UNITED STATES STEEL CORPORATION
MON VALLEY COMPLEX
CLAIRTON PLANT
CLAIRTON, PENNSYLVANIA

Relative Accuracy Test Audit of the Continuous Emissions Monitoring Systems at United States Steel Corporation – Mon Valley Complex Clairton Plant – Boiler No. 1 and Boiler No. 2 Per Pennsylvania Department of Environmental Protection - Continuous Source Monitoring Manual and Code of Federal Regulations, Title 40, Part 75 (Continuous Emission Monitoring) Requirements

March 18, 2009 and March 19, 2009

APRIL 2009

APPENDIX B

Chester Reference Method Comparison Data

CHESTER ENGINEERS

"Tradition in Engineering Excellence Since 1910"

U.S. Steel Corporation - Mon Valley Complex
Clairton Plant - Clairton, PA
PART 75 RATA - Utilities Powerhouse - Boiler No. 1
STRATIFICATION TEST RESULTS using Chester data
MARCH 17, 2009

TIME OF TEST (EDT)	NO_x (ppm)	TRAVERSE POINT	Chester NO_x (ppm, avg.)	ABSOLUTE NO_x DELTA
11:50	183.7	1		
11:51	181.5	1	182.6	0.41
11:52	182.4	2		
11:53	184.5	2	183.45	1.26
11:54	183.7	3		
11:55	182.8	3	183.25	1.06
11:56	185.1	4		
11:57	185.8	4	185.45	3.26
11:58	185.6	5		
11:59	185	5	185.3	3.11
12:00	182.8	6		
12:01	183.4	6	183.1	0.91
12:02	186.8	7		
12:03	184.9	7	185.85	3.66
12:04	182.6	8		
12:05	184.6	8	183.6	1.41
12:06	188.7	9		
12:07	188.8	9	188.75	6.56
12:08	182.8	10		
12:09	173.4	10	178.1	4.09
12:10	173.7	11		
12:11	173	11	173.35	8.84
12:12	174.1	12		
12:13	172.8	12	173.45	8.74

Average of all TRAVERSE POINTS, $(NO_X)_{AVG}$: 182.19

MAXIMUM ppm DIFFERENCE OF $(NO_X)_i$ and $(NO_X)_{AVG}$: 8.84
WHERE, I IS THE TRAVERSE POINT LOCATION

MAXIMUM DIFFERENCE OF $(NO_X)_i$ and $(NO_X)_{AVG}$ AS A PERCENT 4.85
WHERE, I IS THE TRAVERSE POINT LOCATION

RESULTS INDICATE THAT 1 SAMPLING POINT IS NEEDED.

U.S. STEEL CORPORATION - MON VALLEY COMPLEX
CLAIRTON PLANT - UTILITIES POWERHOUSE
CLAIRTON, PENNSYLVANIA

TABLE 1a

BOILER NO. 1
O2 CEM PART 75 RATA RESULTS
MARCH 18, 2009

All Test Runs

Test Run No.	Test Date	Start Time (EDT)	Stop Time (EDT)	RM Test Run Avg. O2 (%)	USS CEM Test Run Avg. O2 (%)	Arithmetic Difference (%)
1	3/18/2009	9:07	9:27	9.3	9.2	0.1 <<<
2	3/18/2009	9:40	10:00	9.3	9.2	0.1 <<<
3	3/18/2009	10:16	10:36	9.3	9.2	0.1 <<<
4	3/18/2009	10:51	11:11	9.5	9.4	0.1 <<<
5	3/18/2009	11:23	11:43	9.5	9.5	0.0 <<<
6	3/18/2009	11:55	12:15	9.6	9.5	0.1 <<<
7	3/18/2009	12:25	12:45	9.6	9.5	0.1 <<<
8	3/18/2009	12:56	13:16	9.7	9.5	0.2 <<<
9	3/18/2009	13:29	13:49	9.7	9.6	0.1 <<<
10						
11						
12						

Results:			
	Data Points (n)		9
	Arithmetic Mean Difference (d)		0.106
	Standard Deviation (Sd)		0.047
	Confidence Coefficient (CC)		0.036
	Average RM Value (ARM)		9.5
For Semiannual RATAs	Relative Accuracy (RA - 1)	passed	1.5% <= 10%
or	Relative Accuracy (RA - 3)	passed	0.106 <= 1
For Annual RATAS	Relative Accuracy (RA - 1)	passed	1.5% <= 7.5%
or	Relative Accuracy (RA - 3)	passed	0.106 <= 0.7

Notes:
<<< = Test run included in statistical analysis
RM = Reference Method
USS CEM = U.S. Steel Clairton Plant's Continuous Emission Monitor
CC = (t value) x (Sd / n^0.5) where t value = 2.306 for n = 9
RA - 1 = (Abs(d) + Abs(CC)) / ARM
RA - 3 = Average Absolute Arithmetic Difference

Calculations according to U.S. EPA Performance Specification 2 and
PA DEP Continuous Source Monitoring Manual (Revision No. 6), Table II

CEM CALIBRATION ERROR TEST DATA

CLIENT	U.S. Steel - Mon Valley Complex	Page 1 of	2
PLANT SITE	Clairton Plant - Clairton, PA	ANALYZER	Advanced Pollution Instrumentation, Inc
TEST UNIT	Exhaust Stack, Boiler No. 1	INSTRUMENT	Chemiluminescent NOx Analyzer-Model 200AH
TEST DATE	March 18, 2009 OPERATOR DN HT	Serial No.	258
PROJECT NO. 09-6296-ENV, Task 102		Calibrated Span	451 (ppmv, dry)

Time (EDT)	Certified Cylinder Value (A) (ppmv, dry)	Analyzer Calibration Response (B) (ppmv, dry)	Absolute Arithmetic Difference (A - B) (ppmv, dry)	Calibration Error [100 * (A-B) / Calibrated Span] (%)	Δ as Percent of Cal. Gas Conc. [100 * (A-B) / Gas Conc.] (%)	Notes
0832	0	0.0	0.0	0.0	X	Zero Gas is [redacted]
0843	451.0	451.1	0.1	0.02	X	12.47 O2
0849	224.1	221.5	2.6	0.58	X	

Specifications: For O2, CO2, SO2, NOx, CO the Allowable Cal. Error < = 2% of Calibrated Span = 9.0 ppm NO
For THC the Allowable Calibration Error < = 5% of Calibration Gas

CEM SAMPLING SYSTEM BIAS AND DRIFT DATA

Mid-Level or High-Level Calibration Gas: 224.1 (ppmv, dry)
(Use the one closest to the actual stack gas concentration)

Time (EDT)	Calibration Gas	Analyzer Response (B) (ppmv, dry)	System Response (C) (ppmv, dry)	System Cal. Bias [100 * (C-B) / Span] (%)	Drift [100 * (Final C - Initial C) / Span] (%)	Response time for upscale bias gas = 60 sec. Notes
0903	Zero	0.0	0.2	0.04		
0856	Upscale	221.5	217.1	0.98		
0937	Zero	0.0	0.3	0.07	0.03	Run No. 1: 0907
0932	Upscale	221.5	215.6	1.31	0.33	0927
1012	Zero	0.0	0.6	0.14	0.07	Run No. 2: 0940
1008	Upscale	221.5	219.0	1.66	0.35	1000
1047	Zero	0.0	0.5	0.11	0.02	Run No. 3: 1016
1043	Upscale	221.5	212.2	1.84	0.18	1036
1119	Zero	0.0	0.6	0.14	0.02	Run No. 4: 1051
1115	Upscale	221.5	212.2	2.06	0.22	1111
1151	Zero	0.0	0.5	0.11	0.02	Run No. 5: 1123
1147	Upscale	221.5	212.0	2.11	0.04	1143
1222	Zero	0.0	0.7	0.16	0.04	Run No. 6: 1155
1219	Upscale	221.5	211.9	2.13	0.02	1215

Specifications: For O2, CO2, SO2, NOx & CO the System Cal. Bias < = 5% of the Calibrated Span = 22.6 ppm NO
For THC the System Cal. Bias < = 3% of the Calibrated Span
For O2, CO2, SO2, NOx, CO & THC the Drift < = 3% of the Calibrated Span = 13.5

CEM CALIBRATION ERROR TEST DATA

CLIENT	U.S. Steel - Mon Valley Complex	Page 2 of	2
PLANT SITE	Clairton Plant - Clairton, PA	ANALYZER	Advanced Pollution Instrumentation, Inc.
TEST UNIT	Exhaust Stack, Boiler No. 1	INSTRUMENT	Chemiluminescent NOx Analyzer-Model 200AH
TEST DATE	March 18, 2009 OPERATOR DN HT	Serial No.	258
PROJECT NO. 09-6296-ENV, Task 102		Calibrated Span	451 (ppmv, dry)

Time (EDT)	Certified Cylinder Value (A) (ppmv, dry)	Analyzer Calibration Response (B) (ppmv, dry)	Absolute Arithmetic Difference (A - B) (ppmv, dry)	Calibration Error [100 * (A-B) / Calibrated Span] (%)	Δ as Percent of Cal. Gas Conc. [100 * (A-B) / Gas Conc.] (%)	Notes
0832	0	0.0	0.0	0.0	X	Zero Gas is ~~10% N~~2
0843	451.0	451.1	0.1	0.02	X	12.47 O_2
0849	224.1	221.5	2.6	0.58	X	

Specifications: For O2, CO2, SO2, NOx, CO the Allowable Cal. Error < = 2% of Calibrated Span = 9.0 ppm NO
For THC the Allowable Calibration Error < = 5% of Calibration Gas

CEM SAMPLING SYSTEM BIAS AND DRIFT DATA

Mid-Level or High-Level Calibration Gas: 224.1 (ppmv, dry)
(Use the one closest to the actual stack gas concentration)

Time (EDT)	Calibration Gas	Analyzer Response (B) (ppmv, dry)	System Response (C) (ppmv, dry)	System Cal. Bias [100 * (C-B) / Span] (%)	Drift [100 * (Final C - Initial C) / Span] (%)	Response time for upscale bias gas = Notes
1252	Zero	0.0	0.8	0.18	0.02	Run No. 7: 1225
1249	Upscale	221.5	211.8	2.15	0.02	1245
1325	Zero	0.0	0.5	0.11	0.07	Run No. 8: 1256
1321	Upscale	221.5	211.6	2.20	0.04	1316
1358	Zero	0.0	0.5	0.11	0.0	Run No. 9: 1329
1354	Upscale	221.5	211.7	2.17	0.02	1349
	Zero	0.0				Run No. 10:
	Upscale					
	Zero	0.0				Run No. 11:
	Upscale					
	Zero	0.0				Run No. 12:
	Upscale					
	Zero	0.0				Run No. 13:
	Upscale					

Specifications: For O2, CO2, SO2, NOx & CO the System Cal. Bias < = 5% of the Calibrated Span = 22.6 ppm NO
For THC the System Cal. Bias < = 3% of the Calibrated Span
For O2, CO2, SO2, NOx, CO & THC the Drift < = 3% of the Calibrated Span = 13.5

CEM CALIBRATION ERROR TEST DATA

CLIENT	U.S. Steel - Mon Valley Complex	Page 1 of	2
PLANT SITE	Clairton Plant - Clairton, PA	ANALYZER	California Analytical Instruments
TEST UNIT	Exhaust Stack, Boiler No. 1	INSTRUMENT	Paramagnetic Oxygen Analyzer - Model 100P
TEST DATE	March 18, 2009 OPERATOR DN HT	Serial No.	4306002
PROJECT NO.	09-6296-ENV, Task 102	Calibrated Span	24.88 (%, dry)

Time (EDT)	Certified Cylinder Value (A) (%, dry)	Analyzer Calibration Response (B) (%, dry)	Absolute Arithmetic Difference (A - B) (%, dry)	Calibration Error [100 * (A-B) / Calibrated Span] (%)	Δ as Percent of Cal. Gas Conc. [100 * (A-B) / Gas Conc.] (%)	Notes
0849	0.0	0.0	0.0	0.0	X	Zero Gas is [redacted]2
0829	24.88	24.9	0.02	0.08	X	224.1 NO
0832	12.47	12.4	0.07	0.28	X	

Specifications: For O2, CO2, SO2, NOx, CO the Allowable Calibration Error <= 2% of Calibrated Span = 0.5 %O2
For THC the Allowable Calibration Error <= 5% of Calibration Gas

CEM SAMPLING SYSTEM BIAS AND DRIFT DATA

Mid-Level or High-Level Calibration Gas: 12.47 (%, dry)
(Use the one closest to the actual stack gas concentration)

Time (EDT)	Calibration Gas	Analyzer Response (B) (%, dry)	System Response (C) (%, dry)	System Cal. Bias [100 * (C-B) / Span] (%)	Drift [100 * (Final C - Initial C) / Span] (%)	Response time for upscale bias gas = 50 sec Notes
0856	Zero	0.0	0.0	0.0		
0903	Upscale	12.4	12.3	0.40		
0932	Zero	0.0	0.0	0.0	0.0	Run No. 1: 0907
0937	Upscale	12.4	12.3	0.40	0.0	0927
0008	Zero	0.0	0.0	0.0	0.0	Run No. 2: 0940
1012	Upscale	12.4	12.3	0.40	0.0	1000
1043	Zero	0.0	0.0	0.0	0.0	Run No. 3: 1016
1047	Upscale	12.4	12.3	0.40	0.0	1036
1115	Zero	0.0	0.0	0.0	0.0	Run No. 4: 1051
1119	Upscale	12.4	12.3	0.40	0.0	1111
1147	Zero	0.0	0.0	0.0	0.0	Run No. 5: 1123
1151	Upscale	12.4	12.3	0.40	0.0	1143
1219	Zero	0.0	0.0	0.0	0.0	Run No. 6: 1155
1222	Upscale	12.4	12.3	0.40	0.0	1215

Specifications: For O2, CO2, SO2, NOx & CO the System Cal. Bias <= 5% of the Calibrated Span = 1.2 %O2
For THC the System Cal. Bias <= 3% of the Calibrated Span
For O2, CO2, SO2, NOx, CO & THC the Drift <= 3% of the Calibrated Span = 0.7 %O2

USS [redacted] = Chester Clock - 62 min

CEM CALIBRATION ERROR TEST DATA

CLIENT	U.S. Steel - Mon Valley Complex	Page 2 of	2
PLANT SITE	Clairton Plant - Clairton, PA	ANALYZER	California Analytical Instruments
TEST UNIT	Exhaust Stack, Boiler No. 1	INSTRUMENT	Paramagnetic Oxygen Analyzer - Model 100P
TEST DATE	March 18, 2009 OPERATOR DN HT	Serial No.	4J06002
PROJECT NO.	09-6296-ENV, Task 102	Calibrated Span	24.88 (%, dry)

Time (EDT)	Certified Cylinder Value (A) (%, dry)	Analyzer Calibration Response (B) (%, dry)	Absolute Arithmetic Difference (A - B) (%, dry)	Calibration Error [100 * (A-B) / Calibrated Span] (%)	Δ as Percent of Cal. Gas Conc. [100 * (A-B) / Gas Conc.] (%)	Notes
0849	0.0	0.0	0.0	0.0	X	Zero Gas is ~~100% N2~~
0829	24.88	24.9	0.02	0.08	X	224.1 N2
0832	12.47	12.4	0.07	0.28	X	

Specifications: For O2, CO2, SO2, NOx, CO the Allowable Calibration Error < = 2% of Calibrated Span = 0.5 %O2
For THC the Allowable Calibration Error < = 5% of Calibration Gas

CEM SAMPLING SYSTEM BIAS AND DRIFT DATA

Mid-Level or High-Level Calibration Gas: 12.47 (%, dry)
(Use the one closest to the actual stack gas concentration)

Time (EDT)	Calibration Gas	Analyzer Response (B) (%, dry)	System Response (C) (%, dry)	System Cal. Bias [100 * (C-B) / Span] (%)	Drift [100 * (Final C - Initial C) / Span] (%)	Response time for upscale bias gas = Notes
1249	Zero	0.0	0.0	0.0	0.0	Run No. 7: 1225
1252	Upscale	12.4	12.3	0.40	0.0	1245
1321	Zero	0.0	0.0	0.0	0.0	Run No. 8: 1256
1325	Upscale	12.4	12.3	0.40	0.0	1316
1354	Zero	0.0	0.0	0.0	0.0	Run No. 9: 1329
1358	Upscale	12.4	12.3	0.40	0.0	1349
	Zero	0.0				Run No. 10:
	Upscale					
	Zero					Run No. 11:
	Upscale					
	Zero					Run No. 12:
	Upscale					
	Zero					Run No. 13:
	Upscale					

Specifications: For O2, CO2, SO2, NOx & CO the System Cal. Bias < = 5% of the Calibrated Span = 1.2 %O2
For THC the System Cal. Bias < = 3% of the Calibrated Span
For O2, CO2, SO2, NOx, CO & THC the Drift < = 3% of the Calibrated Span = 0.7 %O2

U.S. Steel Corporation - Mon Valley Works
Clairton Plant - Clairton, PA
PART 75 RATA - Utilities Powerhouse - Boiler No. 1
Chester Mobile Air Quality Laboratory Data

MARCH 18, 2009

Minute Data Averages

Hour (EDT)	NOx (ppm dry)	O2 (ppm dry)	Line #1 (248+/-25F)	Line #2 (248+/-25F)	Line #3 (248+/-25F)	Notes
8:25	0.3	20.7	249	246	251	Ambient Air
8:26	0.3	22	249	246	251	Ambient Air
8:27	0	24.9	249	246	251	Pre-Test Calibrations
8:28	0	25	249	246	251	Pre-Test Calibrations
8:29	0	**25**	249	246	251	**High O2/CO2 Span Gas**
8:30	0	18.9	249	246	251	Pre-Test Calibrations
8:31	0	12.4	249	246	251	Pre-Test Calibrations
8:32	**0**	**12.4**	249	246	251	**Mid O2/CO2 Span Gas**
8:33	0	7.3	249	246	251	Pre-Test Calibrations
8:34	371.2	0	249	246	251	Pre-Test Calibrations
8:35	455.1	0	249	246	251	Pre-Test Calibrations
8:36	455.5	0	249	246	251	Pre-Test Calibrations
8:37	455.7	0	249	246	251	Pre-Test Calibrations
8:38	456	0	249	246	251	Pre-Test Calibrations
8:39	456.1	-0.1	249	246	251	Pre-Test Calibrations
8:40	453.4	-0.1	249	246	251	Pre-Test Calibrations
8:41	451.6	-0.1	249	246	251	Pre-Test Calibrations
8:42	451.1	-0.1	249	245	251	Pre-Test Calibrations
8:43	**451.1**	-0.1	249	245	251	**High NOx Span Gas**
8:44	447.8	0.3	249	245	252	Pre-Test Calibrations
8:45	270.4	-0.1	249	245	251	Pre-Test Calibrations
8:46	221.3	0	249	245	251	Pre-Test Calibrations
8:47	221.6	0	249	244	252	Pre-Test Calibrations
8:48	221.6	0	249	244	252	Pre-Test Calibrations
8:49	**221.6**	0	249	244	252	**Mid NOx Span Gas**
8:50	211.7	5.2	249	244	252	Bias Checks
8:51	140.8	3.6	249	244	251	Bias Checks
8:52	217.8	0	248	243	251	Bias Checks
8:53	217.2	0	247	241	251	Bias Checks
8:54	216.9	0	246	240	251	Bias Checks
8:55	217.1	0	245	238	251	Bias Checks
8:56	**217.2**	**0**	244	236	251	**Mid NOx Span Gas**
8:57	217.3	4.1	243	235	250	Bias Checks
8:58	34.3	12.3	242	233	250	Bias Checks
8:59	0.8	12.4	242	232	250	Bias Checks
9:00	0.6	12.4	241	231	250	Bias Checks
9:01	0.4	12.4	241	230	250	Bias Checks
9:02	0.3	12.4	240	229	250	Bias Checks
9:03	**0.3**	**12.4**	240	228	250	**Mid O2/CO2 Span Gas**
9:04	0.3	6.2	240	227	250	Stack Gas
9:05	92.6	9.2	240	226	250	Stack Gas
9:06	138	9.3	241	226	251	Stack Gas
9:07	138.8	9.3	242	226	251	**Run #1**
9:08	137	9.6	243	226	251	**Run #1**
9:09	131.5	9.3	245	227	251	**Run #1**
9:10	134.7	9.3	246	228	252	**Run #1**
9:11	138.6	9.4	247	229	252	**Run #1**
9:12	134.6	9.2	248	230	252	**Run #1**
9:13	132.9	9	249	231	252	**Run #1**
9:14	134	9.2	249	231	252	**Run #1**
9:15	132.9	9.1	249	232	252	**Run #1**
9:16	132.6	9.1	249	233	252	**Run #1**
9:17	135	9.3	249	233	253	**Run #1**
9:18	136.7	9.2	249	233	253	**Run #1**

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U.S. Steel Corporation - Mon Valley Works
Clairton Plant - Clairton, PA
PART 75 RATA - Utilities Powerhouse - Boiler No. 1
Chester Mobile Air Quality Laboratory Data

MARCH 18, 2009

Minute Data Averages

Hour (EDT)	NOx (ppm dry)	O2 (ppm dry)	Line #1 (248+/-25F)	Line #2 (248+/-25F)	Line #3 (248+/-25F)	Notes
9:19	136.8	9.3	249	234	253	Run #1
9:20	136	9.2	249	234	252	Run #1
9:21	135.4	9.2	249	234	252	Run #1
9:22	135.3	9.2	249	234	252	Run #1
9:23	136.6	9.3	249	234	252	Run #1
9:24	138.1	9.4	249	234	252	Run #1
9:25	136.8	9.3	249	234	252	Run #1
9:26	135	9.3	249	234	252	Run #1
9:27	134.7	9.2	249	234	252	Run #1
	135.4	9.3	247.9	231.7	252.0	21 Min. Analyzer Average, Ca
	0.30	0.00				Avg. Zero Bias Check, Co
	216.40	12.40				Avg. Mid Span Bias Check, Cm
	224.1	12.47				Actual Mid Span Value, Cma
	140.1	9.3				Corrected Conc., Cstack
	0.234 (lb/MMBtu)		7766.5			NOx Emission Factor
9:28	133.5	5.8	249	234	251	Bias Checks
9:29	160	0	249	234	251	Bias Checks
9:30	215.9	0	248	233	251	Bias Checks
9:31	215.5	0	247	232	250	Bias Checks
9:32	**215.6**	**0**	246	230	250	Mid NOx Span Gas
9:33	210.1	3.9	245	228	250	Bias Checks
9:34	56.7	12.3	245	227	249	Bias Checks
9:35	0.8	12.4	244	225	249	Bias Checks
9:36	0.6	12.4	243	224	249	Bias Checks
9:37	**0.3**	**12.4**	243	223	249	Mid O2/CO2 Span Gas
9:38	4.8	8.4	242	222	249	Bias Checks
9:39	112.3	9.4	242	221	249	Stack Gas
9:40	138.6	9.3	243	221	249	Run #2
9:41	135.5	9.4	244	221	249	Run #2
9:42	132.2	9.3	245	221	250	Run #2
9:43	133.9	9.2	246	221	250	Run #2
9:44	135.8	9.2	247	222	250	Run #2
9:45	133.2	9.2	248	222	250	Run #2
9:46	132.7	9.1	249	223	250	Run #2
9:47	134.5	9.2	249	224	250	Run #2
9:48	133.8	9.5	249	224	251	Run #2
9:49	133.2	9.1	249	225	251	Run #2
9:50	136	9.2	249	226	251	Run #2
9:51	137.4	9.4	249	226	251	Run #2
9:52	135	9.3	249	227	251	Run #2
9:53	135.3	9.1	249	228	251	Run #2
9:54	135.7	9.3	249	228	251	Run #2
9:55	132.8	9.2	249	229	251	Run #2
9:56	131.3	9.2	249	229	251	Run #2
9:57	132	9.2	249	230	251	Run #2
9:58	133.8	9.3	249	230	251	Run #2
9:59	138.7	9.3	249	230	251	Run #2
10:00	139.5	9.4	249	230	251	Run #2
	134.8	9.3	248.0	225.6	Analyzer Aver	2
	0.50	0.00		Avg. Zero Bias Check, Co		

U.S. Steel Corporation - Mon Valley Works
Clairton Plant - Clairton, PA
PART 75 RATA - Utilities Powerhouse - Boiler No. 1
Chester Mobile Air Quality Laboratory Data

MARCH 18, 2009

Minute Data Averages

Hour (EDT)	NOx (ppm dry)	O2 (ppm dry)	Line #1 (248+/-25F)	Line #2 (248+/-25F)	Line #3 (248+/-25F)	Notes
	214.85	12.40		Avg. Mid Span Bias Check, Cm		
	224.1	12.47		Actual Mid Span Value, Cma		
	140.4	9.3		Corrected Conc., Cstack		
	0.237 (lb/MMBtu)		7847.2	NOx Emission Factor		
10:01	137.2	9.4	249	231	251	Stack Gas
10:02	135.8	5.9	249	231	251	Stack Gas
10:03	171.1	0	249	231	251	Bias Checks
10:04	214.2	0	248	231	251	Bias Checks
10:05	213.7	0	248	230	251	Bias Checks
10:06	213.9	0	247	228	250	Bias Checks
10:07	214	0	246	227	250	Bias Checks
10:08	**214.1**	**0**	245	226	250	**Mid NOx Span Gas**
10:09	214.3	0.6	244	225	250	Bias Checks
10:10	112.4	12.2	244	224	250	Bias Checks
10:11	1	12.4	243	223	250	Bias Checks
10:12	**0.7**	**12.4**	243	222	250	**Mid O2/CO2 Span Gas**
10:13	0.6	11.7	242	222	250	Bias Checks
10:14	36.4	8	242	221	250	Stack Gas
10:15	140.8	9.5	242	221	250	Stack Gas
10:16	139.6	9.3	244	221	251	**Run #3**
10:17	137.4	9.3	245	222	251	**Run #3**
10:18	136.3	9.1	246	223	251	**Run #3**
10:19	135.1	9.3	247	223	251	**Run #3**
10:20	132.2	9.2	248	224	252	**Run #3**
10:21	131.5	9.1	249	225	252	**Run #3**
10:22	134.9	9.2	249	226	252	**Run #3**
10:23	135.3	9.3	249	227	252	**Run #3**
10:24	131.5	9.2	249	228	252	**Run #3**
10:25	133.1	9.3	249	228	253	**Run #3**
10:26	136.2	9.4	249	229	253	**Run #3**
10:27	135.5	9.2	249	230	253	**Run #3**
10:28	134.4	9.2	249	230	253	**Run #3**
10:29	136	9.1	249	231	253	**Run #3**
10:30	138.5	9.4	249	231	253	**Run #3**
10:31	138	9.3	249	232	253	**Run #3**
10:32	138.1	9.3	249	232	253	**Run #3**
10:33	136.8	9.2	249	233	253	**Run #3**
10:34	135.5	9.4	249	233	253	**Run #3**
10:35	133.7	9.4	249	233	253	**Run #3**
10:36	133.8	9.3	249	233	253	**Run #3**
	135.4	9.3	248.3	228.3	252.4	**21 Min. Analyzer Average, Ca**
	0.65	0.00				**Avg. Zero Bias Check, Co**
	213.65	12.40				**Avg. Mid Span Bias Check, Cm**
	224.1	12.47				**Actual Mid Span Value, Cma**
	141.8	9.3				**Corrected Conc., Cstack**
	0.237 (lb/MMBtu)		7776.0			**NOx Emission Factor**
10:37	134.4	9.2	249	233	253	Stack Gas
10:38	110.3	0.9	249	233	252	Bias Checks
10:39	212.8	0	249	232	252	Bias Checks

U.S. Steel Corporation - Mon Valley Works
Clairton Plant - Clairton, PA
PART 75 RATA - Utilities Powerhouse - Boiler No. 1
Chester Mobile Air Quality Laboratory Data

