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

Relative Accuracy Test Audit
of the Continuous Emissions Monitoring System
for B-Battery Combustion Stack at
United States Steel Corporation
Mon Valley Complex - Clairton Plant – Clairton, PA
per
Pennsylvania Department of Environmental Protection
Continuous Source Monitoring Manual Requirements

August 26, 2008

SEPTEMBER 2008

APPENDIX B

Chester Reference Method Comparison Data

CHESTER ENGINEERS
"Tradition in Engineering Excellence Since 1910"

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

ANNUAL RATA
B BATTERY COMBUSTION STACK
STRATIFICATION TEST RESULTS
AUGUST 25, 2008

TIME OF TEST (EDT)	NO_x (ppm)	O_2 (%)	TRAVERSE POINT	NO_x (ppm, avg.)	O_2 (%, avg.)	ABSOLUTE NOX DELTA	ABSOLUTE O2 DELTA
14:18	156.3	11.3	1				
14:19	159.2	11.4	1	157.75	11.35	3.12	0.03
14:20	160.3	11.4	2				
14:21	162.4	11.4	2	161.35	11.4	0.48	0.02
14:22	163.4	11.5	3				
14:23	163.6	11.3	3	163.5	11.4	2.63	0.02

Average of all TRAVERSE POINTS, $(NO_X)_{AVG}$ AND $(O_2)_{AVG}$ 160.87 11.38

MAXIMUM ppm DIFFERENCE OF$(NO_X)_i$ and $(NO_X)_{AVG}$ 3.12 (3 ppm)
WHERE, I IS THE TRAVERSE POINT LOCATION

MAXIMUM DIFFERENCE OF$(NO_X)_i$ and $(NO_X)_{AVG}$ AS A PERCENT 1.94 (5%)
WHERE, I IS THE TRAVERSE POINT LOCATION

MAXIMUM % DIFFERENCE OF$(O_2)_i$ and $(O_2)_{AVG}$ 0.03 (0.3 %)
WHERE, I IS THE TRAVERSE POINT LOCATION

MAXIMUM DIFFERENCE OF$(O_2)_i$ and $(O_2)_{AVG}$ AS A PERCENT 0.29 (5%)
WHERE, I IS THE TRAVERSE POINT LOCATION

RESULTS INDICATE THAT 1 SAMPLING POINT IS NEEDED.

United States Steel Corporation
Mon Valley Complex - Clairton Plant

Annual RATA B-Battery Combustion Stack
Chester Engineers Mobile Air Quality Laboratory Data

August 26, 2008
Minute Data Averages

Hour	NO_x	O_2	Temp L1	Temp 2	Notes
8:00	0	20.1	199	71	Ambient Air
8:01	0	20.1	199	71	Ambient Air
8:02	0	20.1	199	71	Ambient Air
8:03	0	20.1	199	71	Ambient Air
8:04	0	20.1	199	71	Ambient Air
8:05	0	20.1	199	72	Ambient Air
8:06	0	20.1	199	72	Ambient Air
8:07	0	13.7	199	71	Ambient Air
8:08	0	-0.2	199	70	Ambient Air
8:09	0	-0.1	199	70	Ambient Air
8:10	0	0	199	70	Ambient Air
8:11	0	0.1	199	70	Ambient Air
8:12	176.7	0	199	71	Pre-Test Calibrations
8:13	269.8	0	199	71	Pre-Test Calibrations
8:14	228.8	0	199	71	Pre-Test Calibrations
8:15	228.5	0	198	71	Pre-Test Calibrations
8:16	228.1	0	198	71	Pre-Test Calibrations
8:17	284.6	0	198	72	Pre-Test Calibrations
8:18	-999	0	197	72	Pre-Test Calibrations
8:19	474.4	0	197	71	Pre-Test Calibrations
8:20	463.5	0	197	71	Pre-Test Calibrations
8:21	460.8	0	196	70	Pre-Test Calibrations
8:22	450.2	0	196	70	Pre-Test Calibrations
8:23	455.3	0	196	70	Pre-Test Calibrations
8:24	-999	0	195	70	Pre-Test Calibrations
8:25	464.2	0	195	70	Pre-Test Calibrations
8:26	-999	0	195	71	Pre-Test Calibrations
8:27	449.5	0	195	71	Pre-Test Calibrations
8:28	447.8	0	194	71	Pre-Test Calibrations
8:29	445.8	0	194	72	Pre-Test Calibrations
8:30	443.5	0	194	72	Pre-Test Calibrations
8:31	388.3	0	194	72	Pre-Test Calibrations
8:32	351.7	0	194	72	Pre-Test Calibrations
8:33	351.3	0	194	71	Pre-Test Calibrations
8:34	402.6	0	193	71	Pre-Test Calibrations
8:35	450.7	0	193	70	Pre-Test Calibrations
8:36	**450.6**	0	193	70	**High NOx Gas**
8:37	442.2	0	193	70	Pre-Test Calibrations
8:38	268.8	0	194	71	Pre-Test Calibrations
8:39	223.1	0	195	71	Pre-Test Calibrations
8:40	**222.7**	**0**	196	71	**Mid NOx & Zero O2/CO2 Gas**
8:41	222.7	7.6	196	71	Pre-Test Calibrations
8:42	58.6	24.5	197	72	Pre-Test Calibrations
8:43	0.4	25	198	72	Pre-Test Calibrations
8:44	0.2	25	199	72	Pre-Test Calibrations
8:45	0	**25**	199	71	**High O2/CO2 Gas**
8:46	0.2	20.5	199	71	Pre-Test Calibrations
8:47	0.3	12.1	200	71	Pre-Test Calibrations
8:48	**0**	**11.9**	200	70	**Mid O2/CO2 & Zero NOx Gas**
8:49	0	12.6	201	70	Bias Checks

United States Steel Corporation
Mon Valley Complex - Clairton Plant

Annual RATA B-Battery Combustion Stack
Chester Engineers Mobile Air Quality Laboratory Data

August 26, 2008
Minute Data Averages

Hour	NO_x	O_2	Temp L1	Temp 2	Notes
8:50	151.2	4.2	201	70	Bias Checks
8:51	215.9	0	200	71	Bias Checks
8:52	216.9	0	199	71	Bias Checks
8:53	**216.6**	**0**	197	71	**Mid NOx & Zero O2/CO2 Gas**
8:54	198.9	5.5	195	71	Bias Checks
8:55	33.4	11.8	193	72	Bias Checks
8:56	0.3	11.9	192	72	Bias Checks
8:57	**0.3**	**11.9**	190	72	**Mid O2/CO2 & Zero NOx Gas**
8:58	4	11.7	189	72	Bias Checks
8:59	137.2	11.8	188	71	Stack Gas
9:00	151.3	12	187	71	Stack Gas
9:01	153.2	12.1	187	71	**Run #1**
9:02	156.2	12	188	71	**Run #1**
9:03	156.6	12	188	71	**Run #1**
9:04	156.9	11.9	189	70	**Run #1**
9:05	156.7	11.9	190	70	**Run #1**
9:06	156.5	11.7	191	71	**Run #1**
9:07	155.7	11.6	192	71	**Run #1**
9:08	152.9	11.4	193	71	**Run #1**
9:09	150.7	11.5	194	72	**Run #1**
9:10	151.7	11.6	195	72	**Run #1**
9:11	154.1	11.8	196	72	**Run #1**
9:12	157	11.9	197	72	**Run #1**
9:13	125.9	16.8	198	72	**Run #1**
9:14	59.1	16.3	198	72	**Run #1**
9:15	145.7	13	199	71	**Run #1**
9:16	185.5	12.7	200	71	**Run #1**
9:17	185.8	12.6	200	71	**Run #1**
9:18	187.7	12.5	201	71	**Run #1**
9:19	192.9	12.4	201	71	**Run #1**
9:20	194.4	12.3	202	71	**Run #1**
9:21	195.6	12.4	202	71	**Run #1**
	158.6	12.5	195.3	71.2	**21 Min. Analyzer Average, Ca**
	0.30	0.00			**Avg. Zero Bias Check, Co**
	216.40	11.90			**Avg. Mid Span Bias Check, Cm**
	224	12.0			**Actual Mid Span Value, Cma**
	164.2	12.6			**Corrected Conc., Cstack**
	0.372 (lb/MMBtu)		**NOx Emission Factor**		
9:22	198.7	7.3	202	71	Bias Checks
9:23	213.4	0	202	71	Bias Checks
9:24	216.6	0	201	71	Bias Checks
9:25	**216.2**	**0**	200	71	**Mid NOx & Zero O2/CO2 Gas**
9:26	176.5	8.2	198	71	Bias Checks
9:27	4.1	11.9	196	71	Bias Checks
9:28	0.3	11.9	194	71	Bias Checks
9:29	**0.3**	**11.9**	192	71	**Mid O2/CO2 & Zero NOx Gas**
9:30	40.6	12.4	191	71	Bias Checks

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United States Steel Corporation
Mon Valley Complex - Clairton Plant

Annual RATA B-Battery Combustion Stack — August 26, 2008
Chester Engineers Mobile Air Quality Laboratory Data — Minute Data Averages

Hour	NO_x	O_2	Temp L1	Temp 2	Notes
9:31	192	12.7	189	71	Stack Gas
9:32	206.3	12.7	189	71	**Run #2**
9:33	160	16.9	189	71	**Run #2**
9:34	92	16.7	189	71	**Run #2**
9:35	125.4	12.6	190	72	**Run #2**
9:36	146	11.7	191	72	**Run #2**
9:37	148.9	11.8	192	72	**Run #2**
9:38	153.4	11.9	194	73	**Run #2**
9:39	155.9	11.8	194	73	**Run #2**
9:40	156.3	11.9	195	72	**Run #2**
9:41	158.3	11.9	196	72	**Run #2**
9:42	158.9	11.9	197	72	**Run #2**
9:43	160.3	11.9	198	72	**Run #2**
9:44	160.1	11.9	199	72	**Run #2**
9:45	160	11.9	199	72	**Run #2**
9:46	160.4	11.7	200	72	**Run #2**
9:47	159.2	11.6	201	72	**Run #2**
9:48	158.3	11.7	201	72	**Run #2**
9:49	159.1	11.8	202	72	**Run #2**
9:50	161.2	12	202	72	**Run #2**
9:51	162.8	11.9	202	72	**Run #2**
9:52	161.7	12	202	72	**Run #2**
	155.5	12.4	196.3	72.0	**21 Min. Analyzer Average, Ca**
	0.30	0.00			**Avg. Zero Bias Check, Co**
	216.20	11.90			**Avg. Mid Span Bias Check, Cm**
	224	12.0			**Actual Mid Span Value, Cma**
	161.0	12.5			**Corrected Conc., Cstack**
	0.360 (lb/MMBtu)		**NOx Emission Factor**		
9:53	169.6	3.8	202	72	Bias Checks
9:54	213.9	0	202	72	Bias Checks
9:55	**216.2**	**0**	202	72	**Mid NOx & Zero O2/CO2 Gas**
9:56	171.5	8.5	200	72	Bias Checks
9:57	0.8	11.9	198	72	Bias Checks
9:58	**0.3**	**11.9**	196	72	**Mid O2/CO2 & Zero NOx Gas**
9:59	36.7	12.3	194	72	Bias Checks
10:00	195.1	12.5	193	72	Stack Gas
10:01	202.3	12.4	193	72	**Run #3**
10:02	201.4	12.3	193	72	**Run #3**
10:03	201.6	12.3	193	72	**Run #3**
10:04	201.1	12.4	193	72	**Run #3**
10:05	201.5	12.6	194	72	**Run #3**
10:06	203.4	12.7	195	72	**Run #3**
10:07	205.6	12.9	196	72	**Run #3**
10:08	207.8	13	197	72	**Run #3**
10:09	209.4	12.9	197	72	**Run #3**
10:10	209.1	12.7	198	72	**Run #3**
10:11	209.6	12.7	199	72	**Run #3**

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United States Steel Corporation
Mon Valley Complex - Clairton Plant

Annual RATA B-Battery Combustion Stack — August 26, 2008
Chester Engineers Mobile Air Quality Laboratory Data — Minute Data Averages

Hour	NO_x	O_2	Temp L1	Temp 2	Notes
10:12	210	12.6	200	72	**Run #3**
10:13	168.8	16.9	200	72	**Run #3**
10:14	80.6	16.7	201	72	**Run #3**
10:15	118.9	12.5	201	72	**Run #3**
10:16	148.4	11.8	202	72	**Run #3**
10:17	151.2	11.6	202	72	**Run #3**
10:18	153.4	11.7	202	72	**Run #3**
10:19	156.6	11.8	202	70	**Run #3**
10:20	158.7	11.7	202	69	**Run #3**
10:21	158.5	11.6	202	69	**Run #3**
	178.9	12.8	198.2	71.6	**21 Min. Analyzer Average, Ca**
	0.30	0.00			**Avg. Zero Bias Check, Co**
	216.05	11.90			**Avg. Mid Span Bias Check, Cm**
	224	12.0			**Actual Mid Span Value, Cma**
	185.6	12.8			**Corrected Conc., Cstack**
	0.434 (lb/MMBtu)		**NOx Emission Factor**		
10:22	165.7	5.7	203	71	Bias Checks
10:23	209.5	0	204	71	Bias Checks
10:24	216.4	0	202	70	Bias Checks
10:25	**215.9**	**0**	200	70	**Mid NOx & Zero O2/CO2 Gas**
10:26	176.1	8.2	199	72	Bias Checks
10:27	5.4	11.9	196	72	Bias Checks
10:28	0.3	11.9	194	70	Bias Checks
10:29	**0.3**	**11.9**	193	69	**Mid O2/CO2 & Zero NOx Gas**
10:30	5.6	11.6	191	71	Bias Checks
10:31	146.9	11.4	190	72	Stack Gas
10:32	158.7	11.5	189	72	**Run #4**
10:33	123.9	16.7	189	70	**Run #4**
10:34	67.8	16.2	189	69	**Run #4**
10:35	154.4	12.8	190	71	**Run #4**
10:36	190.5	12.6	191	72	**Run #4**
10:37	192.8	12.5	192	72	**Run #4**
10:38	195.3	12.4	193	71	**Run #4**
10:39	198.2	12.4	194	69	**Run #4**
10:40	200.8	12.4	195	71	**Run #4**
10:41	203	12.4	196	72	**Run #4**
10:42	204.4	12.2	196	71	**Run #4**
10:43	202.6	12.1	197	69	**Run #4**
10:44	202.4	12	198	71	**Run #4**
10:45	202.9	12	199	72	**Run #4**
10:46	204.1	12.1	199	72	**Run #4**
10:47	205.4	12.3	200	71	**Run #4**
10:48	207.2	12.4	201	69	**Run #4**
10:49	206.5	12.3	201	71	**Run #4**
10:50	206.3	12.3	202	72	**Run #4**
10:51	207.8	12.4	202	72	**Run #4**
10:52	209.4	12.4	202	72	**Run #4**

