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Report of a ...

PEMS RATA

Performed for ...

Cleveland-Cliffs, Inc.
Tilden Mining Company, L.C.
Ishpeming, Michigan

On...

Boiler 4 (EU-BOILER4)

At the...

Tilden Mine
National Mine, Michigan

June 21, 2022

Project #: 053.56

Performed By:

Network Environmental, Inc.
Grand Rapids, MI

Performed for:

Cleveland-Cliffs, Inc.
Tilden Mining Company, L.C.
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Performed at the:

Tilden Mine
National Mine, MI

Performed by:

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I. INTRODUCTION

Network Environmental, Inc. was retained by the Tilden Mining Company, L.C. of Ishpeming, Michigan to perform a relative accuracy test audit (RATA) at the Tilden Mine located in National Mine, Michigan.

The purpose of the testing was to conduct a Relative Accuracy Test Audit (RATA) on the Predictive Emission Monitoring System (PEMS) that services the Gas Fired Boiler #4 (EU-BOILER4). The PEMS on the boiler is for oxides of nitrogen (NO_x) and oxygen (O_2). The PEMS was installed and the RATA was performed in order to meet the requirements of Michigan Department of Environment, Great Lakes & Energy (EGLE), Air Quality Division ROP No. MI-ROP-B4885-2017b.

The RATA was conducted in accordance with 40 CFR Part 60 Appendix B Performance Specification 16 (PS-16).

The following reference test methods were used to conduct the sampling:

- Oxides of Nitrogen (NO_x) – U.S. EPA Method 7E
- Oxygen (O_2) – U.S. EPA Method 3A

The sampling was performed on June 21, 2022 by Stephan K. Byrd and David D. Engelhardt of Network Environmental, Inc.. Assisting with the testing were Mr. Thomas O'Brien of the Tilden Mining Company, L.C. and the operating staff of the facility.

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II. PRESENTATION OF RESULTS

II.1 TABLE 1
NO_x (LBS/MMBTU) RELATIVE ACCURACY TEST AUDIT RESULTS
BOILER #4 (EU-BOILER4)
TILDEN MINING COMPANY, L.C.
NATIONAL MINE, MICHIGAN
JUNE 21, 2022

Run #	Time	REFERENCE METHOD			PEMS	DIFF
		NO_x (1)	O_2 (2)	Lbs/MMBTU	Lbs/MMBTU	
1	07:44-08:09	19.9	5.9	0.029	0.029	0.000
2	08:20-08:45	19.9	5.7	0.028	0.029	-0.001
3	08:54-09:19	19.5	6.1	0.029	0.030	-0.001
4	09:29-09:54	19.4	6.1	0.028	0.029	-0.001
5	10:04-10:29	19.4	5.7	0.028	0.029	-0.001
6	10:39-11:04	19.3	5.7	0.028	0.029	-0.001
7	11:14-11:39	19.1	5.7	0.027	0.029	-0.002
8	11:50-12:15	19.0	6.0	0.028	0.029	-0.001
9	12:24-12:49	18.7	5.8	0.027	0.029	-0.002

Mean Reference Value = 0.02800

Mean of the Difference = -0.00111

Standard Deviation = 0.00060

Confidence Co-efficient = 0.00046

Relative Accuracy (RA) = 5.62% of the mean of the reference method

(1) Concentration in term of PPM by volume on a dry basis
(2) Concentration in terms of % on a dry basis
(3) RA needs to be less than 20%.

III. DISCUSSION OF RESULTS

III.1 NO_x (LBS/MMBTU) RATA – The results of the NO_x Lbs/MMBTU RATA can be found in Table 1 (Section II.1). The relative accuracy calculations were performed in terms of Lbs/MMBTU. The Lbs/MMBTU results were calculated using the formula found in Section 2.1 of Method 19 for O_2 on a dry basis. The F factor used was 8,710. Nine (9) twenty-five (25) minute samples were collected from the boiler exhaust. Raw DAS output results were corrected per Equation 7E-5.

The relative accuracy for the NO_x CEMS using Lbs/MMBTU was **5.62%** of the mean of the reference method samples.

According to Performance Specification 16 in 40 CFR Part 60 Appendix B, "The relative accuracy (RA) of the CEMS shall be no greater than 20 percent of the mean value of the reference method test data."

IV. SOURCE DESCRIPTION

Boiler 4 is a natural gas-fired boiler with a rated capacity of 225 KLbs/Hr of steam. The boiler is equipped with low NO_x burners. Boiler 4 is used to provide process steam to the facility. During the testing periods, the boiler was operated at approximately 50% of capacity. Steam Load and Gas Flow data during the sampling can be found in Appendix B.

The PEMS is a Wunderlich-Malec, Model No. PowerEMS, Serial No. SWCEM EU-BOILER4.

The boiler is exhausted to a stack through a four (4) foot by eight (8) foot breaching. A schematic diagram of the source and sampling location can be found in Appendix E.

V. SAMPLING AND ANALYTICAL PROTOCOL

The sampling methods used for the reference method determinations were as follows:

V.1 Oxides of Nitrogen – The NO_x sampling was conducted in accordance with U.S. EPA Reference Method 7E. A Thermo Environmental Model 42H gas analyzer was used to monitor the boiler exhaust. A

heated probe was used to extract the sample gases from the exhaust stack. A heated Teflon sample line was used to transport the exhaust gases to a gas conditioner to remove moisture and reduce the temperature. From the gas conditioner stack gases were passed to the analyzer. The analyzer produces instantaneous readouts of the NO_x concentrations (PPM).

The analyzer was calibrated by direct injection prior to the testing. A span gas of 54.6 PPM was used to establish the initial instrument calibration. A calibration gas of 25.2 PPM was used to determine the calibration error of the analyzer. A direct injection of 51.0 PPM nitrogen dioxide (NO_2) was performed to show the conversion efficiency of the monitor. The conversion efficiency data can be found in Appendix A. The sampling system (from the back of the stack probe to the analyzer) was injected using the 25.2 PPM gas to determine the system bias. After each sample, a system zero and system injection of 25.2 PPM were performed to establish system drift and system bias during the test period. All calibration gases were EPA Protocol 1 Certified.

The analyzer was calibrated to the output of the data acquisition system (DAS) used to collect the data from the boiler. A diagram of the NO_x sampling train is shown in Figure 1.

V.2 Oxygen – The O_2 sampling was conducted in accordance with U.S. EPA Reference Method 3A. A Servomex Model 1400M portable stack gas analyzer was used to monitor the boiler exhaust. A heated probe was used to extract the sample gas from the stack. A heated Teflon sample line was used to transport the exhaust gases to a gas conditioner to remove moisture and reduce the temperature. From the gas conditioner stack gases were passed to the analyzer. The analyzer produces instantaneous readouts of the O_2 concentrations (%).

The analyzer was calibrated by direct injection prior to the testing. A span gas of 20.85% was used to establish the initial instrument calibration. Calibration gases of 12.10% and 5.90% were used to determine the calibration error of the analyzer. The sampling system (from the back of the stack probe to the analyzer) was injected using the 5.90% gas to determine the system bias. After each sample, a system zero and system injection of 5.90% were performed to establish system drift and system bias during the test period. All calibration gases were EPA Protocol 1 Certified.

The analyzer was calibrated to the output of the data acquisition system (DAS) used to collect the data from the boiler. A diagram of the O_2 sampling train is shown in Figure 1.

