.971	5.298
1.0	5	4.971	5.317
2.0	11	10.935	11.772
3.0	10	9.941	10.742
4.0	10	9.941	10.754

TEMPERATURE

Calibrator Temperature (F) Tw		Average DGM (F) Td
70.0		75.0
70.0		77.0
71.0		82.0
71.0		85.0
71.0		87.0

CALCULATIONS

Time (min)	Gamma (Y)	Delta H@
13.10	0.9459	1.9015
9.14	0.9449	1.8444
14.32	0.9436	1.8606
10.35	0.9430	1.7544
9.09	0.9431	1.7977
	Avg Y	Avg Delta H@
	0.9441	1.8317
	0.9241	1.6317
Tolerances	0.9641	2.0317

Y - Ratio of Accuracy of Wet Test Meter Tolerance = +/- 0.02

Delta H@ - Orifice Pressure Differential that Yields 0.75 CFM

Is Unit Within Calibration Tolerances? YES

Calibrator: _____ Date: 2-23-09

Approved by: _____ Date: 2/23/09

URS

DRY GAS METER CALIBRATION SPREADSHEET

CONTROL BOX ID:	V	CALIBRATED BY:	R. Raymond
CALIBRATION STANDARD:	Secondary	AMBIENT TEMPERATURE (F):	69
CALIBRATION STANDARD ID:	361815	AMBIENT PRESSURE (In Hg):	29.87
DATE CALIBRATED:	4/22/2009	Secondary Standard Correction Factor	0.9941

GAS VOLUME

Setting (delta H)	Gas Volume Metered (ft3)	Gas Volume Corrected (ft3) Vw	Gas Volume DGM (ft3) Vd
0.5	5	4.971	5.368
1.0	5	4.971	5.368
2.0	10	9.941	10.748
3.0	10	9.941	10.561
4.0	10	9.941	10.562

TEMPERATURE

Calibrator Temperature (F) Tw		Average DGM (F) Td
72.0		80.0
72.0		81.0
72.0		84.0
72.0		77.0
72.0		80.0

CALCULATIONS

Time (min)	Gamma (Y)	Delta H@
13.08	0.9387	1.9259
9.11	0.9393	1.8650
13.12	0.9411	1.9235
10.20	0.9432	1.7666
8.57	0.9460	1.6535
	Avg Y	Avg Delta H@
	0.9417	1.8269
	0.9217	1.6269
Tolerances	0.9617	2.0269

Y - Ratio of Accuracy of Wet Test Meter Tolerance = +/- 0.02

Delta H@ - Orifice Pressure Differential that Yields 0.75 CFM

Is Unit Within Calibration Tolerances? YES

Calibrator: _____ Date: 4-22-09

Approved by: _____ Date: 4/22/09

Airgas

Airgas Speciality Gases
12722 S. Wentworth Avenue
Chicago, IL 60628
1-773-785-3000
FAX: 1-773-785-1928
www.airgas.com

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E02NI99E15A3576	Reference Number:	54-124144094-1
Cylinder Number:	CC7488	Cylinder Volume:	144 Cu.Ft.
Laboratory:	ASG - Chicago - IL	Cylinder Pressure:	2015 PSIG
Analysis Date:	Jul 09, 2008	Valve Outlet:	660

Expiration Date: Jul 09, 2010

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

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
NITRIC OXIDE	90.00 PPM	89.00 PPM	G1	+/- 1% NIST Traceable
NITROGEN	Balance			

Total oxides of nitrogen	89.00 PPM	For Reference Only

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM	2786	CC220043	95.96PPM NITRIC OXIDE/NITROGEN	Sep 01, 2010

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
HORIBA 510	NDIR	Jun 19, 2008

Triad Data Available Upon Request

Notes:

QA Approval

PRAXAIR

Praxair Distribution Mid-Atlantic LLC

145 Shimersville Road • Bethlehem, PA 18015 • Phone: 610.317.1608 • Fax: 610.758.8384

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:
PDI WHSE KNOXVILLE HUB
3020 E INDUSTRIAL PKWY
KNOXVILLE TN 37921

Doc Number: 00000003651
Order Number: 130496800 - 7
Customer P. O. Number:
Customer Reference Number: LB218

Fill Date: 10/28/2008
Part Number: NI SD47.5ME-AS
Lot Number: N/A
Cylinder Style & Outlet: AS 660
Cylinder Pressure & Volume: 2000 psi 140 cu ft

Certified Concentration:

Expiration Date: 11/25/2010
Cylinder Number: SA12660

			Analytical Uncertainty:
48.8	ppm	SULFUR DIOXIDE	± 1 %
	Balance	NITROGEN	

NOx ppm = N/A (NOX Values for Reference Only)

Certification Information: Certification Date: 11/25/2008 Term: 24 Months Expiration Date: 11/25/2010

1. This cylinder was certified according to the 1997 EPA Traceability Protocol, document #EPA-600/R-97/121, using procedure G1
2. Do not use this standard if pressure is less than 150 PSIG.

Analytical Data: (R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. Component: SULFUR DIOXIDE

Requested Concentration: 47.5 ppm
Certified Concentration: 48.8 ppm
Instrument Used: SIEMENS ULTRAMAT 6E S/N: 32-96
Analytical Method: NON-DISPERSIVE INFRARED
Last Multipoint Calibration: 11/7/2008

Reference Standard Type: GMIS
Ref. Std. Cylinder # : CC85955
Ref. Std. Conc: 52.4 PPM
Ref. Std. Traceable to SRM # : 1693a

First Analysis Data: Date: 11/17/2008

Z:	0	R:	52.05	C:	48.35	Conc:	48.5
R:	52.27	Z:	0	C:	48.47	Conc:	48.6
Z:	0	C:	48.66	R:	52.34	Conc:	48.8

UOM: PPM Mean Test Assay: 48.7 PPM

Second Analysis Data: Date: 11/25/2008

Z:	0	R:	51.89	C:	48.34	Conc:	48.8
R:	51.97	Z:	0	C:	48.35	Conc:	48.8
Z:	0	C:	48.32	R:	51.86	Conc:	48.8

UOM: PPM Mean Test Assay: 48.8 PPM

Analyzed by: Michelle Kostik

Certified by: 11-3-08

Information contained herein has been prepared at your request by qualified experts within GTS-Welco, Inc. While we believe that the information is accurate within the limits of the analytical methods employed and is complete to the extent of the specific analyses performed, we make no warranty or representation as to the suitability of the use of the information for any purpose. The information is offered with the understanding that any use of the information is at the sole discretion and risk of the user. In no event shall the liability of GTS-Welco, Inc., arising out of the use of the information contained herein exceed the fee established for providing such information.