United States Steel Corporation
Mon Valley Complex - Clairton Plant

Annual RATA B-Battery Combustion Stack — August 26, 2008
Chester Engineers Mobile Air Quality Laboratory Data — Minute Data Averages

Hour	NO_x	O_2	Temp L1	Temp 2	Notes
	187.8	12.7	196.0	71.0	**21 Min. Analyzer Average, Ca**
	0.30	0.00			**Avg. Zero Bias Check, Co**
	216.05	11.90			**Avg. Mid Span Bias Check, Cm**
	224	12.0			**Actual Mid Span Value, Cma**
	194.8	12.8			**Corrected Conc., Cstack**
	0.452 (lb/MMBtu)		**NOx Emission Factor**		
10:53	199.7	7	202	69	Bias Checks
10:54	210	0	202	69	Bias Checks
10:55	**216.2**	**0**	202	72	**Mid NOx & Zero O2/CO2 Gas**
10:56	215.7	0	200	70	Bias Checks
10:57	207.2	5.1	198	70	Bias Checks
10:58	16.8	11.9	197	70	Bias Checks
10:59	0.4	11.9	195	70	Bias Checks
11:00	**0.3**	**11.9**	193	70	**Mid O2/CO2 & Zero NOx Gas**
11:01	27.8	11.5	191	70	Bias Checks
11:02	157.7	11.3	190	70	Stack Gas
11:03	157.8	11.4	189	70	**Run #5**
11:04	159.2	11.6	189	70	**Run #5**
11:05	161	11.6	189	70	**Run #5**
11:06	161.2	11.6	190	70	**Run #5**
11:07	162.6	11.7	191	70	**Run #5**
11:08	164.2	11.9	192	69	**Run #5**
11:09	165.4	12	193	70	**Run #5**
11:10	167.7	12.1	194	71	**Run #5**
11:11	169	12	195	71	**Run #5**
11:12	168.7	12	196	71	**Run #5**
11:13	152.1	16.9	197	72	**Run #5**
11:14	74.9	16.4	197	72	**Run #5**
11:15	154.9	13	198	71	**Run #5**
11:16	189.6	12.3	199	70	**Run #5**
11:17	191.7	12.1	199	70	**Run #5**
11:18	194.8	12.2	200	71	**Run #5**
11:19	198.2	12.3	200	72	**Run #5**
11:20	201.5	12.4	201	70	**Run #5**
11:21	204.7	12.5	201	70	**Run #5**
11:22	206.3	12.7	202	72	**Run #5**
11:23	207.1	12.7	202	72	**Run #5**
	172.0	12.5	195.9	70.7	**21 Min. Analyzer Average, Ca**
	0.30	0.00			**Avg. Zero Bias Check, Co**
	215.60	11.90			**Avg. Mid Span Bias Check, Cm**
	224	12.0			**Actual Mid Span Value, Cma**
	178.7	12.6			**Corrected Conc., Cstack**
	0.407 (lb/MMBtu)		**NOx Emission Factor**		
11:24	209.5	10.5	202	70	Bias Checks

United States Steel Corporation
Mon Valley Complex - Clairton Plant

Annual RATA B-Battery Combustion Stack — August 26, 2008
Chester Engineers Mobile Air Quality Laboratory Data — Minute Data Averages

Hour	NO_x	O_2	Temp L1	Temp 2	Notes
11:25	213.1	0	202	68	Bias Checks
11:26	215.7	0.7	202	70	Bias Checks
11:27	213.4	7.9	201	72	Bias Checks
11:28	165.5	10.8	200	72	Bias Checks
11:29	0.9	11.9	199	69	Bias Checks
11:30	0.4	11.9	198	70	Bias Checks
11:31	**0.3**	**11.9**	196	72	**Mid O2/CO2 & Zero NOx Gas**
11:32	0.3	9.7	194	71	Bias Checks
11:33	156.2	0	193	69	Bias Checks
11:34	214.9	0	191	70	Bias Checks
11:35	**215**	**0**	190	72	**Mid NOx & Zero O2/CO2 Gas**
11:36	205.7	7	189	70	Bias Checks
11:37	152.9	12.2	188	70	Stack Gas
11:38	154.6	12.1	187	70	**Run #6**
11:39	155.2	11.9	187	70	**Run #6**
11:40	156.3	11.9	188	70	**Run #6**
11:41	157.3	12	189	70	**Run #6**
11:42	159.1	12.2	189	70	**Run #6**
11:43	161.2	12.3	190	70	**Run #6**
11:44	162	12.2	191	70	**Run #6**
11:45	160.3	12	192	70	**Run #6**
11:46	159.5	12	193	69	**Run #6**
11:47	159.7	12.1	194	70	**Run #6**
11:48	161.9	12.2	195	71	**Run #6**
11:49	163.7	12.2	196	71	**Run #6**
11:50	163.2	12.2	196	72	**Run #6**
11:51	163.3	12.3	197	71	**Run #6**
11:52	165.9	12.3	198	70	**Run #6**
11:53	131.9	17	199	70	**Run #6**
11:54	76.7	16.5	199	71	**Run #6**
11:55	159.1	13.2	200	71	**Run #6**
11:56	188.4	12.9	200	69	**Run #6**
11:57	193.1	12.9	200	71	**Run #6**
11:58	198.1	12.9	201	72	**Run #6**
	159.5	12.7	194.3	70.4	**21 Min. Analyzer Average, Ca**
	0.30	0.00			**Avg. Zero Bias Check, Co**
	215.20	11.90			**Avg. Mid Span Bias Check, Cm**
	224	12.0			**Actual Mid Span Value, Cma**
	166.1	12.8			**Corrected Conc., Cstack**
	0.387 (lb/MMBtu)		**NOx Emission Factor**		
11:59	204.2	3.2	201	71	Bias Checks
12:00	215.9	0	202	70	Bias Checks
12:01	215.2	0	200	71	Bias Checks
12:02	215.2	0	199	72	Bias Checks
12:03	**215.4**	**0**	197	70	**Mid NOx & Zero O2/CO2 Gas**
12:04	215.4	4.6	195	69	Bias Checks
12:05	28.4	11.9	193	71	Bias Checks

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United States Steel Corporation
Mon Valley Complex - Clairton Plant

Annual RATA B-Battery Combustion Stack — August 26, 2008
Chester Engineers Mobile Air Quality Laboratory Data — Minute Data Averages

Hour	NO_x	O_2	Temp L1	Temp 2	Notes
12:06	0.5	11.9	192	72	Bias Checks
12:07	0.3	11.9	190	71	Bias Checks
12:08	**0.3**	**11.9**	189	69	**Mid O2/CO2 & Zero NOx Gas**
12:09	0.3	12	188	70	Bias Checks
12:10	156.7	12.7	187	72	Stack Gas
12:11	209.7	12.8	186	71	Stack Gas
12:12	209.7	12.8	186	69	**Run #7**
12:13	165	16.9	187	71	**Run #7**
12:14	84.1	16.8	188	71	**Run #7**
12:15	121.3	12.8	189	69	**Run #7**
12:16	147.3	11.8	190	71	**Run #7**
12:17	148	11.7	191	71	**Run #7**
12:18	151	11.6	192	69	**Run #7**
12:19	152.7	11.5	192	69	**Run #7**
12:20	153.8	11.7	193	71	**Run #7**
12:21	156.5	11.9	194	71	**Run #7**
12:22	159.8	12.1	195	69	**Run #7**
12:23	162.9	12.1	195	71	**Run #7**
12:24	164.1	12.1	196	71	**Run #7**
12:25	164.5	12.2	196	69	**Run #7**
12:26	165.2	12.3	197	71	**Run #7**
12:27	166.8	12.4	198	72	**Run #7**
12:28	169	12.4	198	70	**Run #7**
12:29	169.2	12.3	198	70	**Run #7**
12:30	167.4	12.2	199	72	**Run #7**
12:31	168.6	12.3	199	71	**Run #7**
12:32	169.2	12.4	199	69	**Run #7**
	157.9	12.6	193.9	70.3	**21 Min. Analyzer Average, Ca**
	0.30	0.00			**Avg. Zero Bias Check, Co**
	215.15	11.90			**Avg. Mid Span Bias Check, Cm**
	224	12.0			**Actual Mid Span Value, Cma**
	164.4	12.7			**Corrected Conc., Cstack**
	0.377 (lb/MMBtu)		**NOx Emission Factor**		
12:33	146.2	14.3	199	72	Bias Checks
12:34	168	0	200	71	Bias Checks
12:35	215.3	0	199	70	Bias Checks
12:36	**214.9**	**0**	197	71	**Mid NOx & Zero O2/CO2 Gas**
12:37	161.5	8.2	196	72	Bias Checks
12:38	1.7	11.9	194	70	Bias Checks
12:39	0.3	11.9	192	70	Bias Checks
12:40	**0.3**	**11.9**	190	72	**Mid O2/CO2 & Zero NOx Gas**
12:41	0.3	11.9	189	71	Bias Checks
12:42	140.9	12.6	188	69	Stack Gas
12:43	206.7	12.7	187	70	Stack Gas
12:44	207.4	12.6	187	72	**Run #8**
12:45	206.4	12.5	187	70	**Run #8**
12:46	205.5	12.4	187	69	**Run #8**

United States Steel Corporation
Mon Valley Complex - Clairton Plant

Annual RATA B-Battery Combustion Stack
Chester Engineers Mobile Air Quality Laboratory Data

August 26, 2008
Minute Data Averages

Hour	NO_x	O_2	Temp L1	Temp 2	Notes
12:47	204.1	12.3	188	71	**Run #8**
12:48	203.9	12.4	188	72	**Run #8**
12:49	205	12.6	189	72	**Run #8**
12:50	208	12.7	190	70	**Run #8**
12:51	210.8	12.7	191	69	**Run #8**
12:52	209.5	12.7	192	71	**Run #8**
12:53	162.5	17	192	71	**Run #8**
12:54	90.3	16.7	193	69	**Run #8**
12:55	124.7	12.9	194	70	**Run #8**
12:56	146.8	12.4	194	72	**Run #8**
12:57	149.3	12.3	195	73	**Run #8**
12:58	151.9	12.4	195	71	**Run #8**
12:59	154.7	12.6	196	69	**Run #8**
13:00	157.3	12.6	196	71	**Run #8**
13:01	158.4	12.6	197	72	**Run #8**
13:02	159.6	12.6	197	72	**Run #8**
13:03	159.9	12.4	197	70	**Run #8**
13:04	158.8	12.2	198	70	**Run #8**
	173.1	12.9	192.5	70.8	**21 Min. Analyzer Average, Ca**
	0.30	0.00			**Avg. Zero Bias Check, Co**
	215.20	11.90			**Avg. Mid Span Bias Check, Cm**
	224	12.0			**Actual Mid Span Value, Cma**
	180.2	13.0			**Corrected Conc., Cstack**
	0.431 (lb/MMBtu)		**NOx Emission Factor**		
13:05	158.4	9.8	198	72	Bias Checks
13:06	197.8	0	198	72	Bias Checks
13:07	215.7	0	197	70	Bias Checks
13:08	**215.5**	**0**	196	70	**Mid NOx & Zero O2/CO2 Gas**
13:09	215.3	0.1	194	69	Bias Checks
13:10	129.5	11.5	193	72	Bias Checks
13:11	0.6	11.9	191	71	Bias Checks
13:12	**0.3**	**11.9**	190	70	**Mid O2/CO2 & Zero NOx Gas**
13:13	9.7	15.9	188	69	Bias Checks
13:14	69.9	16.5	187	69	Stack Gas
13:15	159.3	13.3	186	72	Stack Gas
13:16	187.5	12.9	186	71	**Run #9**
13:17	192.6	12.7	187	70	**Run #9**
13:18	197.5	12.7	187	69	**Run #9**
13:19	200	12.5	188	71	**Run #9**
13:20	200.3	12.4	189	71	**Run #9**
13:21	201.2	12.4	190	70	**Run #9**
13:22	201.9	12.5	191	70	**Run #9**
13:23	202	12.5	192	72	**Run #9**
13:24	201.4	12.5	192	70	**Run #9**
13:25	201.1	12.4	193	69	**Run #9**
13:26	200.8	12.4	193	69	**Run #9**
13:27	202.4	12.4	194	72	**Run #9**

United States Steel Corporation
Mon Valley Complex - Clairton Plant

Annual RATA B-Battery Combustion Stack — August 26, 2008
Chester Engineers Mobile Air Quality Laboratory Data — Minute Data Averages