V.3 Sampling Locations – Prior to the initial RATA sampling (05/19), a twenty-four (24) point stratification test (as described in U.S. EPA Method 7E) was performed for the exhaust breaching. The breaching is 48 inches deep by 96 inches high with 4 sampling ports. The dimensions used for the stratification test were as follows:

Traverse Point	Dimension (Inches)
1	4.00
2	12.00
3	20.00
4	28.00
5	36.00
6	44.00

The stratification test showed no stratification (< 5%), so a single sampling point (Port 3 - Point 3) was used for the gas sampling. The results of the stratification test can be found in Appendix A.

This report was prepared by:

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Vice President

This report was reviewed by:

R. Scott Cargill
Project Manager

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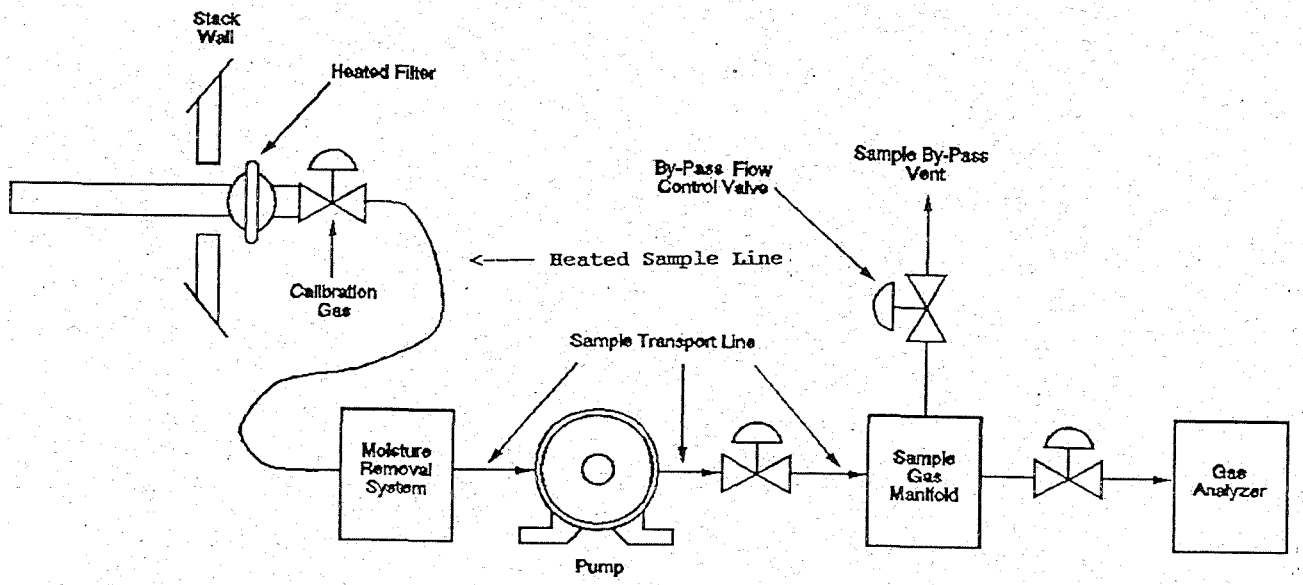

Figure 1

NO_x & O_2 Sampling Train

APPENDIX A

REFERENCE METHOD DAS DATA

Company: Cleveland-Cliffs Tilden

Location: National Mine, MI

Source: Boiler 4

Date: 6/21/2022

Channel:	1	2	3	4	5	6	7	8	9	10
Compound:	NOx	O2								
Units:	PPM	%								

Sample	NOx PPM	O2 %								
1	20.1	5.9								
2	20.1	5.7								
3	19.8	6.1								
4	19.7	6.0								
5	19.7	5.7								
6	19.6	5.7								
7	19.4	5.6								
8	19.3	5.9								
9	19.0	5.7								
10										
11										
12										

Company:	Cleveland-Cliffs Tilden	Monitor:	Thermo Env. Model 42H - NOx
Location:	National Mine, MI	Operator:	SKB / DDE
Source:	Boiler 4 PEMS	Cal. Span Value:	54.60
Date:	6/21/22	Page #:	1 of 1

Cal Gas Conc. PPM	Calibration Response, PPM					Analyzer Cal. Error, % of Span Gas	Drift, % of Span			System Bias, % of Span			
	Direct Injection	System Injection											
		Pretest	Post 1	Post 2	Post 3		Test 1	Test 2	Test 3	Pretest	Post 1	Post 2	Post 3
	7:14	7:23	8:12	8:48	9:22								
0.00	0.0	0.0	0.2	0.2	0.2		0.37	0.00	0.00	0.00	0.37	0.37	0.37
						0.00							
25.20	25.3	25.4	25.4	25.5	25.5	0.18	0.00	0.18	0.00	0.18	0.18	0.37	0.37
54.60	54.6												

System Injection						Drift, % of Span						System Bias, % of Span					
Post 4	Post 5	Post 6	Post 7	Post 8	Post 9	Post 4	Post 5	Post 6	Post 7	Post 8	Post 9	Post 4	Post 5	Post 6	Post 7	Post 8	Post 9
9:58	10:32	11:07	11:42	12:18	12:52												
0.2	0.2	0.2	0.4	0.4	0.4	0.00	0.00	0.00	0.37	0.00	0.00	0.37	0.37	0.37	0.73	0.73	0.73
25.6	25.5	25.5	25.5	25.5	25.4	0.18	-0.18	0.00	0.00	0.00	-0.18	0.55	0.37	0.37	0.37	0.37	0.18

51.0 PPM NO_2 Read 48.2 PPM = 94.51% Conversion

Company:	Cleveland-Cliffs Tilden	Monitor:	Servomex Series 1400 - O_2
Location:	National Mine, MI	Operator:	SKB / DDE
Source:	Boiler 4 PEMS	Cal. Span Value:	20.85
Date:	6/21/22	Page #:	1 of 1

Cal Gas Conc. %	Calibration Response, %					Analyzer Cal. Error, % of Span Gas	Drift, % of Span			System Bias, % of Span			
	Direct Injection	System Injection											
		Pretest	Post 1	Post 2	Post 3		Test 1	Test 2	Test 3	Pretest	Post 1	Post 2	Post 3
	7:04	7:26	8:15	8:51	9:25								
0.00	0.0	0.2	0.2	0.2	0.2		0.00	0.00	0.00	0.96	0.96	0.96	0.96
5.90	6.0	5.9	5.9	5.9	5.9	0.48	0.00	0.00	0.00	-0.48	-0.48	-0.48	-0.48
12.10	12.1					0.00							
20.85	20.9												

System Injection						Drift, % of Span						System Bias, % of Span					
Post 4	Post 5	Post 6	Post 7	Post 8	Post 9	Post 4	Post 5	Post 6	Post 7	Post 8	Post 9	Post 4	Post 5	Post 6	Post 7	Post 8	Post 9
10:00	10:35	11:10	11:46	12:20	12:56												
0.2	0.2	0.2	0.2	0.2	0.2	0.00	0.00	0.00	0.00	0.00	0.00	0.96	0.96	0.96	0.96	0.96	0.96
5.8	5.9	5.8	5.8	5.8	5.8	-0.48	0.48	-0.48	0.00	0.00	0.00	-0.96	-0.48	-0.96	-0.96	-0.96	-0.96