Airgas

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Airgas Specialty Gases
6421 Monclova Road
Maumee, OH 43537-9760
(419) 893-7226
FAX: (419) 893-2963
www.airgas.com

Part Number:	E02NI99E15A0239	Reference Number:	113-124136020-2
Cylinder Number:	CC42997	Cylinder Volume:	144 Cu.Ft.
Laboratory:	ASG - Maumee - OH	Cylinder Pressure:	2015 PSIG
Analysis Date:	Apr 29, 2008	Valve Outlet:	660

Expiration Date: Apr 29, 2010

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

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
SULFUR DIOXIDE	90.00 PPM	92.04 PPM	G1	+/-1% NIST-traceable
NITROGEN	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM	071203	CC240184	496.2PPM SULFUR DIOXIDE/NITROGEN	May 01, 2011
NTRM	071202	CC240079	100.7PPM SULFUR DIOXIDE/NITROGEN	May 01, 2011

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
072-Horiba VIA-510	NDIR	Apr 11, 2008

Triad Data Available Upon Request

Notes:

QA Approval

Airgas

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Airgas Speciality Gases
12722 S. Wentworth Avenue
Chicago, IL 60628
1-773-785-3000
FAX: 1-773-785-1928
http://www.airgas.com

Part Number:	E02AI99E15A0277	Reference Number:	54-124085208-1
Cylinder Number:	CC15456	Cylinder Volume:	146 Cu.Ft.
Laboratory:	ASG - Chicago - IL	Cylinder Pressure:	2015 PSIG
Analysis Date:	Jan 18, 2007	Valve Outlet:	590

Expiration Date: Jan 18, 2010

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

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainity
PROPANE	45.000 PPM	45.10 PPM	G1	+/- 1% NIST Traceable
Air	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM	520	SG880914ALB	50.5PPM PROPANE/NITROGEN	Apr 01, 2010

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
VARIAN 3800	FID	Jan 10, 2007

Triad Data Available Upon Request

Notes:

Alan Carney

QA Approval

Airgas

Airgas Speciality Gases
12722 S. Wentworth Avenue
Chicago, IL 60628
1-773-785-3000
Fax 1-773-785-1928
http://www.airgas.com

Certificate of Analysis: EPA Protocol Gas Mixture

Cylinder Number:	CC146169	Reference Number:	54-124072001-5
Cylinder Pressure:	2000.6 PSIG	Expiration Date:	8/14/2009
Certification Date:	8/14/2006	Laboratory:	ASG - Chicago - IL

Certified Concentrations

Component	Concentration	Accuracy	Analytical Principle	Procedure
PROPANE	29.75 PPM	+/- 1%	FID	G1
Air	Balance			

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interferences.

Notes:

Do not use cylinder below 150 psig.

Approval Signature

Reference Standard Information

Type	Balance Gas	Component	Cyl.Number	Concentration
NTRM 00052008	NITROGEN	PROPANE	SG868167NB	50.5 PPM

Analytical Results

1st Component PROPANE

1st Analysis Date: 08/14/2006

R 50.5	S 29.79	Z 0	Conc 29.79 PPM
S 29.78	Z 0	R 50.62	Conc 29.70 PPM
Z 0	R 50.43	S 29.72	Conc 29.76 PPM
			AVG: 29.75 PPM

Airgas

Airgas Specialty Gases
12722 South Wentworth Avenue
Chicago, IL 60628
773-785-3000
FAX: 773-785-1928
http://www.airgas.com

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E02AI99E15A0461	Reference Number:	54-124118248-1
Cylinder Number:	XC0159798	Cylinder Volume:	146 Cu.Ft.
Laboratory:	ASG - Chicago - IL	Cylinder Pressure:	2015 PSIG
Analysis Date:	Dec 12, 2007	Valve Outlet:	590

Expiration Date: Dec 12, 2010

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

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
PROPANE	85.00 PPM	85.661 PPM	G1	97-1% NIST Traceable
Air	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM	51715	SG9101987ALB	103.6PPM PROPANE/	Jul 01, 2009

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet Nexus	FTIR	Dec 03, 2007

Triad Data Available Upon Request

Notes:

QA Approval

Airgas

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Airgas Speciality Gases
12722 S. Wentworth Avenue
Chicago, IL 60628
1-773-785-3000
FAX: 1-773-785-1928
http://www.airgas.com

Part Number:	E02NI99E15AC017	Reference Number:	54-124085328-4
Cylinder Number:	XC0218478	Cylinder Volume:	144 Cu.Ft.
Laboratory:	ASG - Chicago - IL	Cylinder Pressure:	2015 PSIG
Analysis Date:	Jan 23, 2007	Valve Outlet:	350

Expiration Date: Jan 23, 2010

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

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainity
CARBON MONOXIDE	50.000 PPM	50.209 PPM	G1	+/- 2% NIST Traceable
NITROGEN	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM	980503	SG9174863BAL	50.46PPM CARBON MONOXIDE/NITROGEN	Oct 02, 2010

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet Nexus	FTIR	Jan 08, 2007

Triad Data Available Upon Request

Notes:

QA Approval

Airgas

Airgas Speciality Gases
12722 S. Wentworth Avenue
Chicago, IL 60628
1-773-785-3000
FAX: 1-773-785-1928
www.airgas.com

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E02NI99E15A0077	Reference Number:	54-124154160-2
Cylinder Number:	CC203335	Cylinder Volume:	144 Cu.Ft.
Laboratory:	ASG - Chicago - IL	Cylinder Pressure:	2015 PSIG
Analysis Date:	Oct 17, 2008	Valve Outlet:	350

Expiration Date: Oct 17, 2011

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

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
CARBON MONOXIDE	100.0 PPM	99.28 PPM	G1	+/- 1% NIST Traceable
NITROGEN	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM/CO	5120408	CC180103	99.49PPM CARBON MONOXIDE/	Feb 02, 2009

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet Nexus	FTIR	Oct 08, 2008

Triad Data Available Upon Request

Notes:

QA Approval

Airgas

Airgas Speciality Gases
12722 S. Wentworth Avenue
Chicago, IL 60628
1-773-785-3000
FAX: 1-773-785-1928
www.airgas.com

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E03NI77E15A01N3	Reference Number:	54-124154172-1
Cylinder Number:	CC2603	Cylinder Volume:	153 Cu.Ft.
Laboratory:	ASG - Chicago - IL	Cylinder Pressure:	2015 PSIG
Analysis Date:	Oct 09, 2008	Valve Outlet:	590

Expiration Date: Oct 09, 2011

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

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
OXYGEN	10.00 %	9.960 %	G1	1.1% NIST Traceable
CARBON DIOXIDE	12.50 %	12.43 %	G1	1.1% NIST Traceable
NITROGEN	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM/CO2	080806	SG9161059BAL	15.862% CARBON DIOXIDE/	May 01, 2010
NTRM/O2	82658	SG9168304BAL	16.04% OXYGEN/	Jan 01, 2010

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
HORIBA 510	NDIR	Oct 08, 2008
(P-1) CAI-110	Paramagnetic	Oct 08, 2008

Triad Data Available Upon Request

Notes:

B. Gaba

QA Approval

Airgas

Airgas Specialty Gases
12722 S. Wentworth Avenue
Chicago, IL 60628
1-773-785-3000
FAX: 1-773-785-1928
www.airgas.com

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E03NI60E15A1968	Reference Number:	54-124119942-2
Cylinder Number:	CC144573	Cylinder Volume:	159 Cu.Ft.
Laboratory:	ASG - Chicago - IL	Cylinder Pressure:	2015 PSIG
Analysis Date:	Dec 28, 2007	Valve Outlet:	590

Expiration Date: Dec 28, 2010

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

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty
CARBON DIOXIDE	18.00 %	18.97 %	G1	+/- 1% NIST Traceable
OXYGEN	21.00 %	20.95 %	G1	+/- 1% NIST Traceable
NITROGEN	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM	60608	CC206134	22.51% OXYGEN/NITROGEN	May 01, 2010
NTRM	101705	SG9169340BAL	17.89% CARBON DIOXIDE/	May 01, 2010

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
HORIBA 510	NDIR	Dec 03, 2007
CAI-110	Paramagnetic	Dec 03, 2007

Triad Data Available Upon Request

Notes:

QA Approval

PRAXAIR

Praxair Distribution Mid-Atlantic LLC

145 Shimersville Road • Bethlehem, PA 18015 • Phone: 610.317.1608 • Fax: 610.758.8384

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

PDI WHSE KNOXVILLE HUB
3020 E INDUSTRIAL PKWY
KNOXVILLE TN 37921

Doc Number: 00000003577
Order Number: 130496800 6
Customer P. O. Number:
Customer Reference Number: LB216

Fill Date: 10/27/2008
Part Number: NI NO47.5ME-AS
Lot Number: N/A
Cylinder Style & Outlet: AS 660
Cylinder Pressure & Volume: 2000 psi 140 cu ft

Certified Concentration:

Expiration Date: 11/14/2010
Cylinder Number: CC232136

			Analytical Uncertainty:
47.4	ppm	NITRIC OXIDE	±1 %
	Balance	NITROGEN	

NOx ppm = 47.4 (NOX Values for Reference Only)

Certification Information: Certification Date: 11/14/2008 Term: 24 Months Expiration Date: 11/14/2010

1. This cylinder was certified according to the 1997 EPA Traceability Protocol, document #EPA-600/R-97/121, using procedure G1
2. Do not use this standard if pressure is less than 150 PSIG.

Analytical Data: (R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. Component: NITRIC OXIDE

Requested Concentration: 47.5 ppm
Certified Concentration: 47.4 ppm
Instrument Used: ECOPHYSICS CLD 822 S S/N 82250350
Analytical Method: CHEMILUMINESCENCE
Last Multipoint Calibration: 11/10/2008

Reference Standard Type: GMIS
Ref. Std. Cylinder #: SA16186
Ref. Std. Conc. 49.6 PPM
Ref. Std. Traceable to SRM #: 1684b

First Analysis Date:						Date:	10/31/2008
Z:	0	R:	49.62	C:	47.41	Conc:	47.4
R:	49.6	Z:	0	C:	47.4	Conc:	47.5
Z:	0	C:	47.45	R:	49.5	Conc:	47.5
UOM:	PPM			Mean Test Assay:			47.5 PPM

Second Analysis Data:						Date:	11/14/2008
Z:	0	R:	49.86	C:	47.7	Conc:	47.5
R:	49.85	Z:	0	C:	47.65	Conc:	47.4
Z:	0	C:	47.68	R:	49.77	Conc:	47.5
UOM:	PPM			Mean Test Assay:			47.4 PPM

Analyzed by: Melissa Santana

Certified by: 11-19-08

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Appendix G

Intent to Test Notification
Haverhill North Coke Company

March 6, 2009

Prepared for:

Haverhill North Coke Company
2446 Gallia Pike
Franklin Furnace, Ohio 45629

INTENT TO TEST NOTIFICATION
HAVERHILL NORTH COKE COMPANY

Prepared for:

Haverhill North Coke Company
2446 Gallia Pike
Franklin Furnace, Ohio 45629

Prepared by:

URS Corporation
1093 Commerce Park Drive, Suite 100
Oak Ridge, Tennessee 37830
Doc. #0812051

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ACRONYMS

CO	Carbon Monoxide
CEMS	Continuous Emissions Monitoring System
EPA	Environmental Protection Agency
HAP	Hazardous Air Pollutant
HNCC	Haverhill North Coke Company
HRSG	Heat Recovery Steam Generator
MACT	Maximum Achievable Control Technology
OEPA	Ohio Environmental Protection Agency
NO_x	Nitrogen Oxides
SO_2	Sulfur Dioxide
VOC	Volatile Organic Compound

1.0 INTRODUCTION

Haverhill North Coke Company (HNCC) utilizes Sun Coke's Thompson heat recovery type of oven to manufacture metallurgical coke. In coke production from both heat recovery and byproduct ovens, the volatile fraction of the coal is driven off in a reducing atmosphere. Coke is essentially the remaining carbon and ash. With byproduct ovens, the volatiles and combustion products are collected downstream of the oven chamber and refined in a chemical plant to produce coke oven gas and other products such as tar, ammonia, and light oils. In heat recovery ovens, all the coal volatiles are oxidized.

Heat recovery steam generators (HRSGs) recover heat from the oven waste gases. The cooled gases pass through a lime spray dryer/baghouse system prior to being exhausted from the main stack. The oven pushing/charging machine travels on rails between ovens during the production cycle. A traveling hood/baghouse system controls emissions from coal charging that escape the ovens. On the opposite side of the ovens from the pushing/charging machine, coke is pushed into a flat push hot car that travels on rails from the oven to the quench tower. A multicyclone captures and controls emissions from pushing the coke into the car and during travel to the quench tower. A baghouse controls particulate emissions from the coke screening and crushing facilities in the coke processing area.

There are currently 200 ovens at HNCC that operate on a 48-hour coking cycle. The operating schedule is arranged such that that half the ovens are charged each day. For example, the 100 even-numbered ovens are charged one day and the 100 odd-numbered ovens are charged the next. The 50 ovens that are charged daily are currently performed over three eight-hour shifts.

The second 100 ovens at HNCC (P902) were started-up in 2008. Initial compliance tests for P902 are required by the January 2008 final permit to install modification. The sources listed in the permit that require compliance testing include the main waste gas stack, charging machine baghouse stack, pushing hot car multiclone stack, fugitive charging emissions, and fugitive pushing emissions.

The emission testing for the HRSG bypass vent stacks will be conducted during the first scheduled by-pass of a heat recovery steam generator. Therefore, the HRSG bypass vent stack is not included in this Intent to Test Notification. A separate Intent to Test Notification will provided to OEPA prior to the performance of the HRSG bypass vent stack compliance tests.

2.0 TESTING

Since emissions from the ovens are essentially continuous, testing on the main stack can be performed anytime. However, emissions from the charging machine and hot car can only be performed during production. Each production cycle, on a battery of ovens, consists of pushing and charging 25 ovens. The cycle, repeated at 12-hour intervals, is approximately 3 ½ hours long. The approach presented here for these units is to test the charging machine and hot car simultaneously during a production cycle.

2.1 Main Stack

The SO_2 and mercury emission rates are continuously monitored by the CEMS on the main stack. The system passed all the certification tests and is accurately monitoring SO_2 and mercury emissions. The additional SO_2 and mercury tests required by the permit are redundant and could be eliminated. HNCC requests that both of these tests be removed from the required compliance stack testing. Both tests are currently listed in this test program in the event that the request to remove is denied.

The test requirements are summarized in Table 2-1. The test methods for the main stack are essentially those listed in the permit as described here.

- The following pollutants will be measured simultaneously during each test run: solid particulate matter and condensable particulate matter (PM/CPM), acid gases (HCl), sulfur dioxide (SO_2), nitrogen oxides (NO_x), carbon monoxide (CO), volatile organic compound (VOC). The test runs will be a minimum of 1 hour. The continuous emissions monitoring systems (CEMS) will be calibrated prior to the start, and at the conclusion, of each PM/HCl test run.
- Solid particulates and condensable particulates will be measured in a combined EPA Method 5/OTM-28 train. The OTM-28 method is being substituted for Method 202 due to the known bias of Method 202 on sources containing SO_2. For permit purposes, all solid PM will be considered as PM_{10}. This will eliminate the need for a separate PM_{10} test.
- Lead will be measured in an EPA Method 29 sample train. Mercury will be measured in a separate ASTM D-6784-02 sample train. Both tests will be performed simultaneously for a minimum test run of 2 hours.

- The dioxin/furan (D/F) tests will be performed on the main stack along with the tests on the charging machine and hot car. Consequently, they D/F tests will take 3 days to complete. The D/F test runs will be 3 hours.

Table 2-1

Test Requirements

Emission Unit	Pollutant	Test Method	Comment
Main Stack - P902	Solid Particulates and Condensable Particulates	Combined EPA Methods 5 and OTM-28	OTM-28 is being used in place of Method 202
	PM_{10}	EPA Method 5	All solid PM will be considered as PM_{10}
	Acid Gases	EPA Method 26A	
	Lead	EPA Method 29	Includes HAP Metals
	Mercury	ASTM Method D6784-02	
	Dioxins/furans	EPA Method 23	
	SO_2	EPA Method 6C	Unnecessary, certified CEM for SO_2 on this stack
	NO_x	EPA Method 7E	
	CO	EPA Method 10	
	VOC	EPA Method 25A	Measured as Propane and referenced to carbon
	Traverse point layout	EPA Method 1	
	Gas flowrate	EPA Method 2	
	Gas molecular weight	EPA Method 3	
	Moisture	EPA Method 4	
Charging Baghouse - P902	Particulates	EPA Method 5	Sampling will be performed at 1 traverse point per oven.
	Traverse point layout	EPA Method 1	Initial velocity traverse.
	Gas flowrate	EPA Method 2	
	Gas molecular weight	EPA Method 3	
	Moisture	EPA Method 4	
Hot Car Multiclone - P902	Particulates and lead	Combined EPA Methods 5 and 12	Sample at single representative point. Safety considerations prevent traversing during test run.
	SO_2	Modified EPA Method 6C	Bag samples. Configuration and equipment travel prevent using CEMs.
	NO_x	Modified EPA Method 7E	Bag samples. See SO_2
	CO	Modified EPA Method 10	Bag samples. See SO_2
	VOC	Modified EPA Method 25A	Bag samples. See SO_2
	Traverse point layout	EPA Method 1	Perform velocity traverse and identify representative point while unit is stationary.
	Gas flowrate	EPA Method 2	
	Gas molecular weight	EPA Method 3	
	Moisture	EPA Method 4	

2.2 Charging Machine

The test requirements are summarized in Table 2-1. The testing for the charging machine is from the MACT standard. The MACT standard requires that testing only be performed while charging is actually occurring. Therefore, testing will be performed by operating the sampling train only when the oven door is open.

- Particulate matter tests will be performed during the production cycle on 3 consecutive days.
- The sample train will be operated at one traverse point for the first oven. The train will be moved to the next traverse point for the next oven. This will be repeated for all each oven tested.
- Since the sampling train cannot be accessed during the test run, the impinger box will be disconnected from the sample train and located in an accessible location on the charging machine. The outlet of the heated filter will be connected to the first impinger with an unheated silicone sample line. The sample line length will be at the correct length to prevent build up of condensation in the line. During the recovery of the test train, the sample will be shaken to recover any moisture that may have accumulated during the sample test run. By separating the impingers, the tester can access the impinger train to maintain an adequate supply of ice on the impingers to keep the impinger exit temperature below the required temperature of 68°.
- The MACT standard requires collecting a minimum of 30 cubic feet of sample. The sampling rate will be designed to achieve at least 30 cubic feet over the coarse of 25 ovens. In the event that the charging process is delayed or interrupted, and the target sample volume has been reached, the test train may be stopped and recovered. The emission calculations will take into account the number of actual ovens sampled during the test run.
- During each PM test run, visible emission (VE) readings will be taken on the baghouse exhaust stack and fugitive emissions from the oven doors. The VE readings performed on 5 ovens of each battery will be used for compliance purposes. The VE reader will perform VE readings on 5 ovens for fugitive emissions. The VE reader will then read VEs on the baghouse stack during 5 oven charges. Since the charging process normally takes approximately 3 minutes, this would provide a total of 15 minutes of readings per source.

2.3 Hot Car

The test requirements are summarized in Table 2-1. The MACT standard requires that testing only be performed while pushing is actually occurring and the fan and control device are engaged. Since the standard is for a mobile control device that captures emissions during travel,

the sampling train will only be operated as the coke is being pushed into the hot car and stopped as the coke is pushed into the quench tower.

The hot car is a "one of a kind" device, designed for the heat recovery coking technology. It was designed specifically for this process and presents several challenges for testing.

- As the hot car travels from the oven with the hot coke, it must travel under crossover ducts that transport waste gases to the HRSGs (see Figure 2-1). The length of the hot car stack does not meet EPA Method 1 requirements. However, as seen in the picture, the stack can only be extended a short distance because it must safely travel under the crossover ducts. Observe in Figure 2-2 that although the duct changes from square to round, there are no bends or significant transitions to disturb the gas streamlines. The stack can be safely extended 3 ½ ft. At this length, the sampling ports will meet the 2.0 diameter upstream and 0.5 diameter downstream criteria by measuring upstream from the point where the stack attaches to the fan.

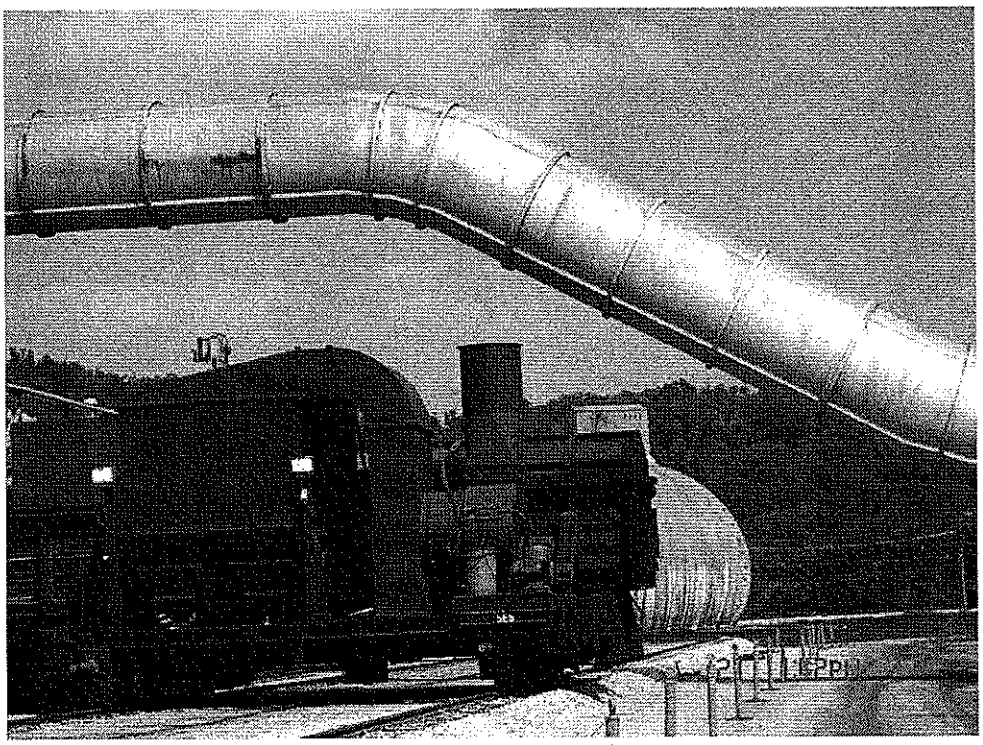


Figure 2-1. Hot Car under Crossover

Figure 2-2. Hot Car

- Due to the high temperatures and proximity to the hot coke and the hot ductwork, no platform can be installed and access on the hot car is prohibited during movement for personnel safety. That means it will not be possible to traverse the stack during the test. The following procedures will produce reasonable results and will allow testing as otherwise specified in the MACT standard.
- A complete velocity traverse, and cyclonic flow check, will be performed with the car parked, before the production cycle starts.
- A single representative sampling point will be located in the stack for performing the test run. Since the fan speed is constant, the velocity, temperature, and moisture measured at this point will have the same relationship to total flow as during the initial traverse. In addition to the sampling nozzle, the sampling probe will also include a pitot tube and thermocouple.
- The sampling train operator will be located in the hot car operator room along with sampling control console. The sampling train operator will start the sampling train when pushing starts at an oven. Velocity pressure and temperature will be recorded and the sampler parameters adjusted. The sample will continue to run throughout the oven push and while the hot car is moving to the quench tower. The sampling train operator will turn off sampler prior to pushing coke into quench tower.
- The sampling procedure will be repeated for each oven. In the event that the production cycle is interrupted or delayed and the required 30 cubic feet of sample volume has been reached, the sample run may be completed before all 25 ovens are

pushed. The total number of ovens tested will be used in the final emission rate calculations.

- The stack temperature and delta P readings recorded during the hot car sampling run will be used to calculate the stack gas flow rate to be used in determining mass emission rates from the hot car. The complete velocity traverse conducted prior to the first test run will establish the velocity profile.
- Also, due to the high temperatures and proximity to the hot coke and the hot ductwork, there is no place to safely mount and operate analyzers to measure SO_2, NO_x, CO, and VOC. Since the hot car moves up to 1,000 ft from the oven to the quench station, it is not possible to temporarily install a sampling line between the stack and the analyzers. This is an intermittent, and based on emission factors, relatively small source of emissions. Considering this, it is proposed to collect gas samples in Tedlar bags and immediately take them to a field CEMS trailer for analysis. Samples will be obtained from every second or third oven throughout the run.
- The gaseous sample for SO_2, NO_x, CO, and VOC will be collected by placing a 40 liter Tedlar sample bag into a protective box that will be attached to the hot car. A stainless steel probe will be inserted into the exhaust stack and connected to a Teflon sample line that will be connected to a leak-free sample pump. The inlet of the sample pump will be fitted with a one-way flow valve to prevent collected air from leaking back through the sample line. The outlet of the sample pump will be connected to the inlet of the sample pump. During the time that the particulate sample train is operating, the bag sample pump will be turned on to collect the sample gas in the Tedlar bag. Two bags will be collected sequentially during each test run.
- Particulates and lead will be measured in a combined train. Due to the movement of the hot car, hanging the entire test train on a monorail attached to the exhaust stack may cause the sample train to fall. To prevent this from happening the impinger train will be separated from the filter hot box and placed in a secure location on the hot car. Because lead is being tested in the sample train, an unheated Teflon sample line will be used to connect the outlet of the heated filter to the inlet of the first impinger. The sample line will be rinsed with same solutions as required for impinger recovery. The sample line rinse will then be added to the sample collected from the first impinger.
- Particulate matter tests will be performed during the production cycle on 3 consecutive days. One test per day will be performed.
- The sampling time will depend on the time required to push the ovens and travel to the quench tower. For example, if there are 25 pushes and each push and travel takes 2 minutes, the run will be 50 minutes long.
- During each test run, VE readings will be taken on the fugitive emissions from the hot car during the oven push and on the multiclone exhaust stack during the transit to the quench tower. Fugitive VE readings will be performed on 5 separate ovens during pushing. VE readings on the multiclone stack will be performed during 5 individual trips of the hot car to the quench tower.

3.0 TEST SCHEDULE

Emissions from the charging machine and hot car can only be sampled during production. Since each production cycle is limited to pushing and charging 25 ovens, it is proposed to obtain three test runs by testing these units simultaneously on Days 3, 4 and 5 as shown in Table 3-1. In addition, the three dioxin/furan runs will be performed on those same days. Since emissions from the ovens are essentially continuous, testing on the main stack can be performed anytime. The remainder of the tests on the main stack will be performed on Day 1 and 2.

Table 3-1

Test Schedule

Source	No. Runs	Performed on	Comment
Main Stack – P902	3	Day 1	PM, HCl, CPM, NO_x, CO, O_2, CO_2, VE
Main Stack – P902	3	Day 2	Lead, Mercury, HAP Metals
Main Stack – P902	3	Days 3-5	Dioxin/Furans - One run per day
Charging Baghouse – P902	3	Days 3-5	PM, VE - One run per day
Pushing Multicyclone - P902	3	Days 3-5	PM, Lead, NO_x, SO_2, CO, O_2, CO_2, VE – One run per day

4.0 TEST REPORT

The permit requires submission of the test report within 30 days of conducting the test. However, many of the laboratory analyses are complex and will not be available for up to 8 weeks after testing. Therefore, it will not be possible to submit the test report on this schedule. It is proposed that the report be submitted 21 days after the laboratory analyses are completed.

At the completion of the test project a final engineering report will be issued to HNNC for subsequent submittal to OEPA. Provided below is a general description of what will be contained in the report.

- A summary of the test results,
- A description of the technical approach used including EPA reference methods,
- QA/QC procedures,
- All permit-required plant process data,
- All raw data sheets,
- Production data for the process during the compliance tests,
- All calibration data, and
- Formulas used to calculate mass emission rates

5.0 INTENT TO TEST FORMS

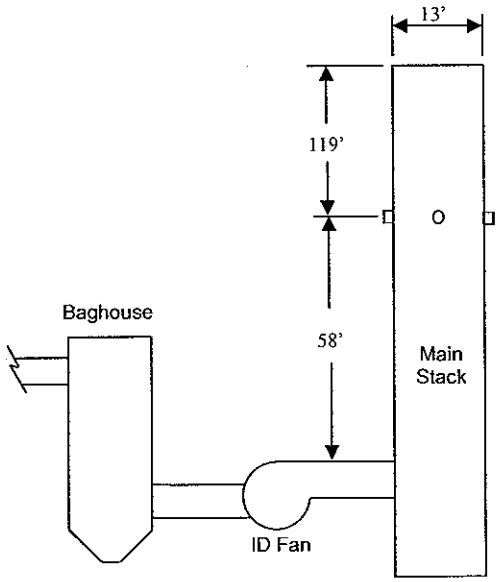
The Ohio EPA Intent to Test Forms are attached.

Appendix A
Schematic of Stacks

24 Sample Points Required
4 ports with 6 points each

Traverse Layout

Point	Distance (from wall)
1	3.28
2	10.45
3	18.41
4	27.61
5	39.00
6	55.54

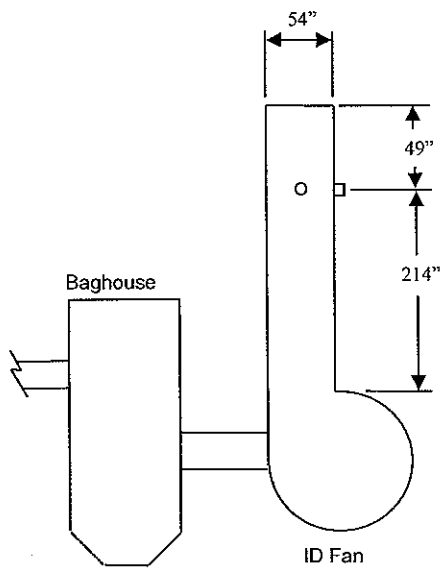


Schematic of Main Stack

16 Velocity Traverse Points Required
2 ports with 8 points each

Traverse Layout

Point	Distance (from wall)
1	1.73
2	5.67
3	10.48
4	17.44
5	36.56
6	43.52
7	48.33
8	52.27

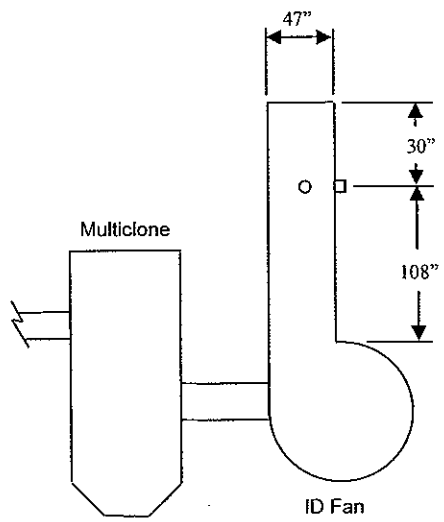


Schematic of Charging Machine Stack

16 Velocity Traverse Points Required
2 ports with 8 points each

Traverse Layout

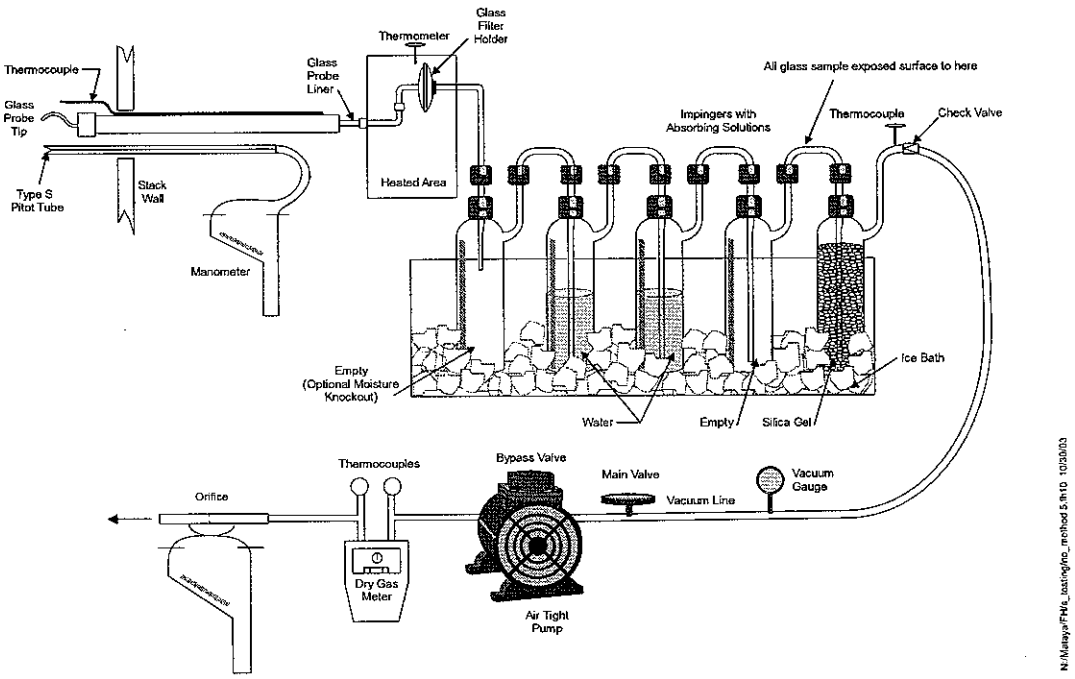
Point	Distance (from wall)
1	1.50
2	4.94
3	9.12
4	15.18
5	31.82
6	37.88
7	42.07
8	45.50



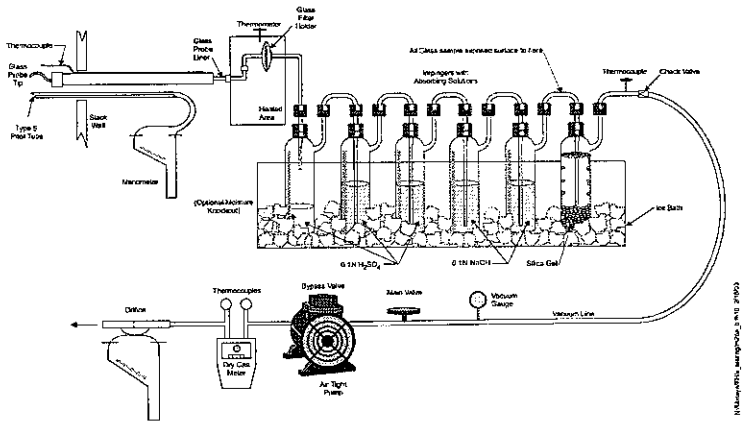
Schematic of Hot Car Stack

APPENDIX B

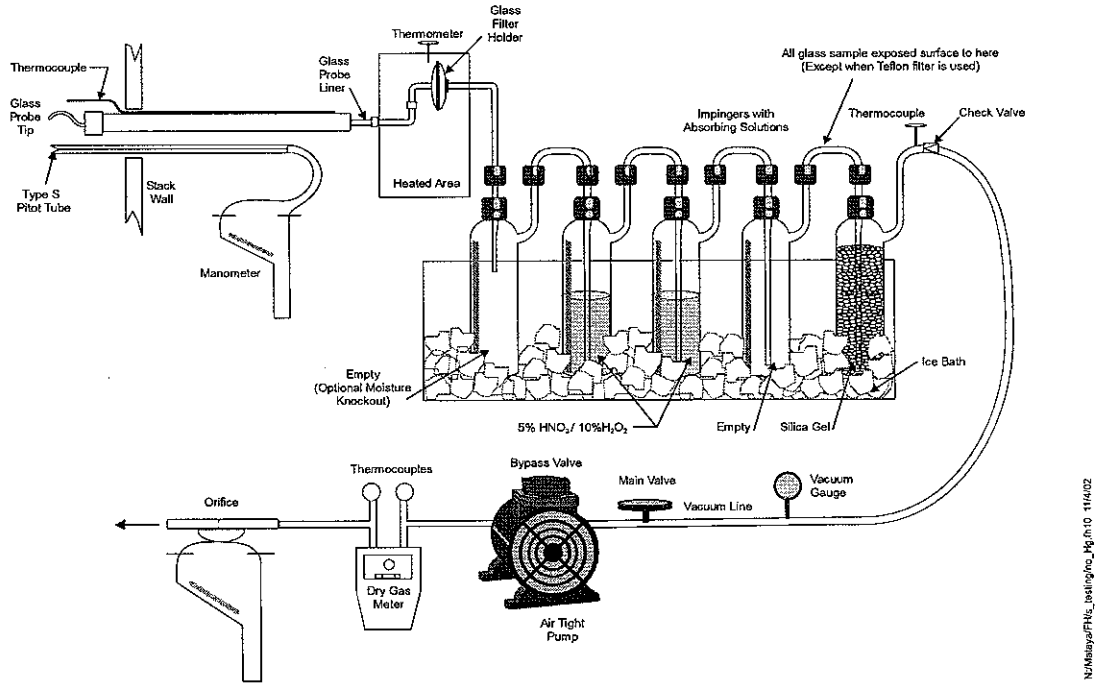
Schematic of Sample Trains



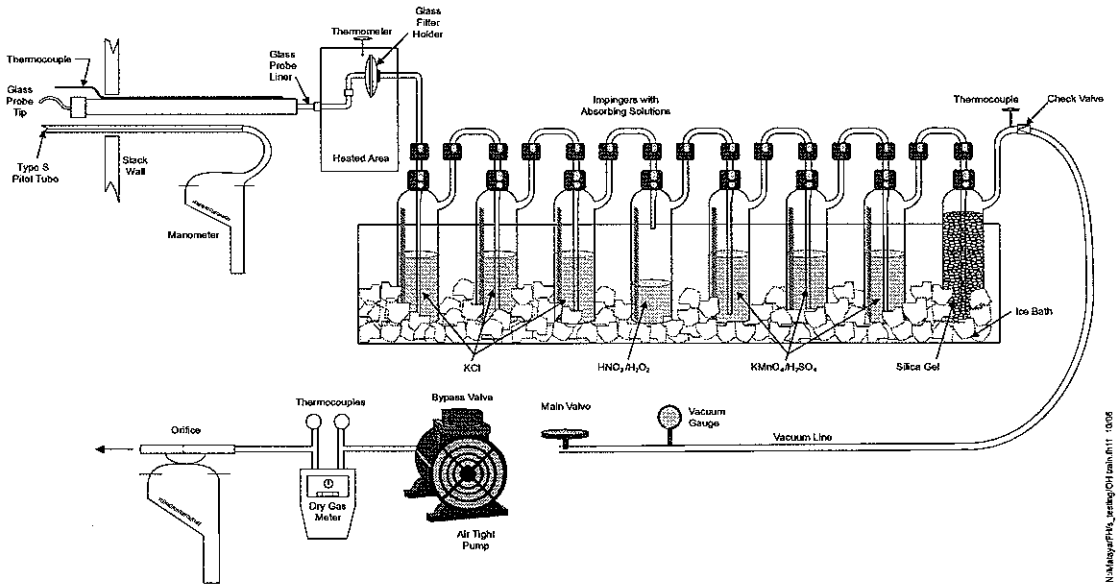
EPA Method 5 Test Train



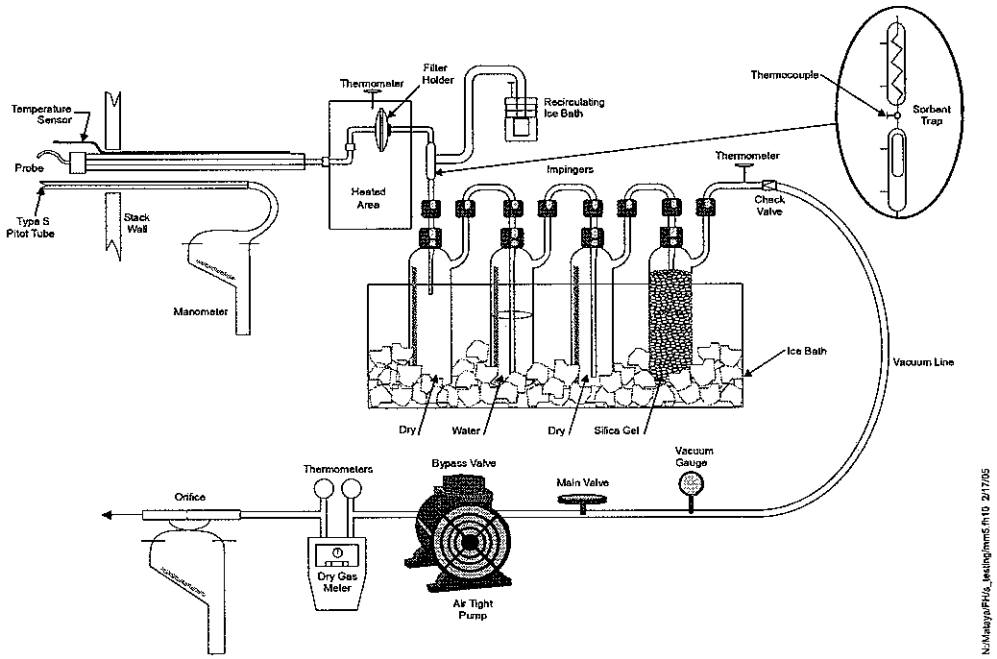
EPA Method 5/26A Test Train



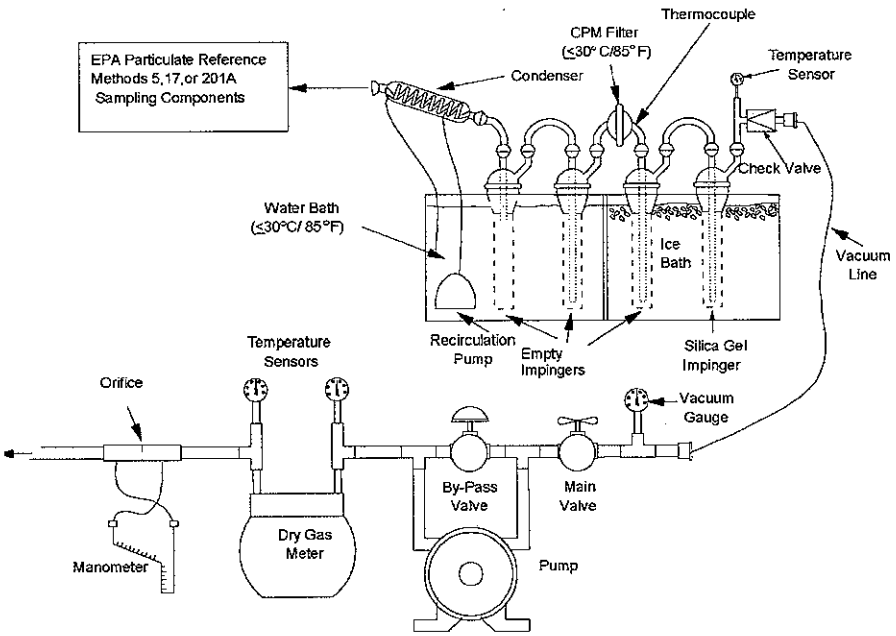
EPA Method 29 Test Train (without mercury)



ASTM Method D6784-02 Test Train



EPA Method 23 Test Train



EPA Method OTM-28