Hour	NO_x	O_2	Temp L1	Temp 2	Notes
13:28	204	12.5	194	72	**Run #9**
13:29	204.9	12.5	195	70	**Run #9**
13:30	205.1	12.3	196	70	**Run #9**
13:31	204.1	12.2	196	69	**Run #9**
13:32	203.2	12.2	196	68	**Run #9**
13:33	158.9	16.7	197	70	**Run #9**
13:34	88.6	16.5	197	72	**Run #9**
13:35	118.5	12.5	197	70	**Run #9**
13:36	142.4	11.8	197	69	**Run #9**
	186.6	12.8	192.7	70.2	**21 Min. Analyzer Average, Ca**
	0.30	0.00			**Avg. Zero Bias Check, Co**
	215.25	11.90			**Avg. Mid Span Bias Check, Cm**
	224.1	12.0			**Actual Mid Span Value, Cma**
	194.2	12.9			**Corrected Conc., Cstack**
	0.459 (lb/MMBtu)		**NOx Emission Factor**		
13:37	149.8	6.4	198	68	Bias Checks
13:38	205.3	0	198	68	Bias Checks
13:39	215.4	0	196	68	Bias Checks
13:40	**215**	**0**	195	68	**Mid NOx & Zero O2/CO2 Gas**
13:41	174	8.5	193	68	Bias Checks
13:42	16.2	11.8	192	68	Bias Checks
13:43	0.3	11.9	190	70	Bias Checks
13:44	0.3	11.9	189	70	Bias Checks
13:45	**0.3**	**11.9**	188	70	**Mid O2/CO2 & Zero NOx Gas**
13:46	24.6	13.1	187	70	Bias Checks
13:47	50	20.6	186	70	Ambient Air

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

TABLE A

B-BATTERY COMBUSTION STACK
O_2 CEM ANNUAL RATA RESULTS
AUGUST 26, 2008

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	08/26/08	9:01	9:21	12.6	12.7	-0.1
2	08/26/08	9:32	9:52	12.5	12.6	-0.1
3	08/26/08	10:01	10:21	12.8	12.9	-0.1
4	08/26/08	10:32	10:52	12.8	12.9	-0.1
5	08/26/08	11:03	11:23	12.6	12.7	-0.1
6	08/26/08	11:38	11:58	12.8	12.9	0.0
7	08/26/08	12:12	12:32	12.7	12.7	-0.1
8	08/26/08	12:44	13:04	13.0	13.1	0.0
9	08/26/08	13:16	13:36	12.9	13.0	-0.1

Results:				
		Data Points (n)		9
		Arithmetic Mean Difference (d)		-0.063
		Standard Deviation (Sd)		0.011
		Confidence Coefficient (CC)		0.008
		Average RM Value (ARM)		12.8
		Relative Accuracy (RA - 1)	passed	0.6% <= 20%
	or	Relative Accuracy (RA - 3)	passed	0.063 <= 1

Notes:

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
ATS Clock= USS Clock + 1 hour

Calculations according to U.S. EPA Performance Specification 2 and
PA DEP Continuous Source Monitoring Manual (Revision No. 8), Table III

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	B-Battery Combustion Stack	INSTRUMENT	Chemiluminescent NOx Analyzer-Model 200AH
TEST DATE	August 26, 2007 OPERATOR DA/DC	Serial No	258
PROJECT NO.	08-6296-ENV, Task 098	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
0848	0.0	0.0	0.0	0.0	X	Zero Gas is 100% N2
0836	451.0	450.5	0.5	0.11	X	
0840	224.1 ~~225~~	222.6	1.5	0.33	X	

Specifications: For O2, CO2, SO2, NOx, CO the Allowable Calibration Error < = 2% of Calibrated Span = 9.02 ppm 9.02

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 = 40 sec Notes
0857	Zero	0.0	0.3	0.07		
0853	Upscale	222.6	216.6	1.33		
0929	Zero	0.0	0.3	0.07	0.0	Run No. 1:
0925	Upscale	222.6	216.2	1.42	0.09	0901-0921
0958	Zero	0.0	0.3	0.07	0.0	Run No. 2: 0932
0955	Upscale	222.6	216.1	1.44	0.02	0952
1029	Zero	0.0	0.3	0.07	0.0	Run No. 3: 1001
1025	Upscale	222.6	215.9	1.49	0.09	1021
1100	Zero	0.0	0.3	0.07	0.0	Run No. 4: 1032
1055	Upscale	222.6	216.1	1.44	0.09	1052
1131	Zero	0.0	0.3	0.07	0.0	Run No. 5: 1103
1135	Upscale	222.6	214.9	1.71	0.27	1123
1208	Zero	0.0	0.3	0.07	0.0	Run No. 6: 1138
1203	Upscale	222.6	215.4	1.60	0.11	1158

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

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

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	B-Battery Combustion Stack	INSTRUMENT	Chemiluminescent NOx Analyzer-Model 200AH
TEST DATE	August 26, 2007 OPERATOR ~~DANadzam~~ JU/DL	Serial No.	258
PROJECT NO.	08-6296-ENV, Task 098	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
	0.0				X	Zero Gas is 100% N2
	451.0				X	
	224.1 ~~225.5~~				X	

Specifications: For O2, CO2, SO2, NOx, CO the Allowable Calibration Error < = 2% of Calibrated Span = 9.02 ppm 9.02
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
1240	Zero	0.0	0.3	0.07	0.0	Run No. 7: 1212
1236	Upscale	222.6	214.8	1.73	0.13	1232
1312	Zero	0.0	0.3	0.07	0.0	Run No. 8: 1244
1308	Upscale	222.6	215.4	1.60	0.13	1304
1345	Zero	0.0	0.3	0.07	0.0	Run No. 9: 1316
1340	Upscale	222.6	214.9	1.71	0.11	1336
	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
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

CEM CALIBRATION ERROR TEST DATA

CLIENT	US Steel	Page 1 of 2	
PLANT SITE	Clairton, PA	ANALYZER	California Analytical Instruments
TEST UNIT	B Battery Exhaust Stack	INSTRUMENT	Paramagnetic Oxygen Analyzer - Model 100P
TEST DATE	Tuesday, August 26, 2008	OPERATOR	HT/DC
PROJECT NO	08-6296-ENV, Task 098	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
0840	0.0	0.0	0.0	0.0	X	Zero Gas is 100% N2
0845	24.88	24.9	0.02	0.08	X	
0848	11.99	11.9	0.09	0.36	X	

Specifications: For O2, CO2, SO2, NOx, CO the Allowable Calibration Error < = 2% of Calibrated Span = 0.50
For THC the Allowable Calibration Error < = 5% of Calibration Gas

CEM SAMPLING SYSTEM BIAS AND DRIFT DATA

Mid-Level or ~~High~~-Level Calibration Gas: 11.99 (%, 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 = 20sec Notes
0853	Zero	0.0	0.0	0.0		
0857	Upscale	11.9	11.8	0.40		
0925	Zero	0.0	0.0	0.0	0.0	Run No. 1:
0929	Upscale	11.9	11.8	0.40	0.0	0901 - 0921
0955	Zero	0.0	0.0	0.0	0.0	Run No. 2: 0932
0958	Upscale	11.9	11.8	0.40	0.0	0952
1025	Zero	0.0	0.0	0.0	0.0	Run No. 3: 1001
1029	Upscale	11.9	11.8	0.40	0.0	1021
1055	Zero	0.0	0.0	0.0	0.0	Run No. 4: 1032
1100	Upscale	11.9	11.8	0.40	0.0	1052
1135	Zero	0.0	0.0	0.0	0.0	Run No. 5: 1103
1131	Upscale	11.9	11.8	0.40	0.0	1123
1203	Zero	0.0	0.0	0.0	0.0	Run No. 6: 1138
1208	Upscale	11.9	11.8	0.40	0.0	1158

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

CEM CALIBRATION ERROR TEST DATA

CLIENT	US Steel	Page 2 of 2	
PLANT SITE	Clairton, PA	ANALYZER	California Analytical Instruments
TEST UNIT	B Battery Exhaust Stack	INSTRUMENT	Paramagnetic Oxygen Analyzer - Model 100P
TEST DATE	Tuesday, August 26, 2008	OPERATOR	JT/PG
PROJECT NO	08-6296-ENV, Task 098	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
	0.0				X	Zero Gas is 100% N2
	24.88				X	
	11.99				X	

Specifications: For O2, CO2, SO2, NOx, CO the Allowable Calibration Error < = 2% of Calibrated Span = 0.50
For THC the Allowable Calibration Error < = 5% of Calibration Gas

CEM SAMPLING SYSTEM BIAS AND DRIFT DATA

Mid-Level or High-Level Calibration Gas: 11.99 (%, 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
1236	Zero	0.0	0.0	0.0	0.0	Run No. 7: 1212
1240	Upscale	11.9	11.8	0.40	0.0	1232
1308	Zero	0.0	0.0	0.0	0.0	Run No. 8: 1244
1312	Upscale	11.9	11.9	0.0	0.40	1304
1340	Zero	0.0	0.0	0.0	0.0	Run No. 9: 1316
1345	Upscale	11.9	11.8	0.40	0.40	1336
	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
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

CEM CALIBRATION GAS REQUIREMENTS

Analyte	ATS Analyzer	Calibration Gases (% of Span)				Interference Check
		Zero	Mid - Level	High - Level	Approved Mixtures	
O_2	California Analytical Instruments - Paramagnetic Oxygen Analyzer - Model 100P	< 10% or N_2	40% - 60 %	100%	O_2 in N_2	Interference Response Test - Vendor Data (M20, S5.4)
CO_2	California Analytical Instruments - CO_2 Analyzer - Model 100	purified ambient air or N_2	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	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	40% - 60 %	100%	CO in N_2	N/A
SO_2	Advanced Pollution Instrumentation, Inc. - Fluorescent SO_2 Analyzer Model - 100AH	< 0.25% or purified ambient air or N_2	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	Comparison with M6
THC	J.U.M. Engineering Heated F.I.D. Analyzer - Model 3 - 300A	purified ambient air or N_2	40% - 60 %	100%	C_3H_8 in N_2 C_3H_8 in air	N/A

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 cal. bias check response for the zero calibration gas
Cm = Average of initial and final cal. bias check response for the upscale calibration gas
Cma = Actual upscale calibration gas concentration

Airgas

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CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E03NI78E15A1066	Reference Number:	113-124123138-5
Cylinder Number:	CC156708	Cylinder Volume:	151 Cu.Ft.
Laboratory:	ASG - Maumee - OH	Cylinder Pressure:	2015 PSIG
Analysis Date:	Jan 24, 2008	Valve Outlet:	590

Expiration Date: Jan 24, 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 DIOXIDE	10.00 %	9.950 %	G1	+/- 1% NIST Traceable
OXYGEN	12.00 %	11.99 %	G1	+/- 1% NIST Traceable
NITROGEN	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM	061204	CC184889	19.66% CARBON DIOXIDE/NITROGEN	May 01, 2010
NTRM	061202	CC195629	20.9% OXYGEN/NITROGEN	Jan 01, 2010

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
030-Horiba VIA-510	NDIR	Jan 09, 2008
050-Rosemount 755R O2 Analyzer	Paramagnetic	Jan 11, 2008

Triad Data Available Upon Request

Notes:

QA Approval

Airgas

Airgas Specialty Gases

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E03NI55E15A6572	Reference Number:	113-124123139-3
Cylinder Number:	CC239967	Cylinder Volume:	160 Cu.Ft.
Laboratory:	ASG - Maumee - OH	Cylinder Pressure:	2014 PSIG
Analysis Date:	Jan 24, 2008	Valve Outlet:	296

Expiration Date: Jan 24, 2011

Certification performed in accordance with "EPA Traceability Protocol (Sept. 1997)" using the assay procedures listed. Analytical Methodology does not imply commercial or analytical interferences. This cylinder has a total 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 DIOXIDE	20.00 %	19.78 %	G1	+/- 1% NIST Traceable
OXYGEN	25.00 %	24.88 %	G1	+/- 1% NIST Traceable
NITROGEN	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM	061204	CC184809	19.60% CARBON DIOXIDE/NITROGEN	May 01, 2010
NTRM	36060820	CC207980	22.51% OXYGEN/NITROGEN	May 01, 2010

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
630 Horiba VIA-510	NDIR	Jan 09, 2008
650-Rosemount 755R O2 Analyzer	Paramagnetic	Jan 11, 2008

Trend Data Available Upon Request

Notes:

QA Approval

Airgas

Airgas Specialty Gases

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E02NI99E15A0528	Reference Number:	113-124127516-4
Cylinder Number:	CC177301	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

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 or 1 Mega Pascal

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 oxides of nitrogen 224.4 PPM For Reference Only

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM	06*237	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

Linde Gas

HiQ® Certificate.

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 50-499 PPM	A31	**Blend Type:**	EPA Protocol
Production #:	100137036	**Cyl. Pressure:**	2000 psig
Lot #:	02499E7240JD	**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 Date
N/A	NOx	452 ppm	05/29/2007

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

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

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

Analytical report approved by Roy Yoder

Roy Yoder

HiQ Certificate

CHESTER MOBILE AIR QUALITY LABORATORY
NOX Analyzer Converter Efficiency Test Results
Test Performed on August 15, 2008
Test Performed by Dan Nadzam using the Tedlar bag technique

Date	Hour	500 ppm NO_x	500 ppm NO_2	Trailer Temp (F)	<<<RANGE <<<UNITS
8/15/2008	11:45	0	-0.2	80	Ambient Air
8/15/2008	11:46	0	-0.1	80	Ambient Air
8/15/2008	11:47	0	0.1	79	Ambient Air
8/15/2008	11:48	79.4	0.2	79	Bag On
8/15/2008	11:49	90.2	1.5	79	Bag On
8/15/2008	11:50	84	2.8	79	Bag On
8/15/2008	11:51	80.9	3.4	79	Bag On
8/15/2008	11:52	76.6	4.2	79	Bag On
8/15/2008	11:53	75	4.5	79	Bag On
8/15/2008	11:54	75.2	5.6	79	Bag On
8/15/2008	11:55	74.8	6.6	79	Bag On
8/15/2008	11:56	74.8	7.5	79	Bag On
8/15/2008	11:57	74.8	8.4	79	**Test**
8/15/2008	11:58	74.8	9.3	78	**Test**
8/15/2008	11:59	74.8	10.3	78	**Test**
8/15/2008	12:00	74.8	11.2	78	**Test**
8/15/2008	12:01	74.8	11.9	78	**Test**
8/15/2008	12:02	74.8	12.8	78	**Test**
8/15/2008	12:03	74.8	13.5	78	**Test**
8/15/2008	12:04	74.8	14.4	78	**Test**
8/15/2008	12:05	74.7	15.1	78	**Test**
8/15/2008	12:06	74.5	15.7	78	**Test**
8/15/2008	12:07	74.7	16.5	78	**Test**
8/15/2008	12:08	74.5	17.2	78	**Test**
8/15/2008	12:09	74.5	17.8	78	**Test**
8/15/2008	12:10	74.5	18.3	78	**Test**
8/15/2008	12:11	74.5	19.1	78	**Test**
8/15/2008	12:12	74.5	19.6	78	**Test**
8/15/2008	12:13	74.4	20.3	78	**Test**
8/15/2008	12:14	74.4	20.9	78	**Test**
8/15/2008	12:15	74.4	21.6	78	**Test**
8/15/2008	12:16	74.3	22.1	78	**Test**
8/15/2008	12:17	74.3	22.6	78	**Test**
8/15/2008	12:18	74.2	23.2	78	**Test**
8/15/2008	12:19	74.2	23.6	78	**Test**
8/15/2008	12:20	74.2	24.1	78	**Test**
8/15/2008	12:21	74.2	24.6	78	**Test**
8/15/2008	12:22	74	25.1	78	**Test**
8/15/2008	12:23	73.9	25.6	78	**Test**
8/15/2008	12:24	73.9	25.9	78	**Test**
8/15/2008	12:25	73.7	26.3	78	**Test**
8/15/2008	12:26	73.5	26.6	78	**Test**
		74.8			**Maximum**
		73.5			**Minimum**
		73.3			**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, 2008 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 1.5% 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, 2008 by Dan Nadzam & Hudson Tiffany

Hour	60.5 ppm CO	101 ppm SO_2	88.8 ppm NO_x	21.9 % O_2	17.7 % CO_2	ppm NO_2	deg F Trailer	<<<CALIBRATION SPAN <<<UNITS
13:31	0	0	0	20.8	0.3	0	76	Ambient Air
13:32	0	0	0	20.8	0.3	0	76	Ambient Air
13:33	0	0	0	10.1	0.3	0	76	Zero Gas (Nitrogen)
13:34	0	0	0	0	0	0	76	Zero Gas (Nitrogen)
13:35	**0**	**0**	**0**	**0**	**0**	0	76	**Zero Gas (Nitrogen)**
13:36	0	4.4	5.9	0.4	0	-0.5	76	NO_x Span Gas (88.8)
13:37	0	21.9	80.5	0	0	-0.3	76	NO_x Span Gas (88.8)
13:38	-0.1	23.2	88.8	0	0	-0.1	76	NO_x Span Gas (88.8)
13:39	-0.2	24.2	88.8	0	0	-0.1	76	NO_x Span Gas (88.8)
13:40	-0.2	24.8	88.9	0	0	-0.2	76	NO_x Span Gas (88.8)
13:41	-0.3	24.5	**88.8**	0.5	0	-0.2	76	**NO_x Span Gas (88.8)**
13:42	-0.2	90	30.2	0.1	0	6.3	76	SO_2 Span Gas (101)
13:43	-0.2	101.2	0.6	0	0	0	76	SO_2 Span Gas (101)
13:44	-0.1	101.5	0.5	0	0	0	76	SO_2 Span Gas (101)
13:45	0	101.1	0.5	0	0	0	76	SO_2 Span Gas (101)
13:46	0	**101.6**	0.5	0	0	0	76	**SO_2 Span Gas (101)**
13:47	-0.1	64.1	0.4	13.5	9.3	0	76	21.9 % O_2, 17.7 % CO2
13:48	-0.4	1.9	0.1	21.9	17.7	0	76	21.9 % O_2, 17.7 % CO2
13:49	-0.7	0.7	0	22	17.8	0	76	21.9 % O_2, 17.7 % CO2
13:50	-1	0.4	0	22	17.8	0	76	21.9 % O_2, 17.7 % CO2
13:51	-1.1	0.3	0	**22**	**17.8**	0	76	**21.9 % O_2, 17.7 % CO2**
13:52	-1.1	0.2	0	21.6	17.6	0	76	CO Span Gas (60.5)
13:53	22.2	0.2	0	1.5	1.5	0	76	CO Span Gas (60.5)
13:54	57.9	0.1	0	0	0.1	0	76	CO Span Gas (60.5)
13:55	60.9	0.1	0	0	0	0	76	CO Span Gas (60.5)
13:56	60.9	0.1	0	0	0	0	77	CO Span Gas (60.5)
13:57	**61**	0.1	0	0	0	0	77	**CO Span Gas (60.5)**
13:58	58.4	0.1	0	0	0	0	77	Zero Gas (Nitrogen)
13:59	13.9	0.1	0	0	0	0	77	Zero Gas (Nitrogen)

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, 2008 by Dan Nadzam & Hudson Tiffany

Hour	50.5 ppm CO	101 ppm SO_2	88.8 ppm NO_x	21.9 % O_2	17.7 % CO_2	ppm NO_2	deg F Trailer	<<<CALIBRATION SPAN <<<UNITS
14:00	0.8	0.1	0	0	0	0	77	Zero Gas (Nitrogen)
14:01	0.2	0.1	0	0	0	0	77	Zero Gas (Nitrogen)
14:02	**0.2**	**0**	**0**	**0**	**0**	0	77	**Zero Gas (Nitrogen)**
14:03	3.2	0	0	0	0	0	77	Low CO
14:04	26.9	0	0	0	0	0	77	Low CO
14:05	29.6	0	0	0	0	0	77	Low CO (30.5)
14:06	**29.6**	**0**	**0**	**0**	**0**	0	77	**Low CO Interference**
14:07	28.6	0	0	3.5	2.2	0	77	Low O2/CO2
14:08	7.4	0	0	12.1	9.8	0	77	Low O2/CO2
14:09	-0.6	0	0	12.1	9.8	0	77	Low O2/CO2
14:10	-0.7	0	0	12	9.8	0	77	Low O2/CO2 (12.0% / 9.98%)
14:11	**-0.7**	**0**	**0**	**12.1**	**9.8**	0	77	**Low O2/CO2 Interference**
14:12	-0.7	32.5	0	0.9	0.7	0	77	Low SO2
14:13	-0.6	50.2	0.1	0	0.1	0	78	Low SO2
14:14	-0.5	50.7	0.1	0	0.1	0	78	Low SO2 (50.6)
14:15	**-0.3**	**50.9**	**0.1**	**0**	**0.1**	0	77	**Low SO2 Interference**
14:16	-0.3	38.2	4.2	0.2	0.1	0	77	Low NOx
14:17	-0.2	16.2	42.2	0	0.1	0.3	77	Low NOx
14:18	-0.2	16.1	49.6	0	-0.1	0.4	77	Low NOx
14:19	-0.2	16.1	49.8	0	-0.1	0.5	77	Low NOx (49.1)
14:20	**-0.2**	**16.2**	**49.9**	**0**	**-0.1**	0.5	77	**Low NOx Interference**
14:21	-0.2	7.9	45.6	11.6	0	0.4	77	Ambient Air
14:22	-0.2	0.6	1.4	20.7	0.1	0.1	77	Ambient Air
14:23	-0.1	0.3	0.1	20.7	0.1	0	77	Ambient Air
14:24	0	0.2	0.1	20.7	0.1	0	77	Ambient Air
14:25	0	0.2	0.1	20.7	0.1	0	77	Ambient Air
14:26	0	0.1	0.1	20.7	0.1	0	77	Ambient Air
14:27	0	0.1	0.1	20.7	0.1	0	77	Ambient Air
14:28	0	0.1	0	20.7	0.1	0	77	Ambient Air
14:29	0	0.1	0	20.7	0.1	0	77	Ambient Air
14:30	0	0.1	0	20.7	0.1	0	77	Ambient Air
14:31	0	0.1	0	20.7	0.1	0	77	Ambient Air
14:32	0	0.1	0	20.7	0.1	0	77	Ambient Air
14:33	**0**	**0**	**0**	**20.7**	**0.1**	0	77	**Ambient Air Interference**
14:34	0	0.5	11.2	7.7	0	0	78	Mixed Gas
14:35	0	7	49.3	0	-0.1	0.2	78	Mixed Gas
14:36	-0.1	11.3	49.6	0	-0.1	0.4	78	Mixed Gas
14:37	-0.1	13	49.7	0	-0.1	0.5	77	Mixed Gas
14:38	-0.2	13.9	49.9	0	-0.1	0.6	77	Mixed Gas
14:39	-0.2	9.3	48.5	2.7	2.1	0.6	77	Mixed Gas
14:40	-0.3	0.4	28	5.3	4.3	0.1	77	Mixed Gas (@5.4 % O2)
14:41	-0.5	0.3	27.1	5.4	4.3	0.1	77	Mixed Gas (@5.4 % O2)
14:42	-0.6	0.3	25.8	5.5	4.4	-0.1	77	Mixed Gas (@5.4 % O2)
14:43	-0.7	0.3	25.4	5.5	4.4	-0.3	77	Mixed Gas (@5.4 % O2)
14:44	-0.7	0.3	25.6	5.5	4.4	-0.3	77	Mixed Gas (@5.4 % O2)
14:45	**-0.7**	**0.3**	**25.7**	**5.4**	**4.4**	-0.3	77	**Mixed Gas (@5.4 % O2)**
14:46	-0.7	0.4	25.9	5.2	4.2	-0.4	77	Mixed Gas (@1.5 % O2)
14:47	-0.7	0.8	34.7	2.2	1.9	-0.4	77	Mixed Gas (@1.5 % O2)
14:48	-0.6	1.8	42.6	1.5	1.2	0	77	Mixed Gas (@1.5 % O2)
14:49	-0.6	1.8	42.7	1.5	1.2	-0.1	76	Mixed Gas (@1.5 % O2)
14:50	**-0.5**	**1.8**	**42.8**	**1.5**	**1.2**	0	76	**Mixed Gas (@1.5 % O2)**

CHESTER ENGINEERS MOBILE AIR QUALITY LABORATORY

CEMS Interference Test Results

Test Performed on January 23, 2008 by Dan Nadzam & Hudson Tiffany

API Gas Filter Correlation CO Analyzer Model 300 S/N 905		
Calibration Span (C.S.) (ppmv, dry) = 60.5		
Test Gas Type	Concentration (ppm or %)	Analyzer Response (ppm)
N2	100%	0.2
O2/CO2/N2	12%/9.98%/balance	-0.7
SO2/N2	50.6ppm/balance	-0.3
NO/N2	49.1ppm/balance	-0.2
Ambient Air	20.9%O2/79.1%N2	0
	Sum of absolute Response	1.4
	Sum as a percent of Calibration Span	2.3%
	Meets criteria of <= 2.5% of C.S.	YES

API Fluorescent SO2 Analyzer Model 100AH S/N 064		
Calibration Span (C.S.) (ppmv, dry) = 101		
Test Gas Type	Concentration (ppm or %)	Analyzer Response (ppm)
N2	100%	0
O2/CO2/N2	12%/9.98%/balance	0
CO/N2	30.5ppm/balance	0
NOx/O2/CO2/N2	42.8ppm/1.5%/1.2%/balance	1.8
Ambient Air	20.9%O2/79.1%N2	0
	Sum of absolute Response	1.8
	Sum as a percent of Calibration Span	1.8%
	Meets criteria of <= 2.5% of C.S.	YES

API Chemiluminescent NOx Analyzer Model 200AH S/N 258		
Calibration Span (C.S.) (ppmv, dry) = 88.8		
Test Gas Type	Concentration (ppm or %)	Analyzer Response (ppm)
N2	100%	0
O2/CO2/N2	12%/9.98%/balance	0
SO2/N2	50.6ppm/balance	0.1
CO/N2	30.5ppm/balance	0
Ambient Air	20.9%O2/79.1%N2	0
	Sum of absolute Response	0.1
	Sum as a percent of Calibration Span	0.1%
	Meets criteria of <= 2.5% of C.S.	YES

California Analytical Instruments O2 Analyzer Model 100-P S/N 4J08002		
Calibration Span (C.S.) (%, dry) = 21.9		
Test Gas Type	Concentration (ppm or %)	Analyzer Response (%)
N2	100%	0
NO/N2	49.1ppm/balance	0
SO2/N2	50.6ppm/balance	0
CO/N2	30.5ppm/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 CO2 Analyzer Model 100 S/N 5J06007		
Calibration Span (C.S.) (%, dry) = 17.7		
Test Gas Type	Concentration (ppm or %)	Analyzer Response (%)
N2	100%	0
NO/N2	49.1ppm/balance	-0.1
SO2/N2	50.6ppm/balance	0.1
CO/N2	30.5ppm/balance	0
Ambient Air	20.9%O2/79.1%N2	0.1
	Sum of absolute Response	0.3
	Sum as a percent of Calibration Span	1.7%
	Meets criteria of <= 2.5% of C.S.	YES