Cleveland-Cliffs Tilden
National Mine, MI
Boiler 4
Sample # 1
Start Time 7:44:28
Date 06/21/22

Date	Time	NOx PPM	O2 %
06/21/22	7:44:28	20.7	6.1
06/21/22	7:45:28	20.0	6.1
06/21/22	7:46:28	20.1	6.5
06/21/22	7:47:28	20.5	6.5
06/21/22	7:48:28	19.6	6.5
06/21/22	7:49:28	20.6	6.5
06/21/22	7:50:28	19.5	6.3
06/21/22	7:51:28	20.0	6.3
06/21/22	7:52:28	19.4	6.1
06/21/22	7:53:28	20.3	5.9
06/21/22	7:54:28	19.7	5.7
06/21/22	7:55:28	20.5	5.5
06/21/22	7:56:28	19.9	5.5
06/21/22	7:57:28	20.2	5.4
06/21/22	7:58:28	19.9	5.4
06/21/22	7:59:28	20.5	5.5
06/21/22	8:00:28	20.0	5.5
06/21/22	8:01:28	20.0	5.5
06/21/22	8:02:28	20.3	5.6
06/21/22	8:03:28	20.1	5.7
06/21/22	8:04:28	20.9	5.6
06/21/22	8:05:28	20.0	5.6
06/21/22	8:06:28	20.4	5.8
06/21/22	8:07:28	19.7	5.7
06/21/22	8:08:28	20.5	5.6
Sample 1	**Average**	**20.1**	**5.9**

Cleveland-Cliffs Tilden
National Mine, MI
Boiler 4
Sample # 2
Start Time 8:19:47
Date 06/21/22

Date	Time	NOx PPM	O2 %
06/21/22	8:19:47	20.3	5.8
06/21/22	8:20:47	19.9	5.8
06/21/22	8:21:47	19.9	5.8
06/21/22	8:22:47	20.1	5.5
06/21/22	8:23:47	19.6	5.5
06/21/22	8:24:47	20.5	5.5
06/21/22	8:25:47	20.0	5.6
06/21/22	8:26:47	20.8	5.6
06/21/22	8:27:47	20.4	5.7
06/21/22	8:28:47	20.8	5.9
06/21/22	8:29:47	19.8	5.9
06/21/22	8:30:47	20.4	5.9
06/21/22	8:31:47	19.9	5.6
06/21/22	8:32:47	20.1	5.6
06/21/22	8:33:47	19.5	5.5
06/21/22	8:34:47	20.4	5.5
06/21/22	8:35:47	19.8	5.6
06/21/22	8:36:47	20.5	5.5
06/21/22	8:37:47	19.5	5.4
06/21/22	8:38:47	20.4	5.6
06/21/22	8:39:47	19.9	5.6
06/21/22	8:40:47	20.1	5.7
06/21/22	8:41:47	20.5	5.8
06/21/22	8:42:47	19.7	5.9
06/21/22	8:43:47	20.3	6.0
Sample 2	**Average**	**20.1**	**5.7**

Cleveland-Cliffs Tilden
National Mine, MI
Boiler 4
Sample # 3
Start Time 8:54:14
Date 06/21/22

Date	Time	NOx PPM	O2 %
06/21/22	8:54:14	19.3	6.1
06/21/22	8:55:14	20.2	6.1
06/21/22	8:56:14	19.7	6.2
06/21/22	8:57:14	20.0	6.1
06/21/22	8:58:14	20.3	6.0
06/21/22	8:59:14	19.4	5.9
06/21/22	9:00:14	19.5	6.1
06/21/22	9:01:14	20.5	6.3
06/21/22	9:02:14	19.5	6.1
06/21/22	9:03:14	19.9	6.1
06/21/22	9:04:14	20.2	6.0
06/21/22	9:05:14	19.5	6.1
06/21/22	9:06:14	20.4	6.2
06/21/22	9:07:14	19.9	6.1
06/21/22	9:08:14	19.7	6.2
06/21/22	9:09:14	20.0	6.1
06/21/22	9:10:14	19.6	6.2
06/21/22	9:11:14	20.2	6.0
06/21/22	9:12:14	19.6	6.1
06/21/22	9:13:14	19.7	6.1
06/21/22	9:14:14	20.4	6.1
06/21/22	9:15:14	19.1	6.1
06/21/22	9:16:14	19.4	6.1
06/21/22	9:17:14	20.4	6.1
06/21/22	9:18:14	19.6	6.0
Sample 3	**Average**	**19.8**	**6.1**

Cleveland-Cliffs Tilden
National Mine, MI
Boiler 4
Sample # 4
Start Time 9:29:06
Date 06/21/22

Date	Time	NOx PPM	O2 %
06/21/22	9:29:06	20.3	6.0
06/21/22	9:30:06	19.5	6.0
06/21/22	9:31:06	19.5	6.1
06/21/22	9:32:06	20.4	6.0
06/21/22	9:33:06	19.4	5.9
06/21/22	9:34:06	19.4	6.1
06/21/22	9:35:06	20.1	6.1
06/21/22	9:36:06	19.4	6.1
06/21/22	9:37:06	19.5	6.1
06/21/22	9:38:06	20.2	6.1
06/21/22	9:39:06	19.5	6.1
06/21/22	9:40:06	19.8	6.0
06/21/22	9:41:06	20.3	6.2
06/21/22	9:42:06	19.1	6.1
06/21/22	9:43:06	19.9	6.2
06/21/22	9:44:06	19.8	6.0
06/21/22	9:45:06	19.3	6.0
06/21/22	9:46:06	20.1	5.9
06/21/22	9:47:06	19.7	5.9
06/21/22	9:48:06	19.3	5.9
06/21/22	9:49:06	20.0	6.0
06/21/22	9:50:06	19.8	5.7
06/21/22	9:51:06	19.3	5.9
06/21/22	9:52:06	19.7	5.8
06/21/22	9:53:06	19.6	5.9
Sample 4	**Average**	**19.7**	**6.0**

Cleveland-Cliffs Tilden
National Mine, MI
Boiler 4
Sample # 5
Start Time 10:03:52
Date 06/21/22

Date	Time	NOx PPM	O2 %
06/21/22	10:03:52	20.2	5.8
06/21/22	10:04:52	19.5	5.5
06/21/22	10:05:52	19.4	5.8
06/21/22	10:06:52	20.0	5.7
06/21/22	10:07:52	19.4	5.8
06/21/22	10:08:52	20.1	5.7
06/21/22	10:09:52	19.5	5.7
06/21/22	10:10:52	20.1	5.7
06/21/22	10:11:52	19.8	5.6
06/21/22	10:12:52	19.3	5.6
06/21/22	10:13:52	20.5	5.8
06/21/22	10:14:52	19.3	5.5
06/21/22	10:15:52	19.7	5.6
06/21/22	10:16:52	19.9	5.6
06/21/22	10:17:52	19.3	5.7
06/21/22	10:18:52	20.3	5.8
06/21/22	10:19:52	19.2	5.8
06/21/22	10:20:52	19.6	5.9
06/21/22	10:21:52	19.9	5.7
06/21/22	10:22:52	19.3	5.8
06/21/22	10:23:52	20.0	5.7
06/21/22	10:24:52	19.7	5.6
06/21/22	10:25:52	19.2	5.7
06/21/22	10:26:52	20.3	5.7
06/21/22	10:27:52	19.2	5.5
Sample 5	**Average**	**19.7**	**5.7**

Cleveland-Cliffs Tilden
National Mine, MI
Boiler 4
Sample # 6
Start Time 10:39:01
Date 06/21/22

Date	Time	NOx PPM	O2 %
06/21/22	10:39:01	19.6	5.8
06/21/22	10:40:01	20.1	5.6
06/21/22	10:41:01	19.0	5.8
06/21/22	10:42:01	20.3	5.8
06/21/22	10:43:01	19.5	5.7
06/21/22	10:44:01	19.3	5.7
06/21/22	10:45:01	19.9	5.6
06/21/22	10:46:01	19.6	5.6
06/21/22	10:47:01	19.2	5.8
06/21/22	10:48:01	20.1	5.8
06/21/22	10:49:01	19.8	5.7
06/21/22	10:50:01	19.5	5.7
06/21/22	10:51:01	20.0	5.7
06/21/22	10:52:01	18.9	5.6
06/21/22	10:53:01	19.8	5.7
06/21/22	10:54:01	18.9	5.6
06/21/22	10:55:01	19.7	5.8
06/21/22	10:56:01	19.5	5.6
06/21/22	10:57:01	19.2	5.6
06/21/22	10:58:01	19.9	5.6
06/21/22	10:59:01	19.4	5.8
06/21/22	11:00:01	19.9	5.7
06/21/22	11:01:01	19.1	5.8
06/21/22	11:02:01	19.9	5.6
06/21/22	11:03:01	19.1	5.7
Sample 6	**Average**	**19.6**	**5.7**

Cleveland-Cliffs Tilden
National Mine, MI
Boiler 4
Sample # 7
Start Time 11:14:17
Date 06/21/22

Date	Time	NOx PPM	O2 %
06/21/22	11:14:17	19.3	5.7
06/21/22	11:15:17	19.4	5.7
06/21/22	11:16:17	19.1	5.7
06/21/22	11:17:17	19.7	5.8
06/21/22	11:18:17	18.7	5.6
06/21/22	11:19:17	19.1	5.7
06/21/22	11:20:17	20.0	5.7
06/21/22	11:21:17	18.8	5.5
06/21/22	11:22:17	19.9	5.7
06/21/22	11:23:17	18.9	5.6
06/21/22	11:24:17	19.5	5.6
06/21/22	11:25:17	19.4	5.6
06/21/22	11:26:17	19.4	5.6
06/21/22	11:27:17	19.7	5.6
06/21/22	11:28:17	19.1	5.6
06/21/22	11:29:17	19.9	5.6
06/21/22	11:30:17	19.0	5.6
06/21/22	11:31:17	20.0	5.6
06/21/22	11:32:17	19.2	5.5
06/21/22	11:33:17	19.1	5.6
06/21/22	11:34:17	20.1	5.6
06/21/22	11:35:17	19.0	5.8
06/21/22	11:36:17	19.6	5.7
06/21/22	11:37:17	19.4	5.6
06/21/22	11:38:17	19.0	5.6
Sample 7	**Average**	**19.4**	**5.6**

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Cleveland-Cliffs Tilden
National Mine, MI
Boiler 4
Sample # 8
Start Time 11:49:34
Date 06/21/22

Date	Time	NOx PPM	O2 %
06/21/22	11:49:34	19.2	5.6
06/21/22	11:50:34	19.6	5.5
06/21/22	11:51:34	19.4	5.4
06/21/22	11:52:34	18.9	5.6
06/21/22	11:53:34	19.1	5.4
06/21/22	11:54:34	19.0	6.0
06/21/22	11:55:34	19.9	6.0
06/21/22	11:56:34	19.0	5.7
06/21/22	11:57:34	19.6	6.2
06/21/22	11:58:34	19.5	6.1
06/21/22	11:59:34	19.6	6.2
06/21/22	12:00:34	19.6	6.2
06/21/22	12:01:34	18.9	6.2
06/21/22	12:02:34	20.0	6.2
06/21/22	12:03:34	19.0	6.1
06/21/22	12:04:34	19.2	5.9
06/21/22	12:05:34	19.7	5.7
06/21/22	12:06:34	18.9	5.5
06/21/22	12:07:34	19.8	6.0
06/21/22	12:08:34	19.2	6.0
06/21/22	12:09:34	18.8	6.0
06/21/22	12:10:34	20.1	6.0
06/21/22	12:11:34	18.8	6.1
06/21/22	12:12:34	19.2	5.9
06/21/22	12:13:34	19.4	5.6
Sample 8	**Average**	**19.3**	**5.9**

Cleveland-Cliffs Tilden
National Mine, MI
Boiler 4
Sample # 9
Start Time 12:24:20
Date 06/21/22

Date	Time	NOx PPM	O2 %
06/21/22	12:24:20	18.9	5.8
06/21/22	12:25:20	18.7	6.1
06/21/22	12:26:20	19.5	6.1
06/21/22	12:27:20	18.6	6.0
06/21/22	12:28:20	19.1	6.1
06/21/22	12:29:20	19.4	5.6
06/21/22	12:30:20	18.8	5.8
06/21/22	12:31:20	18.9	5.8
06/21/22	12:32:20	19.3	5.8
06/21/22	12:33:20	18.7	5.9
06/21/22	12:34:20	18.8	5.7
06/21/22	12:35:20	19.5	5.6
06/21/22	12:36:20	19.3	5.5
06/21/22	12:37:20	19.0	5.5
06/21/22	12:38:20	19.6	5.6
06/21/22	12:39:20	19.3	5.5
06/21/22	12:40:20	18.4	5.7
06/21/22	12:41:20	19.7	5.7
06/21/22	12:42:20	18.7	5.7
06/21/22	12:43:20	19.0	5.6
06/21/22	12:44:20	19.2	5.4
06/21/22	12:45:20	18.5	5.6
06/21/22	12:46:20	18.8	5.6
06/21/22	12:47:20	19.8	5.5
06/21/22	12:48:20	18.7	5.4
Sample 9	**Average**	**19.0**	**5.7**

Tilden Mining Company
National Mine, MI
Boiler 4 Stratification Test
Sample # 1
Start Time 15:46:55
Date 05/06/19

Port/Point	Date	Time	NOx PPM	O2 %
4/6	05/06/19	15:46:55	20.3	6.0
	05/06/19	15:47:55	20.6	5.9
	05/06/19	15:48:55	20.3	5.8
	05/06/19	15:49:55	20.2	5.7
4/5	05/06/19	15:50:55	19.8	5.8
	05/06/19	15:51:55	19.9	5.9
	05/06/19	15:52:55	19.8	5.7
	05/06/19	15:53:55	20.3	5.7
4/4	05/06/19	15:54:55	20.1	5.8
	05/06/19	15:55:55	20.2	5.7
	05/06/19	15:56:55	20.3	6.0
	05/06/19	15:57:55	20.5	5.7
4/3	05/06/19	15:58:55	20.4	5.5
	05/06/19	15:59:55	20.1	5.6
	05/06/19	16:00:55	20.0	5.8
	05/06/19	16:01:55	20.5	5.7
4/2	05/06/19	16:02:55	20.3	5.8
	05/06/19	16:03:55	20.7	5.9
	05/06/19	16:04:55	20.5	5.8
	05/06/19	16:05:55	20.0	5.9
4/1	05/06/19	16:06:55	20.7	5.9
	05/06/19	16:07:55	20.8	5.9
	05/06/19	16:08:55	20.2	5.9
	05/06/19	16:09:55	20.6	6.0
3/6	05/06/19	16:14:24	20.2	5.8
	05/06/19	16:15:24	20.0	5.7
	05/06/19	16:16:24	20.1	5.8
	05/06/19	16:17:24	19.8	5.6
3/5	05/06/19	16:18:24	20.0	5.8
	05/06/19	16:19:24	20.0	5.7
	05/06/19	16:20:24	20.1	5.8
	05/06/19	16:21:24	20.2	5.7
3/4	05/06/19	16:22:24	20.5	5.9
	05/06/19	16:23:24	20.4	5.9
	05/06/19	16:24:24	20.8	6.0
	05/06/19	16:25:24	20.5	6.0
3/3	05/06/19	16:26:24	20.4	6.0
	05/06/19	16:27:24	20.4	5.8
	05/06/19	16:28:24	20.5	5.9
	05/06/19	16:29:24	20.2	5.9
3/2	05/06/19	16:30:24	19.6	6.0
	05/06/19	16:31:24	19.8	5.9
	05/06/19	16:32:24	20.0	5.8
	05/06/19	16:33:24	19.9	5.8
3/1	05/06/19	16:34:24	19.9	5.9
	05/06/19	16:35:24	20.0	5.9
	05/06/19	16:36:24	20.1	5.8
	05/06/19	16:37:24	20.0	5.8
2/6	05/06/19	16:41:21	20.4	5.8
	05/06/19	16:42:21	20.1	6.0
	05/06/19	16:43:21	20.6	6.0
	05/06/19	16:44:21	20.4	5.9
2/5	05/06/19	16:45:21	19.6	6.2
	05/06/19	16:46:21	19.5	5.7
	05/06/19	16:47:21	19.9	5.7
	05/06/19	16:48:21	19.8	5.7
2/4	05/06/19	16:49:21	19.5	6.2
	05/06/19	16:50:21	19.5	5.8
	05/06/19	16:51:21	20.0	5.9
	05/06/19	16:52:21	20.0	5.9
2/3	05/06/19	16:53:21	18.7	5.9
	05/06/19	16:54:21	19.2	6.0
	05/06/19	16:55:21	20.2	5.8
	05/06/19	16:56:21	20.1	5.8
2/2	05/06/19	16:57:21	18.7	5.9
	05/06/19	16:58:21	18.8	6.0
	05/06/19	16:59:21	19.1	6.0
	05/06/19	17:00:21	19.3	5.8
2/1	05/06/19	17:01:21	19.3	6.0
	05/06/19	17:02:21	19.7	6.0
	05/06/19	17:03:21	19.0	6.0
	05/06/19	17:04:21	19.0	5.9
1/6	05/06/19	17:08:11	20.1	6.0
	05/06/19	17:09:11	20.2	6.1
	05/06/19	17:10:11	20.1	6.0
	05/06/19	17:11:11	19.8	6.0
1/5	05/06/19	17:12:11	19.4	6.0
	05/06/19	17:13:11	19.6	5.9
	05/06/19	17:14:11	19.6	5.8
	05/06/19	17:15:11	19.4	5.8
1/4	05/06/19	17:16:11	18.6	6.0
	05/06/19	17:17:11	19.3	5.8
	05/06/19	17:18:11	20.2	5.8
	05/06/19	17:19:11	19.7	5.7
1/3	05/06/19	17:20:11	20.0	6.0
	05/06/19	17:21:11	19.7	5.9
	05/06/19	17:22:11	19.5	5.9
	05/06/19	17:23:11	19.8	5.9

1/2	05/06/19	17:24:11	19.3	6.0
	05/06/19	17:25:11	19.3	6.0
	05/06/19	17:26:11	19.5	6.0
	05/06/19	17:27:11	19.0	5.9
1/1	05/06/19	17:28:11	19.9	6.0
	05/06/19	17:29:11	20.0	6.0
	05/06/19	17:30:11	19.6	6.0
	05/06/19	17:31:11	19.2	6.0
		Average	19.9	5.9
Port 4	Point 6	Average	20.3	5.8
	Point 5	Average	19.9	5.8
	Point 4	Average	20.3	5.8
	Point 3	Average	20.3	5.7
	Point 2	Average	20.4	5.9
	Point 1	Average	20.6	5.9
Port 3	Point 6	Average	20.0	5.7
	Point 5	Average	20.1	5.7
	Point 4	Average	20.5	5.9
	Point 3	Average	20.3	5.9
	Point 2	Average	19.8	5.9
	Point 1	Average	20.0	5.9
Port 2	Point 6	Average	20.4	5.9
	Point 5	Average	19.7	5.8
	Point 4	Average	19.8	5.9
	Point 3	Average	19.6	5.9
	Point 2	Average	19.0	5.9
	Point 1	Average	19.3	6.0
Port 1	Point 6	Average	20.0	6.0
	Point 5	Average	19.5	5.9
	Point 4	Average	19.4	5.8
	Point 3	Average	19.8	5.9
	Point 2	Average	19.3	6.0
	Point 1	Average	19.7	6.0

Port 4	Point 6	% Diff.	2.1	-0.5
	Point 5	% Diff.	0.2	-1.7
	Point 4	% Diff.	1.9	-1.2
	Point 3	% Diff.	1.7	-3.5
	Point 2	% Diff.	2.4	-0.3
	Point 1	% Diff.	3.2	1.1
Port 3	Point 6	% Diff.	0.7	-2.7
	Point 5	% Diff.	1.0	-2.3
	Point 4	% Diff.	3.1	1.0
	Point 3	% Diff.	2.2	0.4
	Point 2	% Diff.	-0.4	0.2
	Point 1	% Diff.	0.4	-0.4
Port 2	Point 6	% Diff.	2.4	0.5
	Point 5	% Diff.	-1.2	-1.0
	Point 4	% Diff.	-0.8	1.1
	Point3	% Diff.	-1.8	0.0
	Point 2	% Diff.	-4.6	0.9
	Point 1	% Diff.	-3.3	1.7
Port 1	Point 6	% Diff.	0.5	2.7
	Point 5	% Diff.	-2.0	0.0
	Point 4	% Diff.	-2.4	-1.0
	Point 3	% Diff.	-0.8	1.2
	Point 2	% Diff.	-3.2	1.7
	Point 1	% Diff.	-1.2	2.2

APPENDIX B

PEMS DATA

Tilden Mining Company L.C. EU-BOILER4: Run 1

Start Time: 06/21/2022 07:44:00

End Time: 06/21/2022 08:08:59

@ Missing & Offline # Invalid * Deviation (blank) No Value ^ Outside Limit

Date:Time	EU-Boiler 4 NOx ppm 1-Minute	EU-Boiler 4 O2 pct 1-Minute	EU-Boiler 4 NOx lb/mmBtu 1-Minute	EU-Boiler 4 Gas kscf/hr 1-Minute	EU-Boiler 4 Steam klb/hr 1-Minute
6/21/2022 7:44	20.25	6.04	0.030	137.58	110.55
6/21/2022 7:45	20.35	6.07	0.030	136.07	109.84
6/21/2022 7:46	20.26	6.06	0.030	133.29	109.05
6/21/2022 7:47	20.26	6.43	0.030	128.87	107.73
6/21/2022 7:48	20.20	6.24	0.030	128.59	106.7
6/21/2022 7:49	20.27	6.35	0.030	129.41	107.13
6/21/2022 7:50	20.24	6.17	0.030	130.83	108.09
6/21/2022 7:51	20.17	6.10	0.030	132.88	109.58
6/21/2022 7:52	20.17	6.06	0.030	137.16	113.1
6/21/2022 7:53	20.38	6.04	0.030	142.91	116.53
6/21/2022 7:54	20.26	5.70	0.029	144.14	117.63
6/21/2022 7:55	20.52	5.56	0.029	146.6	119.13
6/21/2022 7:56	20.39	5.54	0.029	150.71	120.46
6/21/2022 7:57	20.40	5.43	0.029	152.67	121.61
6/21/2022 7:58	20.58	5.42	0.029	152.99	122.13
6/21/2022 7:59	20.48	5.55	0.029	151.76	121.84
6/21/2022 8:00	20.47	5.52	0.029	155.45	122.55
6/21/2022 8:01	20.68	5.72	0.030	156.91	121.51
6/21/2022 8:02	20.56	5.64	0.029	159.65	120.21
6/21/2022 8:03	20.60	5.58	0.029	158.1	117.34
6/21/2022 8:04	20.56	5.89	0.030	151.35	118.44
6/21/2022 8:05	20.36	5.74	0.029	145.42	119.73
6/21/2022 8:06	20.31	5.69	0.029	143.73	119.52
6/21/2022 8:07	20.28	5.93	0.029	145.83	118.65
6/21/2022 8:08	20.44	5.68	0.029	150.98	117.68
Average:	20.38	5.85	0.029	144.16	115.87

Tilden Mining Company L.C. EU-BOILER4: Run 2

Start Time: 06/21/2022 08:20:00

End Time: 06/21/2022 08:44:59

@ Missing & Offline # Invalid * Deviation (blank) No Value ^ Outside Limit

Date:Time	EU-Boiler 4 NOx ppm 1-Minute	EU-Boiler 4 O2 pct 1-Minute	EU-Boiler 4 NOx lb/mmBtu 1-Minute	EU-Boiler 4 Gas kscf/hr 1-Minute	EU-Boiler 4 Steam klb/hr 1-Minute
6/21/2022 8:20	20.43	5.88	0.030	143.73	116.95
6/21/2022 8:21	20.32	5.76	0.029	142.04	116.72
6/21/2022 8:22	20.46	5.73	0.029	144.92	116.98
6/21/2022 8:23	20.34	5.46	0.029	148.70	118.50
6/21/2022 8:24	20.42	5.55	0.029	150.66	121.46
6/21/2022 8:25	20.59	5.51	0.029	153.35	121.26
6/21/2022 8:26	20.48	5.62	0.029	153.54	119.77
6/21/2022 8:27	20.39	5.46	0.029	149.02	121.46
6/21/2022 8:28	20.42	5.68	0.029	143.96	121.06
6/21/2022 8:29	20.33	5.74	0.029	140.81	120.90
6/21/2022 8:30	20.32	6.03	0.030	141.09	119.91
6/21/2022 8:31	20.45	5.74	0.029	144.14	119.58
6/21/2022 8:32	20.38	5.51	0.029	147.38	121.10
6/21/2022 8:33	20.55	5.61	0.029	150.75	120.17
6/21/2022 8:34	20.31	5.56	0.029	149.70	119.90
6/21/2022 8:35	20.41	5.48	0.029	148.25	113.66
6/21/2022 8:36	20.46	5.66	0.029	147.33	112.29
6/21/2022 8:37	20.44	5.43	0.029	147.88	112.53
6/21/2022 8:38	20.29	5.48	0.029	147.74	112.92
6/21/2022 8:39	20.47	5.54	0.029	147.70	113.32
6/21/2022 8:40	20.39	5.50	0.029	146.38	114.52
6/21/2022 8:41	20.45	5.78	0.029	144.87	115.83
6/21/2022 8:42	20.40	5.74	0.029	141.68	114.81
6/21/2022 8:43	20.33	5.88	0.029	140.27	114.59
6/21/2022 8:44	20.31	6.03	0.030	137.85	113.58
Average:	20.40	5.65	0.029	146.15	117.35

Tilden Mining Company L.C. EU-BOILER4: Run 3

Start Time: 06/21/2022 08:54:00

End Time: 06/21/2022 09:18:59

@ Missing & Offline # Invalid * Deviation (blank) No Value ^ Outside Limit

Date:Time	EU-Boiler 4 NOx ppm 1-Minute	EU-Boiler 4 O2 pct 1-Minute	EU-Boiler 4 NOx lb/mmBtu 1-Minute	EU-Boiler 4 Gas kscf/hr 1-Minute	EU-Boiler 4 Steam klb/hr 1-Minute
6/21/2022 8:54	20.27	6.08	0.030	136.44	107.66
6/21/2022 8:55	20.42	6.01	0.030	136.89	107.78
6/21/2022 8:56	20.33	6.03	0.030	136.80	106.91
6/21/2022 8:57	20.20	6.05	0.030	136.66	106.92
6/21/2022 8:58	20.37	5.88	0.029	136.57	108.00
6/21/2022 8:59	20.28	5.91	0.029	136.94	109.07
6/21/2022 9:00	20.27	6.02	0.030	136.62	111.23
6/21/2022 9:01	20.33	6.06	0.030	136.34	112.90
6/21/2022 9:02	20.23	6.00	0.029	136.48	112.69
6/21/2022 9:03	20.17	6.03	0.029	136.62	113.49
6/21/2022 9:04	20.40	5.78	0.029	137.16	112.72
6/21/2022 9:05	20.16	5.92	0.029	136.94	113.40
6/21/2022 9:06	20.26	6.11	0.030	137.26	111.59
6/21/2022 9:07	20.32	5.98	0.030	137.16	111.35
6/21/2022 9:08	20.14	5.99	0.029	136.80	111.23
6/21/2022 9:09	20.30	6.06	0.030	136.53	110.33
6/21/2022 9:10	20.28	6.13	0.030	136.30	109.81
6/21/2022 9:11	20.33	5.94	0.030	137.21	107.92
6/21/2022 9:12	20.27	5.91	0.029	137.35	106.66
6/21/2022 9:13	20.27	5.90	0.029	136.94	106.28
6/21/2022 9:14	20.33	6.05	0.030	137.12	106.94
6/21/2022 9:15	20.23	5.85	0.029	136.75	106.64
6/21/2022 9:16	20.30	5.98	0.030	137.35	107.15
6/21/2022 9:17	20.35	5.95	0.030	137.21	108.60
6/21/2022 9:18	20.20	5.93	0.029	136.98	107.90
Average:	20.28	5.98	0.030	136.86	109.41

Tilden Mining Company L.C. EU-BOILER4: Run 4

Start Time: 06/21/2022 09:29:00

End Time: 06/21/2022 09:53:59

@ Missing & Offline # Invalid * Deviation (blank) No Value ^ Outside Limit

Date:Time	EU-Boiler 4 NOx ppm 1-Minute	EU-Boiler 4 O2 pct 1-Minute	EU-Boiler 4 NOx lb/mmBtu 1-Minute	EU-Boiler 4 Gas kscf/hr 1-Minute	EU-Boiler 4 Steam klb/hr 1-Minute
6/21/2022 9:29	20.36	5.85	0.029	137.30	107.70
6/21/2022 9:30	20.28	5.88	0.029	136.85	108.79
6/21/2022 9:31	20.29	6.07	0.030	136.75	108.29
6/21/2022 9:32	20.35	5.95	0.030	137.03	108.19
6/21/2022 9:33	20.28	5.93	0.029	136.89	108.70
6/21/2022 9:34	20.20	6.06	0.030	137.21	109.71
6/21/2022 9:35	20.35	6.00	0.030	136.80	110.03
6/21/2022 9:36	20.14	6.02	0.029	136.62	111.78
6/21/2022 9:37	20.24	6.01	0.030	137.12	112.15
6/21/2022 9:38	20.30	6.02	0.030	136.94	113.77
6/21/2022 9:39	20.30	5.88	0.029	136.44	113.49
6/21/2022 9:40	20.34	5.64	0.029	136.85	113.20
6/21/2022 9:41	20.34	6.12	0.030	136.75	111.78
6/21/2022 9:42	20.27	5.98	0.030	137.07	111.74
6/21/2022 9:43	20.36	6.12	0.030	136.94	111.02
6/21/2022 9:44	20.33	5.94	0.030	136.39	109.80
6/21/2022 9:45	20.19	5.83	0.029	136.57	108.89
6/21/2022 9:46	20.38	5.84	0.029	137.30	107.63
6/21/2022 9:47	20.36	6.02	0.030	136.94	106.81
6/21/2022 9:48	20.28	5.86	0.029	136.94	105.93
6/21/2022 9:49	20.37	5.91	0.030	137.26	105.91
6/21/2022 9:50	20.35	5.76	0.029	136.80	106.64
6/21/2022 9:51	20.18	5.91	0.029	136.57	107.10
6/21/2022 9:52	20.27	5.89	0.029	137.12	107.06
6/21/2022 9:53	20.37	5.84	0.029	136.85	108.72
Average:	20.30	5.93	0.029	136.89	109.39

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AIR QUALITY DIVISION

Tilden Mining Company L.C. EU-BOILER4: Run 5

Start Time: 06/21/2022 10:04:00

End Time: 06/21/2022 10:28:59

@ Missing & Offline # Invalid * Deviation (blank) No Value ^ Outside Limit

Date:Time	EU-Boiler 4 NOx ppm 1-Minute	EU-Boiler 4 O2 pct 1-Minute	EU-Boiler 4 NOx lb/mmBtu 1-Minute	EU-Boiler 4 Gas kscf/hr 1-Minute	EU-Boiler 4 Steam klb/hr 1-Minute
6/21/2022 10:04	20.04	6.09	0.029	139.58	110.96
6/21/2022 10:05	19.87	5.77	0.029	139.40	109.69
6/21/2022 10:06	19.94	6.08	0.029	139.86	110.86
6/21/2022 10:07	20.03	6.02	0.029	138.94	110.38
6/21/2022 10:08	19.90	6.08	0.029	139.49	109.89
6/21/2022 10:09	20.05	5.93	0.029	139.17	110.75
6/21/2022 10:10	19.97	5.87	0.029	139.67	110.01
6/21/2022 10:11	20.06	6.02	0.029	139.49	111.56
6/21/2022 10:12	19.84	5.94	0.029	139.31	113.34
6/21/2022 10:13	19.88	5.90	0.029	139.63	114.55
6/21/2022 10:14	20.00	6.00	0.029	139.22	115.42
6/21/2022 10:15	19.97	5.84	0.029	139.81	115.26
6/21/2022 10:16	20.03	5.86	0.029	139.81	117.47
6/21/2022 10:17	19.96	5.78	0.029	139.40	116.02
6/21/2022 10:18	20.42	5.66	0.029	139.49	114.19
6/21/2022 10:19	20.49	5.62	0.029	139.76	113.52
6/21/2022 10:20	20.35	5.72	0.029	139.54	113.40
6/21/2022 10:21	20.38	5.77	0.029	139.90	112.03
6/21/2022 10:22	20.47	5.61	0.029	139.86	110.71
6/21/2022 10:23	20.48	5.66	0.029	139.76	109.16
6/21/2022 10:24	20.52	5.75	0.029	139.95	108.06
6/21/2022 10:25	20.41	5.62	0.029	138.81	107.99
6/21/2022 10:26	20.39	5.82	0.029	139.44	107.45
6/21/2022 10:27	20.51	5.60	0.029	139.90	108.11
6/21/2022 10:28	20.35	5.59	0.029	140.36	109.59
Average:	20.17	5.82	0.029	139.58	111.61

Tilden Mining Company L.C. EU-BOILER4: Run 6

Start Time: 06/21/2022 10:39:00

End Time: 06/21/2022 11:03:59

@ Missing & Offline # Invalid * Deviation (blank) No Value ^ Outside Limit

Date:Time	EU-Boiler 4 NOx ppm 1-Minute	EU-Boiler 4 O2 pct 1-Minute	EU-Boiler 4 NOx lb/mmBtu 1-Minute	EU-Boiler 4 Gas kscf/hr 1-Minute	EU-Boiler 4 Steam klb/hr 1-Minute
6/21/2022 10:39	20.49	5.79	0.029	139.22	110.18
6/21/2022 10:40	20.53	5.63	0.029	139.40	110.19
6/21/2022 10:41	20.42	5.83	0.029	139.44	109.21
6/21/2022 10:42	20.50	5.78	0.029	139.31	110.30
6/21/2022 10:43	20.43	5.72	0.029	139.58	109.66
6/21/2022 10:44	20.40	5.55	0.029	139.86	110.14
6/21/2022 10:45	20.48	5.65	0.029	139.54	110.56
6/21/2022 10:46	20.45	5.49	0.029	140.13	112.43
6/21/2022 10:47	20.33	5.77	0.029	139.63	113.00
6/21/2022 10:48	20.54	5.72	0.029	139.22	113.94
6/21/2022 10:49	20.43	5.55	0.029	138.90	115.64
6/21/2022 10:50	20.38	5.69	0.029	139.90	115.89
6/21/2022 10:51	20.51	5.75	0.029	139.58	116.49
6/21/2022 10:52	20.36	5.57	0.029	139.40	115.45
6/21/2022 10:53	20.57	5.81	0.030	139.76	113.89
6/21/2022 10:54	20.45	5.56	0.029	140.13	113.25
6/21/2022 10:55	20.49	5.82	0.030	139.22	112.41
6/21/2022 10:56	20.48	5.59	0.029	139.49	111.74
6/21/2022 10:57	20.40	5.63	0.029	139.90	109.84
6/21/2022 10:58	20.45	5.71	0.029	139.63	109.09
6/21/2022 10:59	20.32	5.65	0.029	139.26	107.70
6/21/2022 11:00	20.51	5.70	0.029	140.04	107.95
6/21/2022 11:01	20.37	5.87	0.029	139.44	106.98
6/21/2022 11:02	20.52	5.47	0.029	139.72	107.98
6/21/2022 11:03	20.50	5.72	0.029	140.04	110.73
Average:	20.45	5.68	0.029	139.59	111.39

Tilden Mining Company L.C. EU-BOILER4: Run 7

Start Time: 06/21/2022 11:14:00

End Time: 06/21/2022 11:38:59

@ Missing & Offline # Invalid * Deviation (blank) No Value ^ Outside Limit

Date:Time	EU-Boiler 4 NOx ppm 1-Minute	EU-Boiler 4 O2 pct 1-Minute	EU-Boiler 4 NOx lb/mmBtu 1-Minute	EU-Boiler 4 Gas kscf/hr 1-Minute	EU-Boiler 4 Steam klb/hr 1-Minute
6/21/2022 11:14	20.50	5.72	0.029	139.35	111.11
6/21/2022 11:15	20.52	5.76	0.029	139.67	109.54
6/21/2022 11:16	20.34	5.68	0.029	140.08	107.31
6/21/2022 11:17	20.42	5.83	0.029	139.49	107.06
6/21/2022 11:18	20.41	5.79	0.029	139.67	107.30
6/21/2022 11:19	20.41	5.82	0.029	139.67	107.33
6/21/2022 11:20	20.42	5.72	0.029	139.44	107.69
6/21/2022 11:21	20.34	5.54	0.029	139.81	108.53
6/21/2022 11:22	20.41	5.73	0.029	139.44	110.04
6/21/2022 11:23	20.37	5.73	0.029	139.76	111.82
6/21/2022 11:24	20.35	5.74	0.029	139.17	114.46
6/21/2022 11:25	20.42	5.70	0.029	139.54	115.59
6/21/2022 11:26	20.29	5.74	0.029	139.58	115.50
6/21/2022 11:27	20.47	5.67	0.029	139.76	114.32
6/21/2022 11:28	20.35	5.69	0.029	139.95	113.45
6/21/2022 11:29	20.44	5.79	0.029	139.81	112.64
6/21/2022 11:30	20.31	5.67	0.029	139.86	111.26
6/21/2022 11:31	20.37	5.75	0.029	139.90	110.95
6/21/2022 11:32	20.36	5.45	0.029	139.58	110.52
6/21/2022 11:33	20.36	5.65	0.029	139.40	110.74
6/21/2022 11:34	20.47	5.62	0.029	140.08	109.68
6/21/2022 11:35	20.26	5.96	0.029	139.72	110.83
6/21/2022 11:36	20.36	5.69	0.029	139.90	109.45
6/21/2022 11:37	20.42	5.73	0.029	139.99	111.10
6/21/2022 11:38	20.30	5.71	0.029	140.13	109.73
Average:	20.39	5.71	0.029	139.71	110.72

Tilden Mining Company L.C. EU-BOILER4: Run 8

Start Time: 06/21/2022 11:50:00

End Time: 06/21/2022 12:14:59

@ Missing & Offline # Invalid * Deviation (blank) No Value ^ Outside Limit

Date:Time	EU-Boiler 4 NOx ppm 1-Minute	EU-Boiler 4 O2 pct 1-Minute	EU-Boiler 4 NOx lb/mmBtu 1-Minute	EU-Boiler 4 Gas kscf/hr 1-Minute	EU-Boiler 4 Steam klb/hr 1-Minute
6/21/2022 11:50	20.26	5.64	0.029	139.49	109.10
6/21/2022 11:51	20.49	5.64	0.029	139.76	108.24
6/21/2022 11:52	20.25	5.62	0.029	139.90	107.48
6/21/2022 11:53	20.48	5.64	0.029	139.99	108.03
6/21/2022 11:54	20.39	5.60	0.029	139.76	108.56
6/21/2022 11:55	20.41	5.67	0.029	139.63	108.57
6/21/2022 11:56	20.37	5.70	0.029	140.04	108.46
6/21/2022 11:57	20.30	5.48	0.029	139.54	109.76
6/21/2022 11:58	20.47	5.74	0.029	139.58	111.07
6/21/2022 11:59	20.30	5.57	0.029	139.40	112.72
6/21/2022 12:00	20.43	5.73	0.029	139.86	116.18
6/21/2022 12:01	20.41	5.66	0.029	139.81	115.61
6/21/2022 12:02	20.43	5.91	0.030	139.13	115.20
6/21/2022 12:03	20.41	5.74	0.029	139.26	113.44
6/21/2022 12:04	20.28	5.44	0.029	139.95	113.17
6/21/2022 12:05	20.44	5.80	0.029	139.44	111.62
6/21/2022 12:06	20.22	5.87	0.029	137.16	110.61
6/21/2022 12:07	20.37	5.70	0.029	139.90	109.30
6/21/2022 12:08	20.43	5.65	0.029	139.95	109.99
6/21/2022 12:09	20.33	5.52	0.029	139.63	110.73
6/21/2022 12:10	20.42	5.70	0.029	139.22	108.75
6/21/2022 12:11	20.40	5.75	0.029	139.26	111.30
6/21/2022 12:12	20.37	5.52	0.029	139.26	111.56
6/21/2022 12:13	20.39	5.56	0.029	139.49	112.48
6/21/2022 12:14	20.33	5.60	0.029	139.40	114.03
Average:	20.37	5.66	0.029	139.51	111.04

Tilden Mining Company L.C. EU-BOILER4: Run 9

Start Time: 06/21/2022 12:24:00

End Time: 06/21/2022 12:48:59

@ Missing & Offline # Invalid * Deviation (blank) No Value ^ Outside Limit

Date:Time	EU-Boiler 4 NOx ppm 1-Minute	EU-Boiler 4 O2 pct 1-Minute	EU-Boiler 4 NOx lb/mmBtu 1-Minute	EU-Boiler 4 Gas kscf/hr 1-Minute	EU-Boiler 4 Steam klb/hr 1-Minute
6/21/2022 12:24	20.44	5.62	0.029	140.08	111.52
6/21/2022 12:25	20.18	5.68	0.029	138.49	109.41
6/21/2022 12:26	20.36	6.00	0.030	139.13	108.06
6/21/2022 12:27	20.35	5.64	0.029	139.22	107.32
6/21/2022 12:28	20.35	5.77	0.029	139.72	107.29
6/21/2022 12:29	20.41	5.58	0.029	139.90	109.61
6/21/2022 12:30	20.35	5.67	0.029	139.72	110.53
6/21/2022 12:31	20.25	5.54	0.029	139.90	112.12
6/21/2022 12:32	20.36	5.45	0.029	140.27	114.83
6/21/2022 12:33	20.40	5.48	0.029	140.08	115.61
6/21/2022 12:34	20.34	5.79	0.029	139.54	116.29
6/21/2022 12:35	20.38	5.73	0.029	138.99	115.92
6/21/2022 12:36	20.42	5.60	0.029	139.22	114.94
6/21/2022 12:37	20.29	5.63	0.029	140.13	114.58
6/21/2022 12:38	20.33	5.50	0.029	139.44	113.92
6/21/2022 12:39	20.43	5.62	0.029	139.86	113.01
6/21/2022 12:40	20.31	5.68	0.029	139.44	111.79
6/21/2022 12:41	20.43	5.93	0.030	139.95	109.99
6/21/2022 12:42	20.39	5.66	0.029	139.86	109.68
6/21/2022 12:43	20.29	5.77	0.029	139.95	108.25
6/21/2022 12:44	20.42	5.58	0.029	139.44	107.83
6/21/2022 12:45	20.35	5.71	0.029	139.26	108.11
6/21/2022 12:46	20.36	5.65	0.029	139.76	108.97
6/21/2022 12:47	20.43	5.90	0.030	139.86	110.67
6/21/2022 12:48	20.33	5.42	0.029	139.72	112.35
Average:	20.36	5.66	0.029	139.64	111.30