MARCH 18, 2009

Minute Data Averages

Hour (EDT)	NOx (ppm dry)	O2 (ppm dry)	Line #1 (248+/-25F)	Line #2 (248+/-25F)	Line #3 (248+/-25F)	Notes
10:40	213.2	0	248	231	252	Bias Checks
10:41	213	0	247	229	251	Bias Checks
10:42	213.1	0	246	228	251	Bias Checks
10:43	**213.2**	**0**	246	226	251	**Mid NOx Span Gas**
10:44	138.9	10.5	245	225	251	Bias Checks
10:45	1.2	12.4	244	224	251	Bias Checks
10:46	0.8	12.4	244	222	250	Bias Checks
10:47	**0.6**	**12.4**	243	221	250	**Mid O2/CO2 Span Gas**
10:48	0.3	8.8	243	220	250	Bias Checks
10:49	108	9.3	243	219	251	Stack Gas
10:50	137.1	9.6	244	219	251	Stack Gas
10:51	134.3	9.5	245	219	251	**Run #4**
10:52	132.2	9.4	246	219	251	**Run #4**
10:53	131.7	9.1	247	220	251	**Run #4**
10:54	129.6	9.2	248	220	251	**Run #4**
10:55	128.8	9.2	249	220	251	**Run #4**
10:56	128.2	9.3	249	221	252	**Run #4**
10:57	130.5	9.1	249	222	252	**Run #4**
10:58	132	9.4	249	222	252	**Run #4**
10:59	131.8	9.4	249	222	252	**Run #4**
11:00	132	9.7	249	223	252	**Run #4**
11:01	131	9.4	249	223	252	**Run #4**
11:02	131.9	9.7	249	223	252	**Run #4**
11:03	133.6	9.6	249	223	252	**Run #4**
11:04	135.4	9.4	249	223	252	**Run #4**
11:05	133.8	9.4	249	224	252	**Run #4**
11:06	131.3	9.4	249	224	252	**Run #4**
11:07	132.8	9.3	249	224	252	**Run #4**
11:08	134.7	9.5	249	224	252	**Run #4**
11:09	133.3	9.5	249	224	252	**Run #4**
11:10	133.7	9.4	249	224	252	**Run #4**
11:11	135.6	9.7	249	224	252	**Run #4**
	132.3	9.4	248.5	222.3	251.8	**21 Min. Analyzer Average, Ca**
	0.60	0.00				**Avg. Zero Bias Check, Co**
	212.75	12.40				**Avg. Mid Span Bias Check, Cm**
	224.1	12.47				**Actual Mid Span Value, Cma**
	139.1	9.5				**Corrected Conc., Cstack**
	0.235 (lb/MMBtu)		7728.5			**NOx Emission Factor**
11:12	124.1	5.7	249	224	252	Stack Gas
11:13	158.7	0	249	224	251	Stack Gas
11:14	212.4	0	249	224	251	Bias Checks
11:15	**212.3**	**0**	248	223	251	**Mid NOx Span Gas**
11:16	212.4	2.8	247	221	251	Bias Checks
11:17	60.7	12.3	246	220	251	Bias Checks
11:18	0.9	12.4	246	219	250	Bias Checks
11:19	**0.6**	**12.4**	245	218	250	**Mid O2/CO2 Span Gas**
11:20	0.5	11.5	245	217	250	Bias Checks
11:21	105.8	9.4	245	216	251	Bias Checks
11:22	133.5	9.4	245	216	251	Stack Gas
11:23	132.6	9.3	246	216	251	**Run #5**
11:24	135.8	9.5	247	216	251	**Run #5**

U.S. Steel Corporation - Mon Valley Works
Clairton Plant - Clairton, PA
PART 75 RATA - Utilities Powerhouse - Boiler No. 1
Chester Mobile Air Quality Laboratory Data

MARCH 18, 2009

Minute Data Averages

Hour (EDT)	NOx (ppm dry)	O2 (ppm dry)	Line #1 (248+/-25F)	Line #2 (248+/-25F)	Line #3 (248+/-25F)	Notes
11:25	135	9.4	248	217	251	Run #5
11:26	132.9	9.4	249	218	251	Run #5
11:27	132.1	9.3	249	218	251	Run #5
11:28	133.1	9.6	249	219	251	Run #5
11:29	132.2	9.4	249	219	251	Run #5
11:30	135.6	9.5	249	220	252	Run #5
11:31	136.7	9.4	249	220	252	Run #5
11:32	136.7	9.6	249	221	252	Run #5
11:33	135.2	9.5	249	222	252	Run #5
11:34	133.7	9.4	249	222	252	Run #5
11:35	133.6	9.3	249	222	252	Run #5
11:36	134.5	9.4	249	222	252	Run #5
11:37	133.8	9.5	249	223	252	Run #5
11:38	132	9.4	249	223	252	Run #5
11:39	132.2	9.5	249	223	252	Run #5
11:40	134.5	9.7	249	223	252	Run #5
11:41	132.6	9.5	249	223	252	Run #5
11:42	133.1	9.7	249	223	252	Run #5
11:43	135	9.6	249	224	252	Run #5
	133.9	9.5	248.7	220.7	251.7	**21 Min. Analyzer Average, Ca**
	0.60	0.00				**Avg. Zero Bias Check, Co**
	212.20	12.40				**Avg. Mid Span Bias Check, Cm**
	224.1	12.47				**Actual Mid Span Value, Cma**
	141.2	9.5				**Corrected Conc., Cstack**
	0.240 (lb/MMBtu)		7735.8			**NOx Emission Factor**
11:44	130.3	8.2	249	224	252	Stack Gas
11:45	168.3	0.1	249	224	252	Bias Checks
11:46	212.3	0	249	225	252	Bias Checks
11:47	**212.1**	**0**	249	224	251	**Mid NOx Span Gas**
11:48	207.1	5.5	248	223	251	Bias Checks
11:49	20	12.3	247	222	251	Bias Checks
11:50	0.8	12.4	247	221	250	Bias Checks
11:51	**0.6**	**12.4**	246	220	250	**Mid O2/CO2 Span Gas**
11:52	9	11.3	246	219	250	Bias Checks
11:53	113.1	9.8	246	219	250	Bias Checks
11:54	136	9.5	247	218	250	Stack Gas
11:55	137.9	9.8	248	218	250	Run #6
11:56	134.6	9.7	249	219	251	Run #6
11:57	134.8	9.5	249	219	251	Run #6
11:58	136.3	9.6	249	220	251	Run #6
11:59	132.7	9.4	249	221	251	Run #6
12:00	132.5	9.5	249	221	251	Run #6
12:01	132.9	9.3	249	222	251	Run #6
12:02	136	9.6	249	223	251	Run #6
12:03	134	9.5	250	223	251	Run #6
12:04	131.9	9.6	250	224	251	Run #6
12:05	131.1	9.5	250	224	251	Run #6
12:06	133.3	9.6	250	224	251	Run #6
12:07	134.8	9.6	250	225	251	Run #6
12:08	134.6	9.8	250	225	251	Run #6
12:09	131.1	9.5	250	225	251	Run #6

U.S. Steel Corporation - Mon Valley Works
Clairton Plant - Clairton, PA
PART 75 RATA - Utilities Powerhouse - Boiler No. 1
Chester Mobile Air Quality Laboratory Data

MARCH 18, 2009

Minute Data Averages

Hour (EDT)	NOx (ppm dry)	O2 (ppm dry)	Line #1 (248+/-25F)	Line #2 (248+/-25F)	Line #3 (248+/-25F)	Notes
12:10	136.9	9.6	249	225	252	Run #6
12:11	134	9.7	249	225	252	Run #6
12:12	129.2	9.5	249	225	252	Run #6
12:13	131.9	9.4	249	226	252	Run #6
12:14	137.1	9.7	249	226	252	Run #6
12:15	133.7	9.5	249	226	252	Run #6
	133.9	9.6	249.3	223.1	251.2	21 Min. Analyzer Average, Ca
	0.70	0.00				Avg. Zero Bias Check, Co
	-212.05	12.40				Avg. Mid Span Bias Check, Cm
	224.1	12.47				Actual Mid Span Value, Cma
	141.2	9.6				Corrected Conc., Cstack
	0.242 (lb/MMBtu)		7750.1			NOx Emission Factor
12:16	131.9	8	249	226	251	Bias Checks
12:17	177.3	0.1	249	226	251	Bias Checks
12:18	212.1	0	249	226	251	Bias Checks
12:19	**212**	**0**	248	225	251	Mid NOx Span Gas
12:20	206	4.4	248	224	251	Bias Checks
12:21	47.5	12.3	248	223	251	Bias Checks
12:22	**0.8**	**12.4**	247	222	251	Mid O2/CO2 Span Gas
12:23	9.2	11.1	247	221	250	Bias Checks
12:24	126.3	9.5	247	220	250	Stack Gas
12:25	135.5	9.6	247	220	251	Run #7
12:26	135.9	9.7	249	220	251	Run #7
12:27	134.1	9.1	249	220	251	Run #7
12:28	127	9.6	249	221	251	Run #7
12:29	126.5	9.3	249	221	251	Run #7
12:30	132.3	9.1	249	222	251	Run #7
12:31	138.9	9.4	249	222	251	Run #7
12:32	136.4	9.6	250	223	251	Run #7
12:33	136.8	9.4	250	223	251	Run #7
12:34	138.6	9.6	250	224	251	Run #7
12:35	137.8	9.6	250	224	251	Run #7
12:36	135.5	9.6	250	225	251	Run #7
12:37	131.4	9.7	250	225	252	Run #7
12:38	131.1	9.7	250	225	252	Run #7
12:39	131.2	9.6	250	225	252	Run #7
12:40	132.7	9.4	250	225	252	Run #7
12:41	134.4	9.8	250	225	252	Run #7
12:42	132.6	9.5	250	226	252	Run #7
12:43	134.4	9.4	250	226	252	Run #7
12:44	133.2	9.4	250	226	252	Run #7
12:45	131.9	9.5	250	226	252	Run #7
	133.7	9.5	249.6	223.5	251.4	21 Min. Analyzer Average, Ca
	0.80	0.00				Avg. Zero Bias Check, Co
	211.95	12.35				Avg. Mid Span Bias Check, Cm
	224.1	12.47				Actual Mid Span Value, Cma
	141.1	9.6				Corrected Conc., Cstack
	0.242 (lb/MMBtu)		7764.6			NOx Emission Factor

U.S. Steel Corporation - Mon Valley Works
Clairton Plant - Clairton, PA
PART 75 RATA - Utilities Powerhouse - Boiler No. 1
Chester Mobile Air Quality Laboratory Data

MARCH 18, 2009

Minute Data Averages

Hour (EDT)	NOx (ppm dry)	O2 (ppm dry)	Line #1 (248+/-25F)	Line #2 (248+/-25F)	Line #3 (248+/-25F)	Notes
12:46	117.5	8.4	249	226	252	Bias Checks
12:47	160.4	0.1	249	226	251	Bias Checks
12:48	211.9	0	249	226	251	Bias Checks
12:49	**211.9**	**0**	249	224	251	**Mid NOx Span Gas**
12:50	198.4	6.2	248	223	251	Bias Checks
12:51	11.4	12.3	248	222	251	Bias Checks
12:52	**0.8**	**12.3**	247	221	251	**Mid O2/CO2 Span Gas**
12:53	14.1	11	247	220	251	Bias Checks
12:54	113	9.9	247	219	251	Stack Gas
12:55	135.5	9.6	247	219	251	Stack Gas
12:56	137.5	9.5	249	219	251	**Run #8**
12:57	137.6	9.7	249	219	252	**Run #8**
12:58	135.1	9.7	249	219	252	**Run #8**
12:59	134.1	9.5	249	220	252	**Run #8**
13:00	138.1	9.7	249	220	252	**Run #8**
13:01	135.3	9.4	249	221	252	**Run #8**
13:02	132.5	9.5	250	221	252	**Run #8**
13:03	132.8	9.4	250	222	252	**Run #8**
13:04	134.3	9.5	250	222	252	**Run #8**
13:05	131.6	9.2	250	223	252	**Run #8**
13:06	136.9	9.6	250	223	252	**Run #8**
13:07	134.9	9.5	250	224	252	**Run #8**
13:08	135.9	9.6	250	224	252	**Run #8**
13:09	135.7	9.4	250	224	252	**Run #8**
13:10	136.6	9.8	250	225	252	**Run #8**
13:11	134.7	9.5	250	225	252	**Run #8**
13:12	137.5	9.8	250	226	252	**Run #8**
13:13	136	9.8	250	226	252	**Run #8**
13:14	136.2	9.6	249	227	252	**Run #8**
13:15	138.1	9.6	249	227	252	**Run #8**
13:16	138.4	9.6	249	227	252	**Run #8**
	135.7	9.6	249.6	223.0	252.0	**21 Min. Analyzer Average, Ca**
	0.70	0.00				**Avg. Zero Bias Check, Co**
	211.80	12.30				**Avg. Mid Span Bias Check, Cm**
	224.1	12.47				**Actual Mid Span Value, Cma**
	143.3	9.7				**Corrected Conc., Cstack**
	0.255 (lb/MMBtu)		7989.9			**NOx Emission Factor**
13:17	125.2	8.9	249	227	251	Bias Checks
13:18	156.1	0.1	249	227	251	Bias Checks
13:19	211.8	0	249	227	251	Bias Checks
13:20	211.6	0	249	225	251	Bias Checks
13:21	**211.7**	**0**	248	224	251	**Mid NOx Span Gas**
13:22	200.2	5.1	248	222	251	Bias Checks
13:23	41.8	12.3	247	221	251	Bias Checks
13:24	0.8	12.3	247	220	251	Bias Checks
13:25	**0.6**	**12.3**	247	219	251	**Mid O2/CO2 Span Gas**
13:26	0.4	7.5	246	218	251	Bias Checks
13:27	63	8.7	246	217	251	Bias Checks
13:28	138.7	9.3	246	217	251	Stack Gas
13:29	139.4	9.4	247	217	252	**Run #9**
13:30	137.8	9.6	249	217	252	**Run #9**

U.S. Steel Corporation - Mon Valley Works
Clairton Plant - Clairton, PA
PART 75 RATA - Utilities Powerhouse - Boiler No. 1
Chester Mobile Air Quality Laboratory Data

MARCH 18, 2009

Minute Data Averages

Hour (EDT)	NOx (ppm dry)	O2 (ppm dry)	Line #1 (248+/-25F)	Line #2 (248+/-25F)	Line #3 (248+/-25F)	Notes
13:31	136.4	9.5	249	218	252	Run #9
13:32	136.2	9.5	249	219	252	Run #9
13:33	135.3	9.5	249	220	252	Run #9
13:34	138.2	9.4	249	220	252	Run #9
13:35	141	9.6	250	221	252	Run #9
13:36	137.7	9.5	250	222	252	Run #9
13:37	138.3	9.3	250	222	252	Run #9
13:38	143	9.6	250	222	252	Run #9
13:39	142	9.5	250	223	252	Run #9
13:40	141	9.7	250	223	252	Run #9
13:41	140.5	9.4	250	224	251	Run #9
13:42	139.2	9.9	250	224	251	Run #9
13:43	136.6	9.7	250	224	251	Run #9
13:44	135.7	9.7	250	225	251	Run #9
13:45	136.6	9.6	250	225	251	Run #9
13:46	139.9	10	250	225	251	Run #9
13:47	135.6	9.6	250	226	251	Run #9
13:48	136	9.5	250	226	251	Run #9
13:49	135.3	9.7	249	226	251	Run #9
	138.2	9.6	249.6	222.3	251.6	**21 Min. Analyzer Average, Ca**
	0.60	0.00				**Avg. Zero Bias Check, Co**
	211.70	12.30				**Avg. Mid Span Bias Check, Cm**
	224.1	12.47				**Actual Mid Span Value, Cma**
	146.0	9.7				**Corrected Conc., Cstack**
	0.256 (lb/MMBtu)		7870.0			**NOx Emission Factor**
13:50	130.5	5.6	249	226	251	Bias Checks
13:51	156.7	0	249	226	251	Bias Checks
13:52	211.8	0	249	225	251	Bias Checks
13:53	211.8	0	249	223	251	Bias Checks
13:54	**211.7**	**0**	248	222	251	**Mid NOx Span Gas**
13:55	169.8	9.3	248	220	251	Bias Checks
13:56	10.6	12.3	247	219	251	Bias Checks
13:57	0.6	12.3	247	218	251	Bias Checks
13:58	**0.6**	**12.3**	247	218	251	**Mid O2/CO2 Span Gas**
13:59	0.3	14.7	246	217	251	Bias Checks

U.S. Steel Corporation - Mon Valley Complex
Clairton Plant - Clairton, PA
PART 75 RATA - Utilities Powerhouse - Boiler No. 2
STRATIFICATION TEST RESULTS using Chester data
MARCH 18, 2009

TIME OF TEST (EDT)	NO_x (ppm)	TRAVERSE POINT	Chester NO_x (ppm, avg.)	ABSOLUTE NO_x DELTA
14:45	150	1		
14:46	148.9	1	149.45	1.35
14:47	151	2		
14:48	153.1	2	152.05	1.25
14:49	151.9	3		
14:50	153.6	3	152.75	1.95
14:51	154.8	4		
14:52	154.5	4	154.65	3.85
14:53	151.5	5		
14:54	152.4	5	151.95	1.15
14:55	152.3	6		
14:56	151.8	6	152.05	1.25
14:57	152.4	7		
14:58	148.8	7	150.6	0.20
14:59	146.2	8		
15:00	144.7	8	145.45	5.35
15:01	149.3	9		
15:02	150.6	9	149.95	0.85
15:03	151	10		
15:04	149.1	10	150.05	0.75
15:05	147	11		
15:06	149.1	11	148.05	2.75
15:07	152.5	12		
15:08	152.7	12	152.6	1.80

Average of all TRAVERSE POINTS, $(NO_x)_{AVI}$: 150.80

MAXIMUM ppm DIFFERENCE OF $(NO_x)_i$ and $(NO_x)_{AVI}$: 5.35
WHERE, I IS THE TRAVERSE POINT LOCATION

MAXIMUM DIFFERENCE OF $(NO_x)_i$ and $(NO_x)_{AVI}$ AS A PERCENT 3.55
WHERE, I IS THE TRAVERSE POINT LOCATION

RESULTS INDICATE THAT 1 SAMPLING POINT IS NEEDED

U.S. STEEL CORPORATION - MON VALLEY COMPLEX
CLAIRTON PLANT - UTILITIES POWERHOUSE
CLAIRTON, PENNSYLVANIA

TABLE 2a

BOILER NO. 2
O2 CEM PART 75 RATA RESULTS
MARCH 19, 2009

All Test Runs

Test Run No.	Test Date	Start Time (EDT)	Stop Time (EDT)	RM Test Run Avg. O2 (%)	USS CEM Test Run Avg. O2 (%)	Arithmetic Difference (%)
1	3/19/2009	9:02	9:22	8.9	9.1	-0.2 <<<
2	3/19/2009	9:34	9:54	8.9	9.2	-0.3 <<<
3	3/19/2009	10:07	10:27	8.8	9.2	-0.4 <<<
4	3/19/2009	10:40	11:00	9.0	9.3	-0.3 <<<
5	3/19/2009	11:15	11:35	9.0	9.3	-0.3 <<<
6	3/19/2009	11:48	12:08	8.9	9.2	-0.3 <<<
7	3/19/2009	12:20	12:40	8.9	9.2	-0.3 <<<
8	3/19/2009	12:53	13:13	8.9	9.2	-0.3 <<<
9	3/19/2009	13:25	13:45	8.9	9.2	-0.3 <<<
10						
11						
12						

Results:			
	Data Points (n)		9
	Arithmetic Mean Difference (d)		-0.293
	Standard Deviation (Sd)		0.044
	Confidence Coefficient (CC)		0.034
	Average RM Value (ARM)		8.9
For Semiannual RATAs	Relative Accuracy (RA - 1)	passed	3.7% <= 10%
or	Relative Accuracy (RA - 3)	passed	0.293 <= 1
For Annual RATAS	Relative Accuracy (RA - 1)	passed	3.7% <= 7.5%
or	Relative Accuracy (RA - 3)	passed	0.293 <= 0.7

Notes:
<<< = Test run included in statistical analysis
RM = Reference Method
USS CEM = U.S. Steel Clairton Plant's Continuous Emission Monitor
CC = (t value) x (Sd / n^0.5) where t value = 2.306 for n = 9
RA - 1 = (Abs(d) + Abs(CC)) / ARM
RA - 3 = Average Absolute Arithmetic Difference

Calculations according to U.S. EPA Performance Specification 2 and
PA DEP Continuous Source Monitoring Manual (Revision No. 6), Table II

CEM CALIBRATION ERROR TEST DATA

CLIENT	U.S. Steel - Mon Valley Complex	Page 1 of	2
PLANT SITE	Clairton Plant - Clairton, PA	ANALYZER	Advanced Pollution Instrumentation, Inc.
TEST UNIT	Exhaust Stack, Boiler No. 2	INSTRUMENT	Chemiluminescent NOx Analyzer-Model 200AH
TEST DATE	March 19, 2009 OPERATOR DN HT	Serial No.	258
PROJECT NO.	09-6296-ENV, Task 102	Calibrated Span	451 (ppmv, dry)

Time (EDT)	Certified Cylinder Value (A) (ppmv, dry)	Analyzer Calibration Response (B) (ppmv, dry)	Absolute Arithmetic Difference (A - B) (ppmv, dry)	Calibration Error [100 * (A-B) / Calibrated Span] (%)	Δ as Percent of Cal. Gas Conc. [100 * (A-B) / Gas Conc.] (%)	Notes
0846	0	0.0	0.0	0.0	X	Zero Gas is 100% N2
0828	451.0	451.7	0.7	0.16	X	12.47 O_2
0835	224.1	223.0	1.1	0.24	X	

Specifications: For O2, CO2, SO2, NOx, CO the Allowable Cal. Error < = 2% of Calibrated Span = 9.0 ppm NO
For THC the Allowable Calibration Error < = 5% of Calibration Gas

CEM SAMPLING SYSTEM BIAS AND DRIFT DATA

Mid-Level or High-Level Calibration Gas: 224.1 (ppmv, dry)
(Use the one closest to the actual stack gas concentration)

Time (EDT)	Calibration Gas	Analyzer Response (B) (ppmv, dry)	System Response (C) (ppmv, dry)	System Cal. Bias [100 * (C-B) / Span] (%)	Drift [100 * (Final C - Initial C) / Span] (%)	Response time for upscale bias gas = 65 sec Notes
0854	Zero	0.0	0.5	0.11		
0853	Upscale	223.0	221.5	0.33		
0930	Zero	0.0	0.5	0.11	0.0	Run No. 1: 0902
0926	Upscale	223.0	221.4	0.35	0.02	0922
1003	Zero	0.0	0.5	0.11	0.0	Run No. 2: 0934
0956	Upscale	223.0	221.5	0.33	0.02	954
1036	Zero	0.0	0.5	0.11	0.0	Run No. 3: 1007
1031	Upscale	223.0	223.3	0.07	0.40	1027
1112	Zero	0.0	0.5	0.11	0.0	Run No. 4: 1040
1105	Upscale	223.0	224.0	0.21	0.14	1100
1144	Zero	0.0	0.5	0.11	0.0	Run No. 5: 1115
1140	Upscale	223.0	223.7	0.17	0.02	1135
			0.5			
1216	Zero	0.0	~~222.9~~	0.11	0.0	Run No. 6: 1148
1212	Upscale	223.0	222.9	0.02	0.22	1208

Specifications: For O2, CO2, SO2, NOx & CO the System Cal. Bias < = 5% of the Calibrated Span = 22.6 ppm NO
For THC the System Cal. Bias < = 3% of the Calibrated Span
For O2, CO2, SO2, NOx, CO & THC the Drift < = 3% of the Calibrated Span = 13.5

USS Time = Chester Time - 62 min

CEM CALIBRATION ERROR TEST DATA

CLIENT	U.S. Steel - Mon Valley Complex	Page 2 of	2
PLANT SITE	Clairton Plant - Clairton, PA	ANALYZER	Advanced Pollution Instrumentation, Inc.
TEST UNIT	Exhaust Stack, Boiler No. 2	INSTRUMENT	Chemiluminescent NOx Analyzer-Model 200AH
TEST DATE	March 19, 2009 OPERATOR DN HT	Serial No.	258
PROJECT NO. 09-6296-ENV, Task 102		Calibrated Span	451 (ppmv, dry)

Time (EDT)	Certified Cylinder Value (A) (ppmv, dry)	Analyzer Calibration Response (B) (ppmv, dry)	Absolute Arithmetic Difference (A - B) (ppmv, dry)	Calibration Error [100 * (A-B) / Calibrated Span] (%)	Δ as Percent of Cal. Gas Conc. [100 * (A-B) / Gas Conc.] (%)	Notes
0846	0	0.0	0.0	0.0	X	Zero Gas is ~~100%~~ N2
0828	451.0	451.7	0.7	0.16	X	12.47 O_2
0835	224.1	223.0	1.1	0.24	X	

Specifications: For O2, CO2, SO2, NOx, CO the Allowable Cal. Error < = 2% of Calibrated Span = 9.0 ppm NO
For THC the Allowable Calibration Error < = 5% of Calibration Gas

CEM SAMPLING SYSTEM BIAS AND DRIFT DATA

Mid-Level or High-Level Calibration Gas: 224.1 (ppmv, dry)
(Use the one closest to the actual stack gas concentration)

Time (EDT)	Calibration Gas	Analyzer Response (B) (ppmv, dry)	System Response (C) (ppmv, dry)	System Cal. Bias [100 * (C-B) / Span] (%)	Drift [100 * (Final C - Initial C) / Span] (%)	Response time for upscale bias gas = Notes
1249	Zero	0.0	0.5	0.11	0.0	Run No. 7: 1220
1245	Upscale	223.0	222.8	0.04	0.02	1240
1321	Zero	0.0	0.5	0.11	0.0	Run No. 8: 1253
1317	Upscale	223.0	223.0	0.00	0.04	1313
1354	Zero	0.0	0.5	0.11	0.0	Run No. 9: 1325
1350	Upscale	223.0	223.3	0.07	0.07	1345
	Zero					Run No. 10:
	Upscale					
	Zero					Run No. 11:
	Upscale					
	Zero					Run No. 12:
	Upscale					
	Zero					Run No. 13:
	Upscale					

Specifications: For O2, CO2, SO2, NOx & CO the System Cal. Bias < = 5% of the Calibrated Span = 22.6 ppm NO
For THC the System Cal. Bias < = 3% of the Calibrated Span
For O2, CO2, SO2, NOx, CO & THC the Drift < = 3% of the Calibrated Span = 13.5

CEM CALIBRATION ERROR TEST DATA

CLIENT	U.S. Steel - Mon Valley Complex	Page 1 of	2
PLANT SITE	Clairton Plant - Clairton, PA	ANALYZER	California Analytical Instruments
TEST UNIT	Exhaust Stack, Boiler No. 2	INSTRUMENT	Paramagnetic Oxygen Analyzer - Model 100P
TEST DATE	March 19, 2009 OPERATOR DN HT	Serial No.	4306002
PROJECT NO.	09-6296-ENV, Task 102	Calibrated Span	24.88 (%, dry)

Time (EDT)	Certified Cylinder Value (A) (%, dry)	Analyzer Calibration Response (B) (%, dry)	Absolute Arithmetic Difference (A - B) (%, dry)	Calibration Error [100 * (A-B) / Calibrated Span] (%)	Δ as Percent of Cal. Gas Conc. [100 * (A-B) / Gas Conc.] (%)	Notes
0835	0.0	0.0	0.0	0.0	X	Zero Gas is ~~100% N2~~
0843	24.88	24.9	0.02	.08	X	22Y.100
0846	12.47	12.3	0.17	.68	X	

Specifications: For O2, CO2, SO2, NOx, CO the Allowable Calibration Error < = 2% of Calibrated Span = 0.5 %O2
For THC the Allowable Calibration Error < = 5% of Calibration Gas

CEM SAMPLING SYSTEM BIAS AND DRIFT DATA

Mid-Level or High-Level Calibration Gas: 12.47 (%, dry)
(Use the one closest to the actual stack gas concentration)

Time (EDT)	Calibration Gas	Analyzer Response (B) (%, dry)	System Response (C) (%, dry)	System Cal. Bias [100 * (C-B) / Span] (%)	Drift [100 * (Final C - Initial C) / Span] (%)	Response time for upscale bias gas = 605 sec. Notes
0853	Zero	0.0	0.0	0.0		
0858	Upscale	12.3	12.3	0.0		
0926	Zero	0.0	0.0	0.0	0.0	Run No. 1: 0902
0930	Upscale	12.3	12.3	0.0	0.0	922
0958	Zero	0.0	0.0	0.0	0.0	Run No. 2: 0934
1003	Upscale	12.3	12.4	0.40	0.40	954
1031	Zero	0.0	0.0	0.0	0.0	Run No. 3: 1007
1036	Upscale	12.3	12.4	0.40	0.0	1027
1105	Zero	0.0	0.0	0.0	0.0	Run No. 4: 1040
1112	Upscale	12.3	12.4	0.40	0.0	1100
1140	Zero	0.0	0.0	0.0	0.0	Run No. 5: 1115
1144	Upscale	12.3	12.4	0.40	0.0	1135
1212	Zero	0.0	0.0	0.0	0.0	Run No. 6: 1148
1216	Upscale	12.3	12.4	0.40	0.0	1208

Specifications: For O2, CO2, SO2, NOx & CO the System Cal. Bias < = 5% of the Calibrated Span = 1.2 %O2
For THC the System Cal. Bias < = 3% of the Calibrated Span
For O2, CO2, SO2, NOx, CO & THC the Drift < = 3% of the Calibrated Span = 0.7 %O2

USS Time = Chester - 62 min

CEM CALIBRATION ERROR TEST DATA

CLIENT	U.S. Steel - Mon Valley Complex	Page 2 of	2
PLANT SITE	Clairton Plant - Clairton, PA	ANALYZER	California Analytical Instruments
TEST UNIT	Exhaust Stack, Boiler No. 2	INSTRUMENT	Paramagnetic Oxygen Analyzer - Model 100P
TEST DATE	March 19, 2009 OPERATOR DN HT	Serial No.	4J06002
PROJECT NO.	09-6296-ENV, Task 102	Calibrated Span	24.88 (%, dry)

Time (EDT)	Certified Cylinder Value (A) (%, dry)	Analyzer Calibration Response (B) (%, dry)	Absolute Arithmetic Difference (A - B) (%, dry)	Calibration Error [100 * (A-B) / Calibrated Span] (%)	Δ as Percent of Cal. Gas Conc. [100 * (A-B) / Gas Conc.] (%)	Notes
8:35	0.0	0.0	0.0	0.0	X	Zero Gas is [illegible]
8:43	24.88	24.9	.02	.08	X	224.100
8:46	12.47	12.3	.17	.68	X	

Specifications: For O2, CO2, SO2, NOx, CO the Allowable Calibration Error < = 2% of Calibrated Span = 0.5 %O2
For THC the Allowable Calibration Error < = 5% of Calibration Gas

CEM SAMPLING SYSTEM BIAS AND DRIFT DATA

Mid-Level or High-Level Calibration Gas: 12.47 (%, dry)
(Use the one closest to the actual stack gas concentration)

Time (EDT)	Calibration Gas	Analyzer Response (B) (%, dry)	System Response (C) (%, dry)	System Cal. Bias [100 * (C-B) / Span] (%)	Drift [100 * (Final C - Initial C) / Span] (%)	Response time for upscale bias gas = Notes
1245	Zero	0.0	0.0	0.0	0.0	Run No. 7: 1220
1249	Upscale	12.3	12.4	0.40	0.0	1240
1317	Zero	0.0	0.0	0.0	0.0	Run No. 8: 1253
1321	Upscale	12.3	12.4	0.4	0.0	1313
1350	Zero	0.0	0.0	0.0	0.0	Run No. 9: 1325
1354	Upscale	12.3	12.4	0.4	0.0	1345
	Zero					Run No. 10:
	Upscale					
	Zero					Run No. 11:
	Upscale					
	Zero					Run No. 12:
	Upscale					
	Zero					Run No. 13:
	Upscale					

Specifications: For O2, CO2, SO2, NOx & CO the System Cal. Bias < = 5% of the Calibrated Span = 1.2 %O2
For THC the System Cal. Bias < = 3% of the Calibrated Span
For O2, CO2, SO2, NOx, CO & THC the Drift < = 3% of the Calibrated Span = 0.7 %O2

U.S. Steel Corporation - Mon Valley Works
Clairton Plant - Clairton, PA
PART 75 RATA - Utilities Powerhouse - Boiler No. 2
Chester Mobile Air Quality Laboratory Data

MARCH 19, 2009

Minute Data Averages

Hour (EDT)	NOx (ppm dry)	O2 (ppm dry)	Line #1 (248+/-25F)	Line #2 (248+/-25F)	Line #3 (248+/-25F)	Notes
8:17	127.4	9.7	249	236	252	Stack Gas
8:18	131.2	6.4	249	236	252	Stack Gas
8:19	317.9	0.1	249	236	251	Pre-Test Calibrations
8:20	422.1	0.1	249	236	251	Pre-Test Calibrations
8:21	421.5	0.1	249	236	251	Pre-Test Calibrations
8:22	421.1	0.1	249	236	251	Pre-Test Calibrations
8:23	422.4	0.1	249	236	251	Pre-Test Calibrations
8:24	422.8	0.1	249	236	251	Pre-Test Calibrations
8:25	435.6	0	249	236	251	Pre-Test Calibrations
8:26	451.3	0	249	236	251	Pre-Test Calibrations
8:27	451.7	0	249	236	251	Pre-Test Calibrations
8:28	**451.7**	0.1	249	236	251	**High NOx Span Gas**
8:29	285.4	0	249	236	251	Pre-Test Calibrations
8:30	253.1	0	249	236	251	Pre-Test Calibrations
8:31	223.4	0	249	236	251	Pre-Test Calibrations
8:32	223	0	249	236	251	Pre-Test Calibrations
8:33	223	0	248	236	251	Pre-Test Calibrations
8:34	223	0	243	236	251	Pre-Test Calibrations
8:35	**223**	**0**	241	236	251	**Mid NOx Span Gas**
8:36	222.8	5.5	240	236	251	Pre-Test Calibrations
8:37	73.2	24.7	240	236	251	Pre-Test Calibrations
8:38	0.3	24.7	240	237	251	Pre-Test Calibrations
8:39	0.3	24.7	241	237	251	Pre-Test Calibrations
8:40	0.3	24.7	241	237	251	Pre-Test Calibrations
8:41	0	24.9	242	238	251	Pre-Test Calibrations
8:42	0	25	243	238	251	Pre-Test Calibrations
8:43	0	**25**	243	238	251	**High O2/CO2 Span Gas**
8:44	0	18.4	244	239	251	Pre-Test Calibrations
8:45	0	12.4	244	239	250	Pre-Test Calibrations
8:46	**0**	**12.4**	245	239	250	**Mid O2/CO2 Span Gas**
8:47	0	7.4	245	240	250	Pre-Test Calibrations
8:48	49.6	12.6	245	240	250	Bias Checks
8:49	119.2	2.3	245	240	249	Bias Checks
8:50	206	1.5	244	239	249	Bias Checks
8:51	220.4	0.1	242	238	249	Bias Checks
8:52	221.6	0.1	241	236	249	Bias Checks
8:53	**221.5**	**0.1**	239	234	248	**Mid NOx Span Gas**
8:54	221	2.8	238	232	248	Bias Checks
8:55	79.7	12.3	237	231	248	Bias Checks
8:56	1.1	12.4	236	229	248	Bias Checks
8:57	0.8	12.4	235	227	248	Bias Checks
8:58	**0.6**	**12.4**	234	226	248	**Mid O2/CO2 Span Gas**
8:59	0.6	8.4	233	225	248	Bias Checks
9:00	76.8	8.9	233	224	249	Stack Gas
9:01	146.8	9	234	224	249	Stack Gas
9:02	143.7	9.1	235	223	250	**Run #1**
9:03	143.2	8.8	236	223	250	**Run #1**
9:04	143	9	238	224	251	**Run #1**
9:05	145.3	8.9	239	225	251	**Run #1**
9:06	143.4	8.5	240	226	252	**Run #1**
9:07	140.7	8.8	241	227	252	**Run #1**
9:08	143	8.8	242	227	252	**Run #1**
9:09	143.9	8.9	243	228	252	**Run #1**
9:10	145.4	8.8	243	229	252	**Run #1**

U.S. Steel Corporation - Mon Valley Works
Clairton Plant - Clairton, PA
PART 75 RATA - Utilities Powerhouse - Boiler No. 2
Chester Mobile Air Quality Laboratory Data

MARCH 19, 2009

Minute Data Averages

Hour (EDT)	NOx (ppm dry)	O2 (ppm dry)	Line #1 (248+/-25F)	Line #2 (248+/-25F)	Line #3 (248+/-25F)	Notes
9:11	144.7	8.9	244	229	252	Run #1
9:12	145.1	9.1	245	230	253	Run #1
9:13	145.3	9.4	245	230	253	Run #1
9:14	145	9.4	245	231	253	Run #1
9:15	144.5	8.9	246	231	253	Run #1
9:16	144.8	9	246	232	253	Run #1
9:17	144.5	9.2	247	232	253	Run #1
9:18	146.8	8.7	247	233	253	Run #1
9:19	144.9	8.4	247	233	253	Run #1
9:20	142.7	9	247	233	253	Run #1
9:21	143.6	8.6	248	233	253	Run #1
9:22	144.3	8.4	248	234	253	Run #1
	144.2	8.9	243.4	229.2	252.2	**21 Min. Analyzer Average, Ca**
	0.60	0.10				**Avg. Zero Bias Check, Co**
	221.45	12.40				**Avg. Mid Span Bias Check, Cm**
	224.1	12.47				**Actual Mid Span Value, Cma**
	145.7	8.9				**Corrected Conc., Cstack**
	0.234 (lb/MMBtu)		7731.6			**NOx Emission Factor**
9:23	143.6	4.9	248	234	252	Bias Checks
9:24	195.7	0.1	247	234	252	Bias Checks
9:25	221.4	0.1	245	233	251	Bias Checks
9:26	**221.4**	**0.1**	244	232	251	Bias Checks
9:27	210.9	6.1	242	231	250	**Mid NOx Span Gas**
9:28	15.6	12.4	240	229	250	Bias Checks
9:29	0.8	12.4	238	228	250	Bias Checks
9:30	**0.6**	**12.4**	237	226	250	**Mid O2/CO2 Span Gas**
9:31	0.4	11.5	236	225	249	Bias Checks
9:32	107.9	8.5	235	224	250	Bias Checks
9:33	146.2	9.1	236	224	250	Stack Gas
9:34	147.1	8.8	237	224	251	Run #2
9:35	146.7	8.6	238	224	251	Run #2
9:36	148.3	8.7	239	225	251	Run #2
9:37	146.9	9	240	226	251	Run #2
9:38	148	9.2	241	227	252	Run #2
9:39	145.8	9.2	242	228	252	Run #2
9:40	144.9	9.2	243	228	252	Run #2
9:41	142.1	9	244	229	252	Run #2
9:42	144.7	9.2	244	229	252	Run #2
9:43	144.7	9	245	230	253	Run #2
9:44	148.8	8.7	245	231	253	Run #2
9:45	145	8.6	246	231	253	Run #2
9:46	144.8	9.1	246	231	253	Run #2
9:47	146.3	8.8	246	232	253	Run #2
9:48	148.6	8.9	247	232	253	Run #2
9:49	148.9	8.6	247	232	253	Run #2
9:50	146.7	9	247	232	253	Run #2
9:51	145.7	9	247	233	252	Run #2
9:52	149.6	9.1	247	233	252	Run #2
9:53	151.1	8.9	248	233	252	Run #2
9:54	150.4	8.9	248	233	252	Run #2

U.S. Steel Corporation - Mon Valley Works
Clairton Plant - Clairton, PA
PART 75 RATA - Utilities Powerhouse - Boiler No. 2
Chester Mobile Air Quality Laboratory Data

MARCH 19, 2009

Minute Data Averages

Hour (EDT)	NOx (ppm dry)	O2 (ppm dry)	Line #1 (248+/-25F)	Line #2 (248+/-25F)	Line #3 (248+/-25F)	Notes
	146.9	8.9	244.1	229.7	252.2	21 Min. Analyzer Average, Ca
	0.55	0.10				Avg. Zero Bias Check, Co
	221.50	12.45				Avg. Mid Span Bias Check, Cm
	224.1	12.47				Actual Mid Span Value, Cma
	148.4	8.9				Corrected Conc., Cstack
	0.241 (lb/MMBtu)		7790.2			NOx Emission Factor
9:55	150.5	8.1	248	233	252	Stack Gas
9:56	167.4	0.1	248	234	251	Stack Gas
9:57	221.5	0.1	246	233	251	Bias Checks
9:58	**221.6**	**0.1**	244	232	250	Mid NOx Span Gas
9:59	221.7	0.1	242	231	250	Bias Checks
10:00	165.1	11.3	240	229	250	Bias Checks
10:01	1.2	12.4	239	228	250	Bias Checks
10:02	0.7	12.4	238	227	249	Bias Checks
10:03	**0.5**	**12.5**	236	225	249	Mid O2/CO2 Span Gas
10:04	0.3	12.1	235	224	249	Bias Checks
10:05	79.3	9.5	235	223	250	Bias Checks
10:06	136.6	9.3	235	223	250	Stack Gas
10:07	136.4	9	236	223	251	Run #3
10:08	135.8	8.5	237	223	251	Run #3
10:09	135.2	9.3	239	224	251	Run #3
10:10	143.6	8.9	240	225	251	Run #3
10:11	141.7	8.6	241	226	252	Run #3
10:12	139.8	8.1	242	226	252	Run #3
10:13	141	8.8	243	227	252	Run #3
10:14	151.5	8.8	243	228	252	Run #3
10:15	153	8.7	244	229	252	Run #3
10:16	153.6	8.7	245	229	252	Run #3
10:17	152.1	9.2	245	230	252	Run #3
10:18	151.4	9.2	246	230	252	Run #3
10:19	151.3	9	246	231	252	Run #3
10:20	152.9	9.2	247	231	252	Run #3
10:21	151.4	9.1	247	231	252	Run #3
10:22	149.6	9.2	247	232	252	Run #3
10:23	150	9.1	247	232	252	Run #3
10:24	150	8.8	248	233	252	Run #3
10:25	148.3	8.7	248	233	252	Run #3
10:26	146.4	9.1	248	233	252	Run #3
10:27	147.8	8.9	248	233	252	Run #3
	146.8	8.9	244.1	229.0	251.8	21 Min. Analyzer Average, Ca
	0.55	0.10				Avg. Zero Bias Check, Co
	222.45	12.50				Avg. Mid Span Bias Check, Cm
	224.1	12.47				Actual Mid Span Value, Cma
	147.7	8.8				Corrected Conc., Cstack
	0.239 (lb/MMBtu)		7808.7			NOx Emission Factor
10:28	131.5	6.4	248	233	252	Stack Gas
10:29	182.3	0.1	248	233	252	Bias Checks
10:30	223.6	0.1	246	233	251	Bias Checks
10:31	**223.3**	**0.1**	244	231	251	Mid NOx Span Gas

U.S. Steel Corporation - Mon Valley Works
Clairton Plant - Clairton, PA
PART 75 RATA - Utilities Powerhouse - Boiler No. 2
Chester Mobile Air Quality Laboratory Data

MARCH 19, 2009

Minute Data Averages

Hour (EDT)	NOx (ppm dry)	O2 (ppm dry)	Line #1 (248+/-25F)	Line #2 (248+/-25F)	Line #3 (248+/-25F)	Notes
10:32	223.6	1.2	242	230	250	Bias Checks
10:33	90.3	12.4	240	228	250	Bias Checks
10:34	1	12.4	239	227	249	Bias Checks
10:35	0.8	12.5	238	226	249	Bias Checks
10:36	**0.6**	**12.5**	236	225	249	**Mid O2/CO2 Span Gas**
10:37	0.5	11.4	235	224	249	Bias Checks
10:38	118.2	8.7	235	223	250	Stack Gas
10:39	143.4	8.6	236	223	250	Stack Gas
10:40	145.9	8.8	237	223	250	**Run #4**
10:41	147.4	9.1	238	223	251	**Run #4**
10:42	144.2	9	239	223	251	**Run #4**
10:43	142.4	8.7	240	224	251	**Run #4**
10:44	140.3	9.1	241	225	252	**Run #4**
10:45	141.8	9.3	242	225	252	**Run #4**
10:46	144.7	9.2	243	226	252	**Run #4**
10:47	146.3	9	244	227	253	**Run #4**
10:48	147.4	8.8	245	227	253	**Run #4**
10:49	144.4	9.4	245	228	253	**Run #4**
10:50	143.4	9	246	228	253	**Run #4**
10:51	143.2	8.8	246	228	253	**Run #4**
10:52	144	8.7	247	228	253	**Run #4**
10:53	143.7	9.2	247	228	253	**Run #4**
10:54	145.4	9.2	247	228	253	**Run #4**
10:55	144.2	9	248	228	253	**Run #4**
10:56	147.8	8.7	248	228	253	**Run #4**
10:57	147.9	9	248	228	253	**Run #4**
10:58	150.6	9	248	228	253	**Run #4**
10:59	152.6	8.9	249	228	253	**Run #4**
11:00	151.5	9.2	249	228	252	**Run #4**
	145.7	9.0	244.6	226.6	252.4	**21 Min. Analyzer Average, Ca**
	0.60	0.05				**Avg. Zero Bias Check, Co**
	223.65	12.50				**Avg. Mid Span Bias Check, Cm**
	224.1	12.47				**Actual Mid Span Value, Cma**
	145.8	9.0				**Corrected Conc., Cstack**
	0.238 (lb/MMBtu)		7809.1			**NOx Emission Factor**
11:01	151	6	249	228	252	Stack Gas
11:02	188.8	0.1	248	227	251	Stack Gas
11:03	224.2	0.1	246	226	251	Bias Checks
11:04	224	0.1	244	224	250	Bias Checks
11:05	**224**	**0**	243	223	249	**Mid NOx Span Gas**
11:06	182.6	8.5	241	221	249	Bias Checks
11:07	2	12.4	239	219	249	Bias Checks
11:08	0.9	12.5	238	218	249	Bias Checks
11:09	0.9	12.5	237	217	249	Bias Checks
11:10	1.1	12.5	236	216	249	Bias Checks
11:11	0.9	12.5	235	215	249	Bias Checks
11:12	**0.6**	**12.5**	235	214	249	**Mid O2/CO2 Span Gas**
11:13	18	10.7	234	213	249	Bias Checks
11:14	162.9	9	234	213	249	Stack Gas
11:15	162	9	235	213	250	**Run #5**
11:16	162.9	9	236	213	250	**Run #5**

U.S. Steel Corporation - Mon Valley Works
Clairton Plant - Clairton, PA
PART 75 RATA - Utilities Powerhouse - Boiler No. 2
Chester Mobile Air Quality Laboratory Data

MARCH 19, 2009

Minute Data Averages

Hour (EDT)	NOx (ppm dry)	O2 (ppm dry)	Line #1 (248+/-25F)	Line #2 (248+/-25F)	Line #3 (248+/-25F)	Notes
11:17	161.7	8.9	238	214	251	Run #5
11:18	156.7	8.8	239	215	251	Run #5
11:19	156.2	9	240	216	252	Run #5
11:20	157.3	9.1	241	217	252	Run #5
11:21	155.1	9.4	242	218	252	Run #5
11:22	153.6	8.9	243	219	252	Run #5
11:23	153.6	8.8	244	220	252	Run #5
11:24	152.5	9.2	245	220	252	Run #5
11:25	151.8	9.2	246	221	252	Run #5
11:26	153.1	8.9	246	221	252	Run #5
11:27	154.5	8.8	247	222	252	Run #5
11:28	155.8	8.9	247	222	252	Run #5
11:29	155	9.2	248	222	252	Run #5
11:30	158.3	8.9	248	222	252	Run #5
11:31	159	8.9	248	223	252	Run #5
11:32	160.1	9.1	248	223	252	Run #5
11:33	159	9.2	249	223	252	Run #5
11:34	158.4	9.6	249	223	252	Run #5
11:35	157	9	249	223	252	Run #5
	156.8	9.0	244.2	219.5	251.7	**21 Min. Analyzer Average, Ca**
	0.60	0.05				**Avg. Zero Bias Check, Co**
	223.95	12.50				**Avg. Mid Span Bias Check, Cm**
	224.1	12.47				**Actual Mid Span Value, Cma**
	156.8	9.0				**Corrected Conc., Cstack**
	0.257 (lb/MMBtu)		7824.6			**NOx Emission Factor**
11:36	160.8	8.7	249	224	252	Stack Gas
11:37	159.7	9.8	249	224	252	Bias Checks
11:38	169.8	0.6	249	224	252	Bias Checks
11:39	223.8	0.1	247	224	251	Bias Checks
11:40	**223.9**	**0.1**	245	223	251	**Mid NOx Span Gas**
11:41	223.9	3.4	243	221	251	Bias Checks
11:42	68.4	12.4	242	219	251	Bias Checks
11:43	0.9	12.5	240	218	251	Bias Checks
11:44	**0.6**	**12.5**	239	217	251	**Mid O2/CO2 Span Gas**
11:45	0.6	8.7	238	216	250	Bias Checks
11:46	112	9	237	215	251	Bias Checks
11:47	161.8	8.9	238	215	251	Stack Gas
11:48	158.8	9.4	238	215	251	Run #6
11:49	158.2	9.1	240	216	251	Run #6
11:50	157.7	8.8	241	217	252	Run #6
11:51	156	9	242	218	252	Run #6
11:52	157.3	9.1	243	219	252	Run #6
11:53	156.5	8.9	244	217	253	Run #6
11:54	158.3	8.7	244	218	253	Run #6
11:55	159.9	8.7	245	219	253	Run #6
11:56	159	9.5	246	220	254	Run #6
11:57	160	9.2	246	221	254	Run #6
11:58	163.2	8.8	247	222	254	Run #6
11:59	162.6	8.9	247	222	254	Run #6
12:00	162.2	8.9	248	223	254	Run #6
12:01	161.1	9.1	248	223	254	Run #6

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U.S. Steel Corporation - Mon Valley Works
Clairton Plant - Clairton, PA
PART 75 RATA - Utilities Powerhouse - Boiler No. 2
Chester Mobile Air Quality Laboratory Data

MARCH 19, 2009

Minute Data Averages

Hour (EDT)	NOx (ppm dry)	O2 (ppm dry)	Line #1 (248+/-25F)	Line #2 (248+/-25F)	Line #3 (248+/-25F)	Notes
12:02	159	8.7	248	223	254	Run #6
12:03	157.6	8.4	249	224	254	Run #6
12:04	149.4	8.8	249	224	251	Run #6
12:05	147.2	9.2	249	225	254	Run #6
12:06	147.9	9	249	226	257	Run #6
12:07	147.7	8.7	249	223	254	Run #6
12:08	145.3	8.7	249	215	254	Run #6
	156.4	8.9	245.8	220.5	253.3	21 Min. Analyzer Average, Ca
	0.60	0.05				Avg. Zero Bias Check, Co
	223.45	12.50				Avg. Mid Span Bias Check, Cm
	224.1	12.47				Actual Mid Span Value, Cma
	156.7	8.9				Corrected Conc., Cstack
	0.253 (lb/MMBtu)		7771.9			NOx Emission Factor
12:09	126.6	4.5	249	206	254	Bias Checks
12:10	180.2	0.1	249	198	253	Bias Checks
12:11	223	0	247	189	253	Bias Checks
12:12	**223**	**0**	245	182	252	**Mid NOx Span Gas**
12:13	223.2	3.6	243	176	252	Bias Checks
12:14	42.4	12.4	242	173	251	Bias Checks
12:15	0.8	12.5	240	178	251	Bias Checks
12:16	**0.6**	**12.5**	239	184	251	**Mid O2/CO2 Span Gas**
12:17	0.5	12.5	238	188	250	Bias Checks
12:18	72.8	9.4	237	192	251	Stack Gas
12:19	153.2	8.8	237	196	251	Stack Gas
12:20	151	8.7	238	199	251	Run #7
12:21	151.5	8.8	239	202	251	Run #7
12:22	154.5	9.1	241	206	248	Run #7
12:23	154.8	9.1	242	209	248	Run #7
12:24	156.7	8.6	242	212	249	Run #7
12:25	152.8	8.6	243	214	250	Run #7
12:26	151.7	9	244	215	251	Run #7
12:27	151.8	8.7	245	217	252	Run #7
12:28	149.4	8.9	246	218	252	Run #7
12:29	151.7	9	246	219	253	Run #7
12:30	150.7	8.9	247	220	253	Run #7
12:31	150	9.1	247	221	253	Run #7
12:32	152.1	8.8	247	222	253	Run #7
12:33	148.9	9.2	247	221	251	Run #7
12:34	148.8	8.9	247	221	251	Run #7
12:35	147.3	8.9	247	222	252	Run #7
12:36	148.6	9.1	248	224	252	Run #7
12:37	151.2	9.1	248	224	253	Run #7
12:38	149.8	9.1	249	225	253	Run #7
12:39	147.2	9	249	226	253	Run #7
12:40	147.6	9	249	226	253	Run #7
	150.9	8.9	245.3	217.3	251.5	21 Min. Analyzer Average, Ca
	0.60	0.00				Avg. Zero Bias Check, Co
	222.95	12.50				Avg. Mid Span Bias Check, Cm
	224.1	12.47				Actual Mid Span Value, Cma
	151.4	8.9				Corrected Conc., Cstack

U.S. Steel Corporation - Mon Valley Works
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PART 75 RATA - Utilities Powerhouse - Boiler No. 2
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Minute Data Averages

Hour (EDT)	NOx (ppm dry)	O2 (ppm dry)	Line #1 (248+/-25F)	Line #2 (248+/-25F)	Line #3 (248+/-25F)	Notes
	0.245 (lb/MMBtu)		7768.5			NOx Emission Factor
12:41	149.9	9.1	249	226	253	Bias Checks
12:42	179.1	0.2	249	227	253	Bias Checks
12:43	223	0.1	247	227	252	Bias Checks
12:44	222.8	0.1	245	227	252	Bias Checks
12:45	**222.9**	**0**	244	226	251	**Mid NOx Span Gas**
12:46	180.9	9.2	242	224	251	Bias Checks
12:47	1.6	12.5	241	223	251	Bias Checks
12:48	0.7	12.5	239	222	250	Bias Checks
12:49	**0.6**	**12.5**	238	221	250	**Mid O2/CO2 Span Gas**
12:50	0.3	11	238	221	250	Bias Checks
12:51	128.3	8.9	237	221	251	Stack Gas
12:52	153	8.7	238	221	251	Stack Gas
12:53	148.1	9.3	239	221	252	**Run #8**
12:54	153.4	9.1	240	221	252	**Run #8**
12:55	150.3	9	241	221	252	**Run #8**
12:56	149.8	8.5	242	222	252	**Run #8**
12:57	144.2	8.9	243	223	252	**Run #8**
12:58	145.6	9.1	244	224	253	**Run #8**
12:59	145.6	9	245	224	253	**Run #8**
13:00	144.9	8.7	246	224	253	**Run #8**
13:01	142.1	8.9	246	224	253	**Run #8**
13:02	141.6	8.7	247	224	253	**Run #8**
13:03	143.7	9	247	224	253	**Run #8**
13:04	145.7	8.6	248	224	253	**Run #8**
13:05	139.3	8.7	248	224	253	**Run #8**
13:06	139.2	8.7	249	225	253	**Run #8**
13:07	138.9	8.9	249	226	253	**Run #8**
13:08	140.1	9.1	249	227	252	**Run #8**
13:09	146.2	9.1	249	228	252	**Run #8**
13:10	150.1	8.6	249	229	251	**Run #8**
13:11	145.7	8.9	249	231	251	**Run #8**
13:12	147	9	249	231	250	**Run #8**
13:13	146.1	9.3	249	232	250	**Run #8**
	145.1	8.9	246.1	225.2	252.2	**21 Min. Analyzer Average, Ca**
	0.60	0.00				**Avg. Zero Bias Check, Co**
	223.00	12.50				**Avg. Mid Span Bias Check, Cm**
	224.1	12.47				**Actual Mid Span Value, Cma**
	145.6	8.9				**Corrected Conc., Cstack**
	0.235 (lb/MMBtu)		7759.3			NOx Emission Factor
13:14	153.5	3	249	232	250	Bias Checks
13:15	206.9	0.1	248	232	249	Bias Checks
13:16	223	0	246	231	249	Bias Checks
13:17	**223.1**	**0**	245	230	249	**Mid NOx Span Gas**
13:18	214.5	5.2	243	229	248	Bias Checks
13:19	55.1	12.4	241	228	248	Bias Checks
13:20	0.7	12.5	240	226	248	Bias Checks
13:21	**0.6**	**12.5**	239	225	248	**Mid O2/CO2 Span Gas**
13:22	0.4	11.7	238	223	248	Bias Checks

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Clairton Plant - Clairton, PA
PART 75 RATA - Utilities Powerhouse - Boiler No. 2
Chester Mobile Air Quality Laboratory Data

MARCH 19, 2009

Minute Data Averages

Hour (EDT)	NOx (ppm dry)	O2 (ppm dry)	Line #1 (248+/-25F)	Line #2 (248+/-25F)	Line #3 (248+/-25F)	Notes
13:23	110.9	8.7	237	221	249	Stack Gas
13:24	152.2	8.9	238	220	250	Stack Gas
13:25	154	9.1	239	220	251	**Run #9**
13:26	156.1	9	240	220	251	**Run #9**
13:27	155.9	8.7	241	220	252	**Run #9**
13:28	155.2	8.5	242	220	252	**Run #9**
13:29	149.9	9.5	243	221	253	**Run #9**
13:30	153.2	9.1	244	222	253	**Run #9**
13:31	154.9	9	245	222	254	**Run #9**
13:32	153.5	8.5	245	223	254	**Run #9**
13:33	154.9	9.3	246	224	254	**Run #9**
13:34	160.7	8.9	246	224	254	**Run #9**
13:35	158.9	8.9	247	225	254	**Run #9**
13:36	158.6	8.6	248	225	254	**Run #9**
13:37	153.3	9.2	248	226	254	**Run #9**
13:38	152	9.1	249	227	254	**Run #9**
13:39	153.8	9.2	249	229	254	**Run #9**
13:40	152.3	8.8	249	230	253	**Run #9**
13:41	153.6	8.8	249	230	253	**Run #9**
13:42	155.7	8.9	249	230	252	**Run #9**
13:43	156.3	9	249	230	252	**Run #9**
13:44	157.9	8.8	249	230	252	**Run #9**
13:45	153	8.9	249	230	252	**Run #9**
	154.9	8.9	246.0	225.1	253.0	**21 Min. Analyzer Average, Ca**
	0.60	0.00				**Avg. Zero Bias Check, Co**
	223.25	12.50				**Avg. Mid Span Bias Check, Cm**
	224.1	12.47				**Actual Mid Span Value, Cma**
	155.3	8.9				**Corrected Conc., Cstack**
	0.251 (lb/MMBtu)		7750.1			**NOx Emission Factor**
13:46	151.9	4.6	249	230	252	Bias Checks
13:47	196.6	0.1	249	229	251	Bias Checks
13:48	223.3	0	247	228	251	Bias Checks
13:49	223.3	0	245	226	251	Bias Checks
13:50	**223.4**	**0**	243	225	251	**Mid NOx Span Gas**
13:51	210.8	6.3	242	224	250	Bias Checks
13:52	13.5	12.4	241	222	250	Bias Checks
13:53	0.9	12.5	239	221	249	Bias Checks
13:54	**0.6**	**12.5**	238	220	249	**Mid O2/CO2 Span Gas**
13:55	0.4	8.4	237	220	249	Stack Gas
13:56	0.3	12.6	237	219	249	Stack Gas

CEM CALIBRATION GAS REQUIREMENTS

Analyte	Chester Analyzer	Calibration Gases (% of Span)					Interference Check
		Zero	Low - Level	Mid - Level	High Level (C.S.)	Approved Mixtures	
O_2	California Analytical Instruments - Paramagnetic Oxygen Analyzer - Model 100P	< 10% or N_2	N/A	40% - 60 % of Calibrated Span	100%	O_2 in N_2	Interference Response Test - Vendor Data (M20, S5.1)
CO_2	California Analytical Instruments - CO_2 Analyzer - Model 100	purified ambient air or N_2	N/A	40% - 60 %	100%	CO_2 in N_2 CO_2 in air	Ibid.
NO_x	Advanced Pollution Instrumentation, Inc. - Chemiluminescent NO_x Analyzer Model - 200AH	purified ambient air or N_2	N/A	40% - 60 %	100%	NO in N_2	Ibid. + NO_2 to NO Converter Test (M20, S5.6)
CO	Advanced Pollution Instrumentation, Inc. - Gas Filter Correlation CO Analyzer Model - 300	N_2	N/A	40% - 60 %	100%	CO in N_2	Ibid.
SO_2	Advanced Pollution Instrumentation, Inc. - Fluorescent SO_2 Analyzer Model - 100AH	< 0.25% or purified ambient air or N_2	N/A	40% - 60 %	100%	SO_2 in N_2 SO_2 in air SO_2/CO_2 in N_2 SO_2/O_2 in N_2 $SO_2/CO_2/O_2$ in N_2	Ibid or Comparison with M6
THC	J.U.M. Engineering Heated F.I.D. Analyzer - Model 3 - 300A	purified ambient air or N_2	N/A	40% - 60 %	100%	C_3H_8 in N_2 C_3H_8 in air	N/A

C.S. = Calibrated Span (equal to the High Level calibration gas certified value)

C - stack gas = (C-analyzer - Co) * Cma / (Cm - Co)
C - stack gas = Stack gas concentration
C - analyzer = Average analyzer gas concentration
Co = Average of initial and final calibration bias check response for the zero calibration gas
Cm = Average of initial and final calibration bias check response for the upscale calibration gas
Cma = Actual upscale calibration gas concentration

Airgas

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E02NI99E15A0528	Reference Number:	113-124127516-4
Cylinder Number:	CC177361	Cylinder Volume:	144 Cu.Ft.
Laboratory:	ASG - Maumee - OH	Cylinder Pressure:	2015 PSIG
Analysis Date:	Feb 21, 2008	Valve Outlet:	660

Expiration Date: Feb 21, 2010

Analysis performed in accordance with "EPA Traceability Protocol (Sept. 1997, using the assay procedure listed. Analytical Methods typically not equivalent to analytical conference. The expanded analytical uncertainty is stated based on a confidence level of 95%. Data are calculated, signature has been affixed in lieu of hand signature. All concentrations are on a volume/volume basis unless otherwise noted.
Do Not Use the Cylinder below 150 psig. ? Meja Fuerza

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainity
NITRIC OXIDE	225.0 PPM	224.1 PPM	G1	+/- 1% NIST Traceable
NITROGEN	Balance			
Total nodes of nitrogen		224.4 PPM		For Reference Only

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM	061237	CC217599	476.8PPM NITRIC OXIDE/NITROGEN	Sep 01, 2010

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
063-HORIBA CLA-510SS	chemiluminescence	Feb 11, 2008

Triad Data Available Upon Request

Notes:

QA Approval

NOx Calibration

EPA Protocol
Performed according to EPA-600/R-97/121, Procedure G1

Notice: This Cylinder is not to be used when pressure is under 150 psig.

Manufactured and certified at:
Linde Gas USA LLC
Maumee Specialty Gas Plant
6421 Monclova Road
MAUMEE OH 43537
419-893-7226

Produced for customer:
LINDE GAS
LINDE PITTSBURGH INTERBRANCH
4349 WILLIAM PENN HWY
MURRYSVILLE PA 15668
724-327-1480

Material:	6599	Blend Tolerance:	5 % Relative
EPA NO/N2 50-199 PPM	A31	Blend Type:	EPA Protocol
Production #:	109132036	Cyl. Pressure:	2000 psig
Lot #:	03499L730JD	Balance Gas:	Nitrogen
Cylinder #:	CC137207	CGA:	660
Expiration Date:	5/29/2009	Analytical Accuracy:	1.00 % Relative
Shelf Life:	24 months	Confidence:	95 %

CAS #	Certified Component	Requested Concentration	Concentration and Uncertainty	Date of Certification
10102-43-9	Nitric Oxide	450	451 +/- 5 ppm	05/29/2007
7727-37-9	Nitrogen		Balance	05/29/2007

CAS #	Analyzed (For Ref Use Only)	Concentration	Analysis Da
NEA	NOx	451 ppm	05/29/2007

CAS #	Reference Standard	Cylinder/Standard #	Concentration	Expire Dat
10102-43-9	Nitric Oxide	CC220031 , NTRM	476.8 ppm	09/01/2010

Instrument	Serial #	Analytical Principle	Calibration D
Horiba CLA-510SS	568093024	Chemiluminescence	05/24/2007

All analyses are performed under controlled environmental conditions.This product is manufactured using equipment which been calibrated with NIST traceable, or equivalent, standards, weights, or equipment.

Analytical result approved by: Ross Nesbo

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E03NI78E15A01R6	Reference Number:	113-124107578-1
Cylinder Number:	CC154304	Cylinder Volume:	151 Cu.Ft.
Laboratory:	ASG - Maumee - OH	Cylinder Pressure:	2015 PSIG
Analysis Date:	Sep 13, 2007	Valve Outlet:	590

Expiration Date: Sep 13, 2010

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. 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 given on a volume/volume basis unless otherwise noted.
Do Not Use This Cylinder below 150 psig. ie: 1 Mega Pascal

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainity
CARBON DIOXIDE	10.00 %	10.34 %	G1	+/- 1% NIST Traceable
OXYGEN	12.00 %	12.47 %	G1	+/- 1% NIST Traceable
NITROGEN	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM	C327UA	CC59133	13.78% CARBON DIOXIDE/NITROGEN	Oct 02, 2008
NTRM	C314BI	CC73619	14.84% OXYGEN/NITROGEN	Oct 02, 2008

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
039-Horiba VIA-510	NDIR	Aug 14, 2007
059-Rosemount 755R O2 Analyzer	Paramagnetic	Sep 13, 2007

Triad Data Available Upon Request

Notes:

QA Approval

Page 1 of 113-124107578-1

Airgas, Inc
6421 Monclova Road
Maumee, Ohio 43537

Phone : (419) 893-7226
Fax : (419) 893-6411
www.airgas.com

Airgas

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number	E03NI59E15A8577	Reference Number	113-124123139.3
Cylinder Number	CC239967	Cylinder Volume	160 Cu.Ft
Laboratory	ASG - Macmee - OH	Cylinder Pressure	2014 PSIG
Analysis Date	Jan 24, 2008	Valve Outlet	290

Expiration Date: Jan 24, 2011

[illegible]

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainity
CARBON DIOXIDE	20.00 %	19.78 %	G1	[illegible] NIST Traceable
OXYGEN	25.00 %	24.88 %	G1	[illegible] NIST Traceable
NITROGEN	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM	65L004	CC184885	18.86% CARBON DIOXIDE/NITROGEN	May 01, 2018
NTRM	966[illegible]	CC287590	22.51% OXYGEN/NITROGEN	May 01, 2018

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
030 Horiba VIA-510	NDIR	Jan 08, 2008
050 Rosemount 755R O2 Analyzer	Paramagnetic	Jan 11, 2008

Trend Data Available Upon Request

Notes

QA Approval

CHESTER MOBILE AIR QUALITY LABORATORY
NOX Analyzer Converter Efficiency Test Results
Test Performed on March 11, 2009
Test Performed by Hudson Tiffany using the Tedlar bag technique

Date	Hour	500 ppm NO_x	500 ppm NO_2	Trailer Temp (F)	<<<RANGE <<<UNITS
3/11/2009	10:40	0	0.1	61	Ambient Air
3/11/2009	10:41	0	0.1	61	Ambient Air
3/11/2009	10:42	30.9	1.1	61	Bag On
3/11/2009	10:43	125.6	4.6	61	Bag On
3/11/2009	10:44	124.4	5.9	61	Bag On
3/11/2009	10:45	123.8	7.3	61	**Test**
3/11/2009	10:46	123.6	9	61	**Test**
3/11/2009	10:47	123.6	10.5	61	**Test**
3/11/2009	10:48	123.6	12.3	61	**Test**
3/11/2009	10:49	123.5	13.8	61	**Test**
3/11/2009	10:50	123.5	15.4	61	**Test**
3/11/2009	10:51	123.3	16.9	61	**Test**
3/11/2009	10:52	123.3	18.2	61	**Test**
3/11/2009	10:53	123.3	19.7	61	**Test**
3/11/2009	10:54	123.1	21	61	**Test**
3/11/2009	10:55	123	22.4	62	**Test**
3/11/2009	10:56	123	23.7	62	**Test**
3/11/2009	10:57	122.9	24.9	62	**Test**
3/11/2009	10:58	122.9	26.3	62	**Test**
3/11/2009	10:59	122.7	27.4	62	**Test**
3/11/2009	11:00	122.7	28.3	61	**Test**
3/11/2009	11:01	122.5	29.4	61	**Test**
3/11/2009	11:02	122.4	30.5	62	**Test**
3/11/2009	11:03	122.4	31.6	62	**Test**
3/11/2009	11:04	122.4	32.7	62	**Test**
3/11/2009	11:05	122.4	33.7	62	**Test**
3/11/2009	11:06	122.2	34.7	62	**Test**
3/11/2009	11:07	122.1	35.6	62	**Test**
3/11/2009	11:08	122.1	36.6	62	**Test**
3/11/2009	11:09	121.8	37.4	62	**Test**
3/11/2009	11:10	122	38.3	62	**Test**
3/11/2009	11:11	121.8	39.3	62	**Test**
3/11/2009	11:12	121.7	40	62	**Test**
3/11/2009	11:13	121.5	40.7	62	**Test**
3/11/2009	11:14	121.5	41.6	62	**Test**
3/11/2009	11:15	121.5	42.4	62	finished
3/11/2009	11:16	121.3	43.2	62	finished
		123.8			**Maximum**
		121.5			**Minimum**
		121.3			**Allowable Minimum**

Converter Efficiency Test is ACCEPTABLE

CHESTER ENGINEERS MOBILE AIR QUALITY LABORATORY
CEMS Interference Test Notes
API Chemiluminescent NOx Analyzer Model 200AH S/N 258
API Fluorescent SO2 Analyzer Model 100AH S/N 064
API Gas Filter Correlation CO Analyzer Model 300 S/N 905
California Analytical Instruments O2 Analyzer Model 100-P S/N 4J06002
California Analytical Instruments CO2 Analyzer Model 100 S/N 5J06007
Test Performed on January 23, 2009 by Dan Nadzam & Hudson Tiffany

These interference tests demonstrate that the Chester Engineers CEMS are within the U.S. EPA specifications allowed for analyzer interference. Each analyzer was operated at the lowest typical range. Protocol 1 calibration Gases were used.

The following CALIBRATION worksheet demonstrates that the analyzers were in calibration (+/- 2.0% of the calibrated span) prior to the interference testing. The data is the response of each analyzer to the CALIBRATION SPAN gas. All gases were introduced through a common manifold.

The following INTERFERENCE worksheet demonstrates two things. One is that the analyzers have a linear response as verified by the acceptable response (+/- 2.0% of the calibrated span) to a mid level calibration gas. The second is the response of each analyzer to the interferent test gas.

The SO2 analyzer response test was performed by blending a mixture of interferent test gases. The purpose of mixing the gases was to determine the least amount of oxygen necessary to reduce the NO interference (note the unacceptable SO2 response to the Protocol 1 NO gases, which are balance nitrogen) to acceptable levels. The analyzer manufacturer suggested at least 3% would be necessary, yet it was found that 1.9% oxygen would be acceptable.

Each analyzer's Interference Response is summarized on the RESULTS worksheet.

CHESTER ENGINEERS MOBILE AIR QUALITY LABORATORY
CEMS Interference Test Calibrations
API Chemiluminescent NOx Analyzer Model 200AH S/N 258
API Fluorescent SO2 Analyzer Model 100AH S/N 064
API Gas Filter Correlation CO Analyzer Model 300 S/N 905
California Analytical Instruments O2 Analyzer Model 100-P S/N 4J06002
California Analytical Instruments CO2 Analyzer Model 100 S/N 5J06007
Test Performed on January 23, 2009 by Dan Nadzam & Hudson Tiffany

Hour	60.5 ppm CO	119.5 ppm SO_2	88.8 ppm NO_x	24.88 % O_2	19.78 % CO_2	88.8 ppm NO_2	deg F Trailer	<<<CALIBRATION SPAN <<<UNITS
13:42	0.1	0	0	0	0	0.1	83	Zero Gas (Nitrogen)
13:43	-0.1	0	0	0	0	0.1	83	Zero Gas (Nitrogen)
13:44	-0.1	0	0	0	0	0.1	84	Zero Gas (Nitrogen)
13:45	-0.1	0	0	0	0	0.1	84	Zero Gas (Nitrogen)
13:46	**-0.1**	**0**	**0**	**0**	**0**	0.1	84	**Zero Gas (Nitrogen)**
13:47	5.7	0	0	0.1	0	0.1	84	CO Span Gas (60.5)
13:48	53.8	0	0	0	0	0.1	84	CO Span Gas (60.5)
13:49	60.7	0	0	0	0	0.1	84	CO Span Gas (60.5)
13:50	61	0	0	0	0	0.1	84	CO Span Gas (60.5)
13:51	60.7	0	0	0	0	0.1	84	CO Span Gas (60.5)
13:52	**60.6**	0	0	0	0	0.1	84	**CO Span Gas (60.5)**
13:53	48.8	47.6	0	0.1	0	0.1	84	SO_2 Span Gas (119.5)
13:54	4.6	115.5	0	0	0	0.1	84	SO_2 Span Gas (119.5)
13:55	0.1	116.7	0	0	0	0.1	84	SO_2 Span Gas (119.5)
13:56	-0.1	117	0	0	0	0.1	84	SO_2 Span Gas (119.5)
13:57	-0.3	118.1	0	0	0	0.1	84	SO_2 Span Gas (119.5)
13:58	-0.3	119.2	0	0	0	0.1	83	SO_2 Span Gas (119.5)
13:59	-0.4	**119.4**	0	0	0	0.1	83	**SO_2 Span Gas (119.5)**
14:00	-0.4	119.3	0	0	0	0.1	83	NO_x Span Gas (88.8)
14:01	-0.4	69.7	18.3	0	0	0.1	84	NO_x Span Gas (88.8)
14:02	-0.4	31.1	88.2	0	0.1	0.2	84	NO_x Span Gas (88.8)
14:03	-0.4	30.6	88.4	0	0.1	0.3	84	NO_x Span Gas (88.8)
14:04	-0.4	30.7	**88.3**	0	0.1	-0.1	84	**NO_x Span Gas (88.8)**
14:05	-0.4	15.9	77.6	13.5	9.2	1.6	84	24.88 % O_2, 19.78 % CO2
14:06	-0.7	0.2	13.8	24.9	18.9	2.6	84	24.88 % O_2, 19.78 % CO2
14:07	-0.9	0.2	0	25	19.8	0.1	84	24.88 % O_2, 19.78 % CO2
14:08	-1.2	0.1	0	25	19.8	0.1	84	24.88 % O_2, 19.78 % CO2
14:09	-1.3	0.1	0	25	19.8	0.1	84	24.88 % O_2, 19.78 % CO2
14:10	-1.3	0.1	0	**25**	**19.8**	0.1	84	**24.88 % O_2, 19.78 % CO2**
14:11	-1.3	0.1	0	25	19.8	0.1	84	24.88 % O_2, 19.78 % CO2
14:12	-0.5	0.3	0	18.8	6.5	0.1	84	Ambient Air
14:13	-0.4	0.9	0	20.6	0.3	0.1	85	Ambient Air
14:14	-0.3	0.5	0	20.5	0.3	0.1	85	Ambient Air

CHESTER ENGINEERS MOBILE AIR QUALITY LABORATORY
CEMS Interference Tests
API Chemiluminescent NOx Analyzer Model 200AH S/N 258
API Fluorescent SO2 Analyzer Model 100AH S/N 064
API Gas Filter Correlation CO Analyzer Model 300 S/N 905
California Analytical Instruments O2 Analyzer Model 100-P S/N 4J06002
California Analytical Instruments CO2 Analyzer Model 100 S/N 5J06007
Test Performed on January 23, 2009 by Dan Nadram & Hudson Tiffany

	60.5	119.5	88.8	24.84	19.75	88.8		<<<CALIBRATION SPAN
	ppm	ppm	ppm	%	%	ppm	deg F	<<<UNITS
Hour	CO	SO_2	NO_x	O_2	CO_2	NO	Trailer	
14:44	-0.3	-0.1	0	20.6	0.1	0.1	83	Ambient Air
14:45	-0.3	-0.1	0	20.6	0.1	0.1	83	Ambient Air
14:46	-0.3	-0.1	0	19.2	0.1	0.1	83	Zero Gas
14:47	-0.3	-0.1	0	0	0	0.1	83	Zero Gas
14:48	-0.2	-0.1	0	0	0	0.1	83	Zero Gas
14:49	-0.1	-0.1	0	0	0	0.1	82	Zero Gas
14:50	-0.1	-0.2	0	0.1	0	0.1	83	Low CO
14:51	18.1	-0.1	0	0	0	0.1	83	Low CO
14:52	28.8	-0.2	0	0	0	0.1	83	Low CO
14:53	29.3	-0.1	0	0	0	0.1	83	Low CO (30.5)
14:54	**29.3**	**-0.2**	**0**	**0**	**0**	0.1	83	**Low CO Interference**
14:55	26.2	13.8	0	0.2	0	0.1	84	Low SO2
14:56	3.8	50	0.1	0	0	0.1	84	Low SO2
14:57	-0.1	50.6	0.3	0	0	0.1	84	Low SO2
14:58	-0.3	50.8	0.3	0	0	0.1	84	Low SO2 (50.94)
14:59	**-0.3**	**50.8**	**0.3**	**0**	**0**	0.1	84	**Low SO2 Interference**
15:00	-0.4	50.8	0.3	0	0	0.1	84	Low SO2
15:01	-0.4	38.6	0.7	0	0	-0.3	84	Low NOx
15:02	-0.4	17.3	44.9	0	0	0	84	Low NOx
15:03	-0.4	17.2	50.4	0	0	0.7	84	Low NOx
15:04	-0.4	17.2	50.7	0	0	0.4	84	Low NOx
15:05	**-0.4**	**17.3**	**50.7**	**0**	**0**	0.6	84	**Low NOx Interference**
15:06	-0.4	9.4	44.4	0	0	0.4	83	Low NOx
15:07	-0.4	-0.1	0.1	0	0	0.2	83	Ambient Air
15:08	-0.3	-0.1	0	3.2	2.3	0.1	83	Ambient Air
15:09	-0.4	-0.1	0	12.4	9.9	0.1	84	Ambient Air
15:10	-0.5	-0.1	0	12.4	10	0.1	84	Ambient Air
15:11	-0.8	-0.1	0	12.4	10	0.1	83	Ambient Air
15:12	-1.1	-0.1	0	12.4	10	0.1	84	Ambient Air
15:13	-0.7	-0.1	0	3.8	3.2	0.1	84	Ambient Air
15:14	-0.3	-0.1	0	0	0	0.1	84	Check Zero
15:15	-0.1	-0.1	0	0	0	0.1	84	Check Zero
15:16	-0.1	-0.1	0	0.1	0	0.1	84	Low O2/CO2
15:17	-0.2	-0.1	0	12.2	9.4	0.1	84	Low O2/CO2
15:18	-0.4	-0.1	0	12.5	10.3	0.1	84	Low O2/CO2 (12.47/10.34)
15:19	**-0.7**	**-0.1**	**0**	**12.4**	**10.3**	0.1	84	**Low O2/CO2 Interference**
15:20	-0.8	-0.1	0	16.3	3.3	0.1	84	Ambient Air
15:21	-0.9	0.1	0	20.7	0.2	0.1	84	Ambient Air
15:22	-0.6	0	0	20.6	0.2	0.1	84	Ambient Air
15:23	-0.4	-0.1	0	20.6	0.2	0.1	84	Ambient Air
15:24	-0.3	-0.1	0	20.7	0.2	0.1	84	Ambient Air
15:25	-0.3	-0.1	0	20.7	0.2	0.1	84	Ambient Air
15:26	-0.3	-0.1	0	20.6	0.2	0.1	84	Ambient Air
15:27	**-0.3**	**-0.1**	**0**	**20.6**	**0.2**	0.1	84	**Ambient Air Interference**
15:28	-0.3	-0.1	0	15.6	0.2	0.1	84	Mixed Gas
15:29	-0.3	1.9	30.6	1.5	1.3	0.4	84	Mixed Gas
15:30	-0.4	3	43.8	1.3	1.2	0.1	84	Mixed Gas
15:31	-0.5	3.3	44	1.3	1.2	0.1	84	Mixed Gas
15:32	-0.7	3.5	44.5	1.2	1.1	0.2	84	Mixed Gas
15:33	**-0.8**	**3.6**	**44.8**	**1.2**	**1.1**	0.3	84	Mixed Gas (@ 1.2 % O2)
15:34	-0.8	3.8	45.1	1.1	1.1	0.3	84	Mixed Gas
15:35	-0.8	3.8	45.2	1.4	1.2	0.4	84	Mixed Gas
15:36	-0.8	2.5	43.4	1.9	1.6	0.7	84	Mixed Gas
15:37	-0.8	2.4	42.1	1.9	1.6	0.4	83	Mixed Gas
15:38	-0.8	2.4	42.1	1.8	1.6	0.3	83	Mixed Gas
15:39	-0.8	2.4	42.1	1.9	1.6	0.3	83	Mixed Gas
15:40	**-0.8**	**2.4**	**42.1**	**1.9**	**1.6**	0.4	83	Mixed Gas (@ 1.9 % O2)
15:41	-0.8	2.4	42.1	1.9	1.6	0.4	83	Mixed Gas
15:42	-0.8	2.3	42	2	1.7	0.4	83	Mixed Gas
15:43	-0.8	1.9	41.1	2.5	2.1	0.6	83	Mixed Gas
15:44	-0.8	1.6	39.3	2.6	2.2	0.6	83	Mixed Gas
15:45	-0.8	1.5	38.6	2.7	2.3	0.4	83	Mixed Gas
15:46	**-0.8**	**1.5**	**38.3**	**2.7**	**2.3**	0.4	83	Mixed Gas (@ 2.7 % O2)
15:47	-0.8	1.5	38.6	2.7	2.3	0.2	83	Mixed Gas
15:48	-0.8	1.5	38.5	3	2.5	0.3	83	Mixed Gas
15:49	-0.8	1.1	36.8	3.6	3	0.5	83	Mixed Gas
15:50	-0.9	1	34.6	3.6	3.1	0.2	83	Mixed Gas
15:51	**-0.9**	**1**	**34.7**	**3.6**	**3.1**	0.4	83	Mixed Gas (@ 3.6 % O2)
15:52	-0.9	1	34.3	4.2	3.5	0.6	83	Mixed Gas
15:53	-0.9	0.6	29	5.1	4.3	0.7	83	Mixed Gas
15:54	-0.9	0.5	28	5.2	4.4	0.3	83	Mixed Gas
15:55	**-0.9**	**0.5**	**27.7**	**5.3**	**4.5**	0.1	83	Mixed Gas (@ 5.2 % O2)
15:56	-0.9	0.3	21	5.4	3.8	0.4	83	Mixed Gas

CHESTER ENGINEERS MOBILE AIR QUALITY LABORATORY

CEMS Interference Test Results

Test Performed on January 23, 2009 by Dan Nadzam & Hudson Tiffany

API Gas Filter Correlation CO Analyzer Model 300 S/N 905		
Calibration Span (C.S.) (ppmv, dry) = 50.5		
Test Gas Type	Concentration (ppm or %)	Analyzer Response (ppm)
N_2	100%	-0.1
$O_2/CO_2/N_2$	12.47% / 10.34% / balance	-0.4
SO_2/N_2	50.94 ppm / balance	-0.3
NO/N_2	50.37 ppm / balance	-0.4
Ambient Air	20.9%O_2 / 79.1%N_2	-0.3
	Sum of absolute Response	1.5
	Sum as a percent of Calibration Span	2.48%
	Meets criteria of <= 2.5% of C.S.	YES

API Fluorescent SO_2 Analyzer Model 100AH S/N 064		
Calibration Span (C.S.) (ppmv, dry) = 119.5		
Test Gas Type	Concentration (ppm or %)	Analyzer Response (ppm)
N_2	100%	-0.1
$O_2/CO_2/N_2$	12.47% / 10.34% / balance	-0.1
CO/N_2	30.5 ppm / balance	-0.2
$NO_x/O_2/CO_2/N_2$	42.1ppm / 1.9% / 1.6% / balance	2.4
Ambient Air	20.9%O_2 / 79.1%N_2	-0.1
	Sum of absolute Response	2.9
	Sum as a percent of Calibration Span	2.4%
	Meets criteria of <= 2.5% of C.S.	YES

API Chemiluminescent NO_x Analyzer Model 200AH S/N 258		
Calibration Span (C.S.) (ppmv, dry) = 88.8		
Test Gas Type	Concentration (ppm or %)	Analyzer Response (ppm)
N_2	100%	0
$O_2/CO_2/N_2$	12.47% / 10.34% / balance	0
SO_2/N_2	50.94 ppm / balance	0.3
CO/N_2	30.5 ppm / balance	0
Ambient Air	20.9%O_2 / 79.1%N_2	0
	Sum of absolute Response	0.3
	Sum as a percent of Calibration Span	0.3%
	Meets criteria of <= 2.5% of C.S.	YES

California Analytical Instruments O_2 Analyzer Model 100-P S/N 4J06002		
Calibration Span (C.S.) (%, dry) = 24.9		
Test Gas Type	Concentration (ppm or %)	Analyzer Response (%)
N_2	100%	0
SO_2/N_2	50.94 ppm / balance	0
NO/N_2	50.37 ppm / balance	0
CO/N_2	30.5 ppm / balance	0
	Sum of absolute Response	0
	Sum as a percent of Calibration Span	0.0%
	Meets criteria of <= 2.5% of C.S.	YES

California Analytical Instruments CO_2 Analyzer Model 100 S/N 5J06007		
Calibration Span (C.S.) (%, dry) = 19.8		
Test Gas Type	Concentration (ppm or %)	Analyzer Response (%)
N_2	100%	0
SO_2/N_2	50.94 ppm / balance	0
NO/N_2	50.37 ppm / balance	0
CO/N_2	30.5 ppm / balance	0
Ambient Air	20.9%O_2 / 79.1%N_2	0.2
	Sum of absolute Response	0.2
	Sum as a percent of Calibration Span	1.0%
	Meets criteria of <= 2.5% of C.S.	YES