MAY 07 2020

CERTIFIED MAIL 7018 3090 0001 9999 0474

April 29, 2020

Air and Radiation Division
U. S. Environmental Protection Agency, Region V
77 West Jackson Boulevard,
Chicago, IL 60604

Re: Submittal of U. S. Steel – Minntac and Keetac Compliance Reports per the Requirements of 40 CFR Part 52.1235(e)(5) through (7) – Taconite Regional Haze FIP

U. S. Steel – Keetac (Keetac)

Keetac utilizes Ametek Model 920 analyzers to measure NOx and SO_2 (Serial Number AE-920-10086-1).

Keetac submits quarterly excess emission reports to the Minnesota Pollution Control Agency. Therefore, to fulfill the requirements of the excess emissions and monitoring system performance reports, a copy of the quarterly excess emissions report for the 1st quarter is included in this submittal. Where EPA's requirements per the regulation differ from Minnesota's requirements, this information is also being included.

Any periods of startup and shut down are reported in Section 5 of the DRF-1 Form included in this submittal. There were no deviations during this reporting period.

The emission limitation for SO2 is 225 lbs/hr – 30 day rolling average. There were no deviations associated with the emission limit.

The emission limitation for NOx became effective on September 8, 2019 and is 1.5 lbs/MMBtu based on a 30-day rolling average. However, for any 30 or more consecutive days when only natural gas is used, a limit of 1.2 lbs/MMBtu applies. Refer to attachment 1.

The last CEMS CGA was conducted on December 10, 2019 and was previously provided. The last CEMS RATA was conducted on March 24, 2020 and was submitted separately on April 28, 2020.

U. S. Steel – Minntac (Minntac)

Minntac utilizes Ametek Model 920 analyzers to measure NOx and SO_2. The table below outlines the serial numbers for each of the units:

Line 3	AE-920-10086-1
Line 4	AE-920-10086-2
Line 5	AE-920-10086-3
Line 6	ZA-920-10336-1

Line 7	ZA-920-10336-2

Minntac submits quarterly excess emission reports to the Minnesota Pollution Control Agency. Therefore, to fulfill the requirements of the excess emissions and monitoring system performance reports, a copy of the quarterly excess emissions report for the 1st quarter is included in this submittal. Where EPA's requirements per the regulation differ from Minnesota's requirements, this information is also being included.

Any periods of startup and shut down are reported in Section 5 of the DRF-1 Form included in this submittal. There were no deviations during this reporting period.

The emission limitation for SO_2 is a 30-day rolling average aggregate limit for indurating lines 3-7 of 498 lbs/hr when all lines are producing flux pellets, 630 lbs/hr when producing acid pellets or using the equation in 40 CFR 52.1235(b)(2)(iii) when the 30 day period includes both acid and flux pellet production. There were no deviations associated with the emission limit.

The emission limitation for NOx on Lines 4, 6 and Line 7 is 1.5 lbs/MMBtu based on a 30-day rolling average. However, for any 30 or more consecutive days when only natural gas is used, a limit of 1.2 lbs/MMBtu applies. There were no deviations associated with the emission limit for Lines 4, 6 and Line 7.

The latest CEMS RATA was conducted on Lines 3-7 on May 15-16 and May 20-22, 2019. This report was submitted on July 10, 2019. The last CGAs were performed on February 11th and 13th of 2020 and are included in this report.

If you should require any additional information, please contact me at scampbell@uss.com or 218-778-8684.

Sincerely,

Stephani Campbell

Stephani Campbell
Environmental Control

U. S. Steel Corporation
Minnesota Ore Operations
P.O. Box 217
Keewatin, MN 55753

CERTIFIED MAIL 7018 3090 0001 9999 0436

April 28, 2020

Air Quality Compliance Tracking Coordinator
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Re: U. S. Steel – Keetac Administrative Order by Consent
Quarterly Continuous Monitoring System Deviation Report

Dear Supervisor:

Enclosed with this letter is U. S. Steel – Keetac's (Keetac) Quarterly Continuous Emission Monitoring System Deviation report for the 1st quarter of 2020. The Continuous Emission Monitoring System (CEMS) was certified on Keetac's Waste Gas Stack on November 6th, 2008. The CEMS was installed as a part of Keetac's Administrative Order by Consent with the State of Minnesota effective September 27th, 2007.

Deviations associated with Emission Limits

There were no deviations associated with emission limits.

Deviations associated with Monitor Downtime

There were sixteen instances of monitor downtime that affected either NO_x or SO_2. The individual downtime duration and cause is listed in the monitor downtime section of this report.

Deviations associated with Monitor Bypass

Keetac utilizes a grate/kiln system for pelletizing taconite. Although this is an extremely hot process (with temperatures exceed 2500 °F in the kiln), the equipment is designed to withstand the high temperatures and will do so during normal operation. However, the grate is very susceptible to heat damage during upset conditions or if stopped for any reason while it is hot. To prevent equipment damage and heat related safety issues during these situations, large amounts of heat must be released from the grate as soon as possible. For that reason the system was designed

such that when the grate stops or gets overheated, a stack cap is lifted to release heat through an emergency stack. At this time the monitor is bypassed. These situations are the only times the monitor is bypassed. Because they represent upset conditions or process downtime (production loss), the company has a strong vested interest in minimizing both the number and duration of occurrences.

The times listed in the monitor bypass section are when the grate emergency stack cap is open and there is combustion in the kiln. This is the only time when any NO_x and SO_2 are emitted. Times when the cap is open but there is no combustion in the kiln are not listed.

If you have any questions concerning these forms, please contact Stephani Campbell at (218) 778-8684.

Sincerely,

Travis Kolari
Plant Manager - Keetac

Enclosure

cc: Steve Palzkill – MPCA
File

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Excess Emissions Reporting Form - DRF-1

Continuous Monitoring Systems Reporting Form

Please note: This form has been updated. Please print, complete and remit only the forms. Please see the instructions in the Word version of DRF-1 to ensure proper use and understanding of definitions. DO NOT print and return the instructions.

Use this form to record and report excess emissions (EE) that are identified by *Continuous Monitoring Systems.* This includes Continuous Emission Monitoring Systems (CEMS) and Continuous Opacity Monitoring Systems (COMS). DRF-1 is the form you must use to report excess emissions from a stack as recorded by your facility's Continuous Emission Monitoring Systems (CEMS) and Continuous Opacity Monitoring Systems (COMS).

Address hard copy
Compliance Tracking Coordinator, Fourth Floor
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

1) General Facility Information

Company name: U. S. Steel - Keetac
AQ file no.: 62B
Report covers Quarter: First
AQ permit no.: 13700063-005
Year: 2020

2) CEMS/COMS Data Summary Table

				Duration of Monitor Downtime		Duration of Excess Emissions (EE)			
2a) Monitor ID Number	2b) Monitor ID Pollutant	2c) EU/SV ID Number	2d) Total Operating Time (TOT) (hr)	3i) Total Duration of Monitor Downtime (hr)	2e) Downtime % Of TOT	4l) Cumulative Duration of Exempt EE	2f) Exempt EE % of TOT	4m) Cumulative Total Duration of All EE	2g) Total EE % of TOT
Line 2	NOx	SV 051	2184	15	0.7%	N/A	N/A	0	0.00%
Line 2	SO2	SV 051	2184	15	0.7%	N/A	N/A	0	0.00%

3) Duration of Monitor Downtime: Provide the following information regarding each period of monitor downtime. Make a separate table for each monitor, as needed.

3a) Monitor ID Number	3b) Monitor ID Pollutant or Parameter	3c) Emission Unit Being Monitored	3d) Beginning Date and Time of Downtime	3e) End Date and Time of Downtime	3f) Duration of Downtime (min)	3g) Reason for Monitor Downtime (clarifying comments)	3h) Corrective ActionTaken (clarifying comments)
Line 2	SO2	SV 051	01/10/2020 18:00:00	01/10/2020 18:59:00	60	Primary Analyzer Malfunction	Performed necessary maintenance
Line 2	SO2	SV 051	01/11/2020 14:00:00	01/11/2020 14:59:00	60	Primary Analyzer Malfunction	Performed necessary maintenance
Line 2	SO2	SV 051	02/10/2020 15:00:00	02/10/2020 15:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 2	SO2	SV 051	02/10/2020 16:00:00	02/10/2020 21:59:00	360	Preventative Maintenance	Performed necessary maintenance
Line 2	SO2	SV 051	02/18/2020 02:00:00	02/18/2020 04:59:00	180	Primary Analyzer Malfunction	Performed necessary maintenance
Line 2	SO2	SV 051	02/19/2020 12:00:00	02/19/2020 12:59:00	60	Primary Analyzer Malfunction	Performed necessary maintenance
Line 2	SO2	SV 051	03/22/2020 06:00:00	03/22/2020 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 2	SO2	SV 051	03/25/2020 06:00:00	03/25/2020 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 2	NOx	SV 051	01/10/2020 18:00:00	01/10/2020 18:59:00	60	Primary Analyzer Malfunction	Performed necessary maintenance
Line 2	NOx	SV 051	01/11/2020 14:00:00	01/11/2020 14:59:00	60	Primary Analyzer Malfunction	Performed necessary maintenance
Line 2	NOx	SV 051	02/10/2020 15:00:00	02/10/2020 15:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 2	NOx	SV 051	02/10/2020 16:00:00	02/10/2020 21:59:00	360	Preventative Maintenance	Performed necessary maintenance
Line 2	NOx	SV 051	02/18/2020 02:00:00	02/18/2020 04:59:00	180	Primary Analyzer Malfunction	Performed necessary maintenance
Line 2	NOx	SV 051	02/19/2020 12:00:00	02/19/2020 12:59:00	60	Primary Analyzer Malfunction	Performed necessary maintenance
Line 2	NOx	SV 051	03/22/2020 06:00:00	03/22/2020 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 2	NOx	SV 051	03/25/2020 06:00:00	03/25/2020 06:59:00	60	Automatic Calibration	Performed necessary maintenance

3i) Total duration of downtime: 30 **hours**

***Opacity time listed in minutes**

4) Duration of Excess Emissions: Provide the following information regarding each individual excess emission

4a) Emission Unit ID Number	4b) Monitor ID Number	4c) Pollutant or Parameter Monitored	4d) Beginning Date and Time of EE	4e) End Date and Time of EE	4f) Limit and Averaging Period	4g) Highest Reading of EE with Units (example: 5 lb/hr, etc)	4h) Duration of Exempt EE (include these entries as part of 4i)	4i) Total Duration of All EE	4j) Cause of EE (clarifying comments)	4k) Corrective Action Taken (clarifying comments)
SV051	CM001	NOx	N/A	N/A	N/A	N/A	0	0	N/A	N/A
SV051	CM005	SO2	N/A	N/A	N/A	N/A	0	0	N/A	N/A
						4l) Cumulative Duration of Exempt Excess Emissions:	0		4m) Cumulative Total Duration	0 Hrs

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were

5a) Monitor ID number	5b) Emission Unit Required to be Monitored	5c) Pollutant and Limit Required to be Monitored	5d) Beginning Date and Time of Bypass Period	5e) End date and time of bypass period	5f) Duration of monitor bypass (min)	5g) Was P.C.E. operating during bypass period?	5h) Duration of allowable monitor bypass (min)	5i) Reason for monitor bypass (clarifying comments)	5j) Corrective action taken (clarifying comments)
Line 2	SV 051	NOx and SO2	1/8/2020 6:43	1/8/2020 13:00	377	Yes	377	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	1/8/2020 13:00	1/8/2020 14:26	86	Yes	86	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	1/13/2020 13:03	1/13/2020 13:25	22	Yes	22	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	1/26/2020 1:47	1/26/2020 2:19	32	Yes	32	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	2/1/2020 10:28	2/1/2020 11:33	65	Yes	65	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	2/5/2020 7:11	2/5/2020 7:41	30	Yes	30	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	2/9/2020 21:49	2/10/2020 1:10	201	Yes	201	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	2/14/2020 10:06	2/14/2020 10:11	5	Yes	5	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	2/24/2020 9:29	2/24/2020 11:24	115	Yes	115	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	2/26/2020 12:57	2/26/2020 13:00	3	Yes	3	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	2/26/2020 13:00	2/26/2020 13:19	19	Yes	19	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	3/22/2020 1:00	3/22/2020 5:00	240	Yes	240	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	3/22/2020 5:00	3/22/2020 10:06	306	Yes	306	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	3/22/2020 11:40	3/22/2020 13:00	80	Yes	80	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	3/22/2020 13:00	3/22/2020 19:25	385	Yes	385	Bypass necessary to protect plant equipment	N/A
Line 2	SV 051	NOx and SO2	3/25/2020 6:24	3/25/2020 9:07	163	Yes	163	Bypass necessary to protect plant equipment	N/A

5k) Total duration of allowable monitor bypass: 35 hours

6) CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Signature of Responsible Official	Travis Kolari Printed Name of Responsible Official
Plant Manager - Keetac Title	April 28, 2020 Date

COMS audits

Subject item	Operating hours	Monitor ID	Pollutant	Last audit date	Cal error results	Pass/fail	Next test due by:	Comments
N/A								

Cylinder gas audit's (CGA)

Emission unit	Operating hours	Monitor ID	Pollutant	Last audit date	Cal error results	Pass/fail	Next test due by:	Comments
SV051/EU030		CM001	NOx	12/10/2019	Low 1.28% Mid 1.34%	Pass	6/30/2020	RATA 1st Qtr
SV051/EU030		CM005	SO2	12/10/2019	Low 0.43% Mid 1.93%	Pass	6/30/2020	RATA 1st Qtr

Linearity

Emission unit	Operating hours	Monitor ID	Pollutant	Last audit date	Cal error results	Pass/fail	Next test due by:	Comments
N/A					Low Mid High			

Relative accuracy test audit (RATA)

Emission unit	Operating hours	Monitor ID	Pollutant	Last audit date	Relative accuracy	Pass/fail	Next test due by:	Comments
SV051	2184	CM001	NOx	3/24/2020	10.4%	Pass	3/31/2021	
SV051	2184	CM005	SO2	3/24/2020	9.8%	Pass	3/31/2021	

U.S. Steel Corporation
Keetac
Keewatin, Minnesota

Barr Engineering Co.
April 9, 2020

TABLE 1

RATA RESULTS SUMMARY
Phase II Waste Gas Stack (SV051)
March 24, 2020

Sulfur Dioxide Emission Rate Relative Accuracy		**Calculated using the Reference Method**				***Relative Accuracy Limit***			***20%***
SO_2, lb/hr	Run 1 1005-1026	Run 2 1043-1104	Run 3 1114-1135	Run 4 1135-1156	Run 5 1207-1228	Run 6 1228-1249	Run 7 1300-1321	Run 8 1321-1342	Run 9 1354-1415
Reference Method lb/hr	237.9	252.9	247.1	243.4	237.2	239.9	239.2	234.0	235.0
CEM lb/hr	212.8	231.2	231.4	220.9	215.5	218.1	217.0	212.2	212.6
Difference	-25.1	-21.7	-15.7	-22.5	-21.7	-21.8	-22.2	-21.7	-22.4
Average Difference	-21.6	Standard Deviation of the Differences			2.5	**Relative Accuracy**			**9.8%**
Confidence Coefficient	1.9	Average Reference Method, SO2 lb/hr			240.7	Average CEM, SO_2 lb/hr			219.1

Oxides of Nitrogen Emission Rate Relative Accuracy Calculated using the Reference Method						***Relative Accuracy Limit***			***20%***
NO_X, lb/hr	Run 1 1005-1026	Run 2 1043-1104	Run 3 1114-1135	Run 4 1135-1156	Run 5 1207-1228	Run 6 1228-1249	Run 7 1300-1321	Run 8 1321-1342	Run 9 1354-1415
Reference Method lb/hr	1058.5	1082.8	1100.2	1116.8	1118.8	1079.2	1105.8	1108.8	1079.6
CEM lb/hr	946.2	976.7	999.2	998.0	1002.7	981.1	1015.5	993.9	992.7
Difference	-112.3	-106.1	-100.9	-118.9	-116.1	-98.1	-90.3	-115.0	-86.8
Average Difference	-104.9	Standard Deviation of the Differences			11.6	**Relative Accuracy**			**10.4%**
Confidence Coefficient	8.9	Average Reference Method, NOx lb/hr			1094.5	Average CEM, lb/hr			989.6

Summary Table by Monitor Downtime Type
U. S. Steel - Keetac
1st Quarter 2020

NOx

Line	Duration (Hrs)	Description
Line 2	3	Automatic Calibration
	0	Data Handling System Malfunction
	0	Sample Interface Malfunction
	0	Excess Drift Primary Analyzer
	6	Primary Analyzer Malfunction
	6	Preventative Maintenance

SO2

Line	Duration (Hrs)	Description
Line 2	3	Automatic Calibration
	0	Data Handling System Malfunction
	0	Sample Interface Malfunction
	0	Excess Drift Primary Analyzer
	6	Primary Analyzer Malfunction
	6	Preventative Maintenance

Attachment 1 - Duration of Excess Emissions Table

Emission Unit ID	Monitor ID	Pollutant	Date of EE	Beginning and end time of EE	Magnitude of the EE	Cause of EE	Corrective or Preventative Actions Taken
SV051	CM001	NOx	1/1/20-3/31/20	1/1/20-3/31/20	NOx emissions have not increased at U. S. Steel - Keetac. The applicable limit is significantly lower than Keetac's historic emissions – using good combustion practices. Because the FIP limit is significantly more stringent than the existing state standard, the emissions at Keetac, despite good combustion practices are substantially higher than the existing FIP limit.	The USEPA Federal Implementation Plan for Regional Haze for Keetac which established significantly more stringent limits became effective on September 8, 2019. This limit is currently under judicial review in the U.S. Court of Appeals for the Eighth Circuit in which U. S. Steel has challenged the technological and economical feasibility of the limit. There is also ongoing mediation between U. S. Steel and USEPA to resolve that case and to develop revised NOx limits.	U. S. Steel – Keetac is actively in mediation with USEPA regarding the FIP NOx limits. During this mediation process, U. S. Steel has completed studies regarding Keetac emissions in an effort to reach resolution. USEPA is reviewing these materials. In the meantime, U. S. Steel – Keetac is relying on good combustion practices to minimize emissions while avoiding impacts to safety and pellet quality.
SV051	CM005	SO2	N/A	N/A	N/A	N/A	N/A

U. S. Steel Corporation
Minnesota Ore Operations
P.O. Box 417
Mt. Iron, MN 55768

CERTIFIED MAIL 7018 3090 0001 9999 0443

April 28, 2020

Air Quality Compliance Tracking Coordinator
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

Re: United States Steel Corporation, Minnesota Ore Operations – Minntac
Air Emissions Permit No. 13700005-006
Quarterly Continuous Monitoring System Deviation Report

Dear Supervisor:

Enclosed with this letter is U. S. Steel – Minntac's (Minntac) Quarterly Excess Emissions Reporting Form for the 1st quarter of 2020. NOx/SO_2 Continuous Emission Monitoring Systems (CEMS) are certified on all Agglomerator Waste Gas Lines.

Deviations associated with Emission Limits

There were no deviations during the 1st quarter of 2020.

Deviations associated with Monitor Downtime

There were one hundred twenty-three instances of monitor downtime for either NOx or SO_2. The individual downtime durations and causes are listed in the monitor downtime section of this report.

Deviations associated with Monitor Bypass

Minntac utilizes a grate/kiln system for pelletizing taconite. Although this is an extremely hot process (with temperatures exceed 2500°F in the kiln), the equipment is designed to withstand the high temperatures and will do so during normal operation. However, the grate is very susceptible to heat damage during upset conditions or if stopped for any reason while it is hot. To prevent equipment damage and heat related safety issues during these situations, large amounts of heat must be released from the grate as soon as possible. For that reason the system was designed such that when the grate stops or gets overheated, a stack cap is lifted to release heat through an emergency stack. At this time the monitor is bypassed. These situations are the only times the monitor is bypassed. Because they represent upset conditions or process downtime (production loss), the company has a strong vested interest in minimizing both the number and duration of occurrences.

The times listed in the monitor bypass section are when the grate emergency stack cap is open and there is combustion in the kiln. This is the only time when any NO_x or SO_2 is emitted. Times when the cap is open but there is no combustion in the kiln are not listed.

If you have any questions concerning these forms, please contact Stephani Campbell at (218) 778-8684.

Sincerely,

Lukas Klemke
Plant Manager – Minntac

Enclosure

cc: Steve Palzkill – MPCA
File

Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

DRF-1

Excess Emissions Reporting Form

Air Quality Permit Program

Doc Type: Excess Emission Report

Note: Please complete, and remit **only** the forms. Please see the instructions to ensure proper use and understanding of definitions.
Do not print and return the instructions.

General Information about Deviation and Compliance Reporting

If your permit requires you to submit deviation reports or an annual compliance certification, you should use the Deviation Reporting Forms (DRFs) and Annual Compliance Certification Report (CR-04), unless you get Minnesota Pollution Control Agency (MPCA) approval to use another format or your facility's permit specifies otherwise. There are two separate DRF forms: DRF-1 and DRF-2.

DRF-1 is used to report direct excess stack emissions (EE) recorded by Continuous Emission Monitoring Systems (CEMS) and Continuous Opacity Monitoring Systems

DRF-2 is used to report deviations recorded by periodic monitoring systems, deviations of permitted operating conditions and surrogate parameters whether recorded
Some examples: flow rate, temperature, throughput, control equipment operating parameters, fuel-use records

CR-04: is used to report facility compliance status at the end of each year if required by your permit.

Address hard copy report submittals to: Air Compliance Tracking Coordinator, Minnesota Pollution Control Agency
520 Lafayette Road North, St. Paul, Minnesota 55155-4195

Or e-mail a signed and scanned PDF copy to: AQRoutineReport.PCA@state.mn.us
(see e-mail instructions in "Routine Air Report Instructions Letter" at:
http://www.pca.state.mn.us/nwqh472

1) General Facility Information

Facility name:	United States Steel Corporation, Minnesota Ore Operations, Minntac	AQ file no.:	26A
County:	St. Louis	AQ permit #:	13700005
Report covers quarter:	First	Year:	2020

2) CEMS/COMS Data Summary Table

				Duration of Monitor Downtime		Duration of Excess Emissions (EE)			
2a) Monitor ID Number	2b) Monitor ID Pollutant	2c) EU/SV ID Number	2d) Total Operating Time (TOT)	3i) Total Duration of Monitor Downtime (hr)	2e) **Downtime % Of TOT**	4l) Cumulative Duration of Exempt EE	2f) **Exempt EE % of TOT**	4m) Cumulative Total Duration of All EE	2g) **Total EE % of TOT**
MR 001	NOx	SV-103	2173	90	**4.1%**	0	**0%**	0	**0%**
MR 002	NOx	SV-118	1925	15	**0.8%**	0	**0%**	0	**0%**
MR 003	NOx	SV-127	2184	35	**1.6%**	0	**0%**	0	**0%**
MR 004	NOx	SV-144	2163	27	**1.2%**	0	**0%**	0	**0%**
MR 005	NOx	SV-151	2053	34	**1.7%**	0	**0%**	0	**0%**
MR 001	SO2	SV-103	2173	93	**4.3%**	0	**0%**	0	**0%**
MR 002	SO2	SV-118	1925	17	**0.9%**	0	**0%**	0	**0%**
MR 003	SO2	SV-127	2184	40	**1.8%**	0	**0%**	0	**0%**
MR 004	SO2	SV-144	2163	29	**1.3%**	0	**0%**	0	**0%**
MR 005	SO2	SV-151	2053	42	**2.0%**	0	**0%**	0	**0%**

3) Duration of Monitor Downtime: Provide the following information regarding each period of monitor downtime. Make a separate table for each monitor, as needed.

3a) Monitor ID Number	3b) Pollutant or parameter monitored	3c) Emission Unit Being Monitored	3d) Beginning Date and Time of Downtime	3e) End Date and Time of Downtime	3f) Duration of Downtime (minutes)	3g) Reason for Monitor Downtime (clarifying comments)	3h) Corrective ActionTaken (clarifying comments)
Line 3	NOx	SV103	01/22/2020 07:00:00	01/23/2020 04:59:00	1,320	Primary Analyzer Malfunction	Performed necessary maintenance
Line 3	NOx	SV103	01/23/2020 05:00:00	01/23/2020 05:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 3	NOx	SV103	02/10/2020 10:00:00	02/10/2020 10:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 3	NOx	SV103	02/10/2020 11:00:00	02/10/2020 14:59:00	240	Excess Drift Primary Analyzer	Performed necessary maintenance
Line 3	NOx	SV103	02/10/2020 15:00:00	02/11/2020 04:59:00	840	Preventative Maintenance	Performed necessary maintenance
Line 3	NOx	SV103	02/11/2020 05:00:00	02/11/2020 05:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 3	NOx	SV103	02/11/2020 06:00:00	02/12/2020 04:59:00	1,380	Preventative Maintenance	Performed necessary maintenance
Line 3	NOx	SV103	02/12/2020 05:00:00	02/12/2020 05:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 3	NOx	SV103	02/12/2020 06:00:00	02/12/2020 17:59:00	720	Preventative Maintenance	Performed necessary maintenance
Line 3	NOx	SV103	02/13/2020 19:00:00	02/14/2020 04:59:00	600	Primary Analyzer Malfunction	Performed necessary maintenance
Line 3	NOx	SV103	02/14/2020 05:00:00	02/14/2020 05:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 3	SO2	SV103	01/23/2020 05:00:00	01/23/2020 05:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 3	SO2	SV103	01/23/2020 06:00:00	01/23/2020 09:59:00	240	Excess Drift Primary Analyzer	Performed necessary maintenance
Line 3	SO2	SV103	01/31/2020 05:00:00	01/31/2020 05:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 3	SO2	SV103	01/31/2020 06:00:00	01/31/2020 09:59:00	240	Excess Drift Primary Analyzer	Performed necessary maintenance
Line 3	SO2	SV103	01/31/2020 10:00:00	01/31/2020 10:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 3	SO2	SV103	02/07/2020 05:00:00	02/07/2020 05:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 3	SO2	SV103	02/07/2020 06:00:00	02/07/2020 08:59:00	180	Excess Drift Primary Analyzer	Performed necessary maintenance
Line 3	SO2	SV103	02/07/2020 09:00:00	02/07/2020 09:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 3	SO2	SV103	02/10/2020 06:00:00	02/10/2020 09:59:00	240	Excess Drift Primary Analyzer	Performed necessary maintenance
Line 3	SO2	SV103	02/10/2020 10:00:00	02/10/2020 10:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 3	SO2	SV103	02/10/2020 11:00:00	02/10/2020 14:59:00	240	Excess Drift Primary Analyzer	Performed necessary maintenance
Line 3	SO2	SV103	02/10/2020 15:00:00	02/11/2020 04:59:00	840	Preventative Maintenance	Performed necessary maintenance
Line 3	SO2	SV103	02/11/2020 05:00:00	02/11/2020 05:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 3	SO2	SV103	02/11/2020 06:00:00	02/12/2020 04:59:00	1,380	Preventative Maintenance	Performed necessary maintenance
Line 3	SO2	SV103	02/12/2020 05:00:00	02/12/2020 05:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 3	SO2	SV103	02/12/2020 06:00:00	02/12/2020 17:59:00	720	Preventative Maintenance	Performed necessary maintenance
Line 3	SO2	SV103	02/13/2020 05:00:00	02/13/2020 05:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 3	SO2	SV103	02/13/2020 06:00:00	02/13/2020 09:59:00	240	Excess Drift Primary Analyzer	Performed necessary maintenance
Line 3	SO2	SV103	02/13/2020 10:00:00	02/13/2020 10:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 3	SO2	SV103	02/13/2020 19:00:00	02/14/2020 04:59:00	600	Primary Analyzer Malfunction	Performed necessary maintenance

3) Duration of Monitor Downtime: Provide the following information regarding each period of monitor downtime. Make a separate table for each monitor, as needed.

3a) Monitor ID Number	3b) Pollutant or parameter monitored	3c) Emission Unit Being Monitored	3d) Beginning Date and Time of Downtime	3e) End Date and Time of Downtime	3f) Duration of Downtime (minutes)	3g) Reason for Monitor Downtime (clarifying comments)	3h) Corrective ActionTaken (clarifying comments)
Line 3	SO2	SV103	02/14/2020 05:00:00	02/14/2020 05:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 4	NOx	SV118	01/06/2020 00:00:00	01/06/2020 05:59:00	360	Primary Analyzer Malfunction	Performed necessary maintenance
Line 4	NOx	SV118	01/06/2020 06:00:00	01/06/2020 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 4	NOx	SV118	01/06/2020 07:00:00	01/06/2020 09:59:00	180	Primary Analyzer Malfunction	Performed necessary maintenance
Line 4	NOx	SV118	02/04/2020 06:00:00	02/04/2020 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 4	NOx	SV118	02/13/2020 08:00:00	02/13/2020 10:59:00	180	Primary Analyzer Malfunction	Performed necessary maintenance
Line 4	NOx	SV118	03/10/2020 06:00:00	03/10/2020 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 4	SO2	SV118	01/06/2020 00:00:00	01/06/2020 05:59:00	360	Primary Analyzer Malfunction	Performed necessary maintenance
Line 4	SO2	SV118	01/06/2020 06:00:00	01/06/2020 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 4	SO2	SV118	01/06/2020 07:00:00	01/06/2020 09:59:00	180	Primary Analyzer Malfunction	Performed necessary maintenance
Line 4	SO2	SV118	02/04/2020 06:00:00	02/04/2020 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 4	SO2	SV118	02/13/2020 08:00:00	02/13/2020 10:59:00	180	Primary Analyzer Malfunction	Performed necessary maintenance
Line 4	SO2	SV118	03/08/2020 20:00:00	03/08/2020 21:59:00	120	Primary Analyzer Malfunction	Performed necessary maintenance
Line 4	SO2	SV118	03/10/2020 06:00:00	03/10/2020 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 5	NOx	SV127	01/18/2020 06:00:00	01/18/2020 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 5	NOx	SV127	01/18/2020 07:00:00	01/18/2020 07:59:00	60	Excess Drift Primary Analyzer	Performed necessary maintenance
Line 5	NOx	SV127	01/18/2020 08:00:00	01/18/2020 08:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 5	NOx	SV127	02/14/2020 14:00:00	02/14/2020 22:59:00	540	Primary Analyzer Malfunction	Performed necessary maintenance
Line 5	NOx	SV127	02/19/2020 06:00:00	02/19/2020 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 5	NOx	SV127	02/29/2020 15:00:00	02/29/2020 21:59:00	420	Primary Analyzer Malfunction	Performed necessary maintenance
Line 5	NOx	SV127	03/01/2020 03:00:00	03/01/2020 05:59:00	180	Primary Analyzer Malfunction	Performed necessary maintenance
Line 5	NOx	SV127	03/01/2020 11:00:00	03/01/2020 21:59:00	660	Primary Analyzer Malfunction	Performed necessary maintenance
Line 5	NOx	SV127	03/05/2020 06:00:00	03/05/2020 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 5	SO2	SV127	01/18/2020 06:00:00	01/18/2020 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 5	SO2	SV127	01/18/2020 07:00:00	01/18/2020 07:59:00	60	Excess Drift Primary Analyzer	Performed necessary maintenance
Line 5	SO2	SV127	01/18/2020 08:00:00	01/18/2020 08:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 5	SO2	SV127	02/14/2020 14:00:00	02/14/2020 22:59:00	540	Primary Analyzer Malfunction	Performed necessary maintenance
Line 5	SO2	SV127	02/19/2020 06:00:00	02/19/2020 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 5	SO2	SV127	02/29/2020 15:00:00	03/01/2020 05:59:00	900	Primary Analyzer Malfunction	Performed necessary maintenance
Line 5	SO2	SV127	03/01/2020 11:00:00	03/01/2020 21:59:00	660	Primary Analyzer Malfunction	Performed necessary maintenance
Line 5	SO2	SV127	03/05/2020 06:00:00	03/05/2020 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 6	NOx	SV144	01/09/2020 06:00:00	01/09/2020 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 6	NOx	SV144	01/17/2020 06:00:00	01/17/2020 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 6	NOx	SV144	02/08/2020 10:00:00	02/08/2020 10:59:00	60	Primary Analyzer Malfunction	Performed necessary maintenance
Line 6	NOx	SV144	02/10/2020 06:00:00	02/10/2020 06:59:00	60	Automatic Calibration	Performed necessary maintenance

3) Duration of Monitor Downtime: Provide the following information regarding each period of monitor downtime. Make a separate table for each monitor, as needed.

3a) Monitor ID Number	3b) Pollutant or parameter monitored	3c) Emission Unit Being Monitored	3d) Beginning Date and Time of Downtime	3e) End Date and Time of Downtime	3f) Duration of Downtime (minutes)	3g) Reason for Monitor Downtime (clarifying comments)	3h) Corrective ActionTaken (clarifying comments)
Line 6	NOx	SV144	02/11/2020 06:00:00	02/11/2020 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 6	NOx	SV144	02/14/2020 03:00:00	02/14/2020 05:59:00	180	Primary Analyzer Malfunction	Performed necessary maintenance
Line 6	NOx	SV144	02/14/2020 06:00:00	02/14/2020 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 6	NOx	SV144	02/14/2020 07:00:00	02/14/2020 08:59:00	120	Primary Analyzer Malfunction	Performed necessary maintenance
Line 6	NOx	SV144	02/14/2020 10:00:00	02/14/2020 10:59:00	60	Primary Analyzer Malfunction	Performed necessary maintenance
Line 6	NOx	SV144	02/18/2020 22:00:00	02/18/2020 22:59:00	60	Sample Interface Malfunction	Performed necessary maintenance
Line 6	NOx	SV144	02/20/2020 06:00:00	02/20/2020 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 6	NOx	SV144	03/09/2020 03:00:00	03/09/2020 05:59:00	180	Primary Analyzer Malfunction	Performed necessary maintenance
Line 6	NOx	SV144	03/09/2020 06:00:00	03/09/2020 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 6	NOx	SV144	03/09/2020 07:00:00	03/09/2020 14:59:00	480	Primary Analyzer Malfunction	Performed necessary maintenance
Line 6	NOx	SV144	03/13/2020 11:00:00	03/13/2020 11:59:00	60	Primary Analyzer Malfunction	Performed necessary maintenance
Line 6	SO2	SV144	01/01/2020 09:00:00	01/01/2020 09:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 6	SO2	SV144	01/09/2020 06:00:00	01/09/2020 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 6	SO2	SV144	01/17/2020 06:00:00	01/17/2020 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 6	SO2	SV144	02/08/2020 10:00:00	02/08/2020 10:59:00	60	Primary Analyzer Malfunction	Performed necessary maintenance
Line 6	SO2	SV144	02/10/2020 06:00:00	02/10/2020 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 6	SO2	SV144	02/11/2020 06:00:00	02/11/2020 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 6	SO2	SV144	02/14/2020 03:00:00	02/14/2020 05:59:00	180	Primary Analyzer Malfunction	Performed necessary maintenance
Line 6	SO2	SV144	02/14/2020 06:00:00	02/14/2020 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 6	SO2	SV144	02/14/2020 07:00:00	02/14/2020 08:59:00	120	Primary Analyzer Malfunction	Performed necessary maintenance
Line 6	SO2	SV144	02/14/2020 10:00:00	02/14/2020 10:59:00	60	Primary Analyzer Malfunction	Performed necessary maintenance
Line 6	SO2	SV144	02/18/2020 22:00:00	02/18/2020 22:59:00	60	Sample Interface Malfunction	Performed necessary maintenance
Line 6	SO2	SV144	02/20/2020 06:00:00	02/20/2020 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 6	SO2	SV144	02/26/2020 20:00:00	02/26/2020 20:59:00	60	Primary Analyzer Malfunction	Performed necessary maintenance
Line 6	SO2	SV144	03/09/2020 03:00:00	03/09/2020 05:59:00	180	Primary Analyzer Malfunction	Performed necessary maintenance
Line 6	SO2	SV144	03/09/2020 06:00:00	03/09/2020 06:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 6	SO2	SV144	03/09/2020 07:00:00	03/09/2020 14:59:00	480	Primary Analyzer Malfunction	Performed necessary maintenance
Line 6	SO2	SV144	03/13/2020 11:00:00	03/13/2020 11:59:00	60	Primary Analyzer Malfunction	Performed necessary maintenance
Line 7	NOx	SV151	01/06/2020 06:00:00	01/06/2020 08:59:00	180	Automatic Calibration	Performed necessary maintenance
Line 7	NOx	SV151	01/07/2020 06:00:00	01/07/2020 08:59:00	180	Automatic Calibration	Performed necessary maintenance
Line 7	NOx	SV151	01/07/2020 09:00:00	01/07/2020 18:59:00	600	Excess Drift Primary Analyzer	Performed necessary maintenance
Line 7	NOx	SV151	01/07/2020 19:00:00	01/07/2020 19:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 7	NOx	SV151	01/31/2020 09:00:00	01/31/2020 09:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 7	NOx	SV151	02/08/2020 12:00:00	02/08/2020 12:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 7	NOx	SV151	02/11/2020 10:00:00	02/11/2020 10:59:00	60	Automatic Calibration	Performed necessary maintenance

3) Duration of Monitor Downtime: Provide the following information regarding each period of monitor downtime. Make a separate table for each monitor, as needed.

3a) Monitor ID Number	3b) Pollutant or parameter monitored	3c) Emission Unit Being Monitored	3d) Beginning Date and Time of Downtime	3e) End Date and Time of Downtime	3f) Duration of Downtime (minutes)	3g) Reason for Monitor Downtime (clarifying comments)	3h) Corrective ActionTaken (clarifying comments)
Line 7	NOx	SV151	02/12/2020 12:00:00	02/12/2020 12:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 7	NOx	SV151	03/09/2020 03:00:00	03/09/2020 05:59:00	180	Primary Analyzer Malfunction	Performed necessary maintenance
Line 7	NOx	SV151	03/09/2020 06:00:00	03/09/2020 07:59:00	120	Automatic Calibration	Performed necessary maintenance
Line 7	NOx	SV151	03/09/2020 08:00:00	03/09/2020 14:59:00	420	Primary Analyzer Malfunction	Performed necessary maintenance
Line 7	NOx	SV151	03/16/2020 07:00:00	03/16/2020 07:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 7	SO2	SV151	01/06/2020 06:00:00	01/06/2020 08:59:00	180	Automatic Calibration	Performed necessary maintenance
Line 7	SO2	SV151	01/07/2020 06:00:00	01/07/2020 08:59:00	180	Automatic Calibration	Performed necessary maintenance
Line 7	SO2	SV151	01/07/2020 09:00:00	01/07/2020 18:59:00	600	Excess Drift Primary Analyzer	Performed necessary maintenance
Line 7	SO2	SV151	01/07/2020 19:00:00	01/07/2020 19:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 7	SO2	SV151	01/31/2020 09:00:00	01/31/2020 09:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 7	SO2	SV151	02/01/2020 06:00:00	02/01/2020 07:59:00	120	Automatic Calibration	Performed necessary maintenance
Line 7	SO2	SV151	02/01/2020 08:00:00	02/01/2020 09:59:00	120	Excess Drift Primary Analyzer	Performed necessary maintenance
Line 7	SO2	SV151	02/01/2020 10:00:00	02/01/2020 10:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 7	SO2	SV151	02/08/2020 12:00:00	02/08/2020 12:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 7	SO2	SV151	02/11/2020 10:00:00	02/11/2020 10:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 7	SO2	SV151	02/12/2020 12:00:00	02/12/2020 12:59:00	60	Automatic Calibration	Performed necessary maintenance
Line 7	SO2	SV151	03/09/2020 03:00:00	03/09/2020 05:59:00	180	Primary Analyzer Malfunction	Performed necessary maintenance
Line 7	SO2	SV151	03/09/2020 06:00:00	03/09/2020 07:59:00	120	Automatic Calibration	Performed necessary maintenance
Line 7	SO2	SV151	03/09/2020 08:00:00	03/09/2020 14:59:00	420	Primary Analyzer Malfunction	Performed necessary maintenance
Line 7	SO2	SV151	03/12/2020 06:00:00	03/12/2020 07:59:00	120	Automatic Calibration	Performed necessary maintenance
Line 7	SO2	SV151	03/12/2020 08:00:00	03/12/2020 08:59:00	60	Excess Drift Primary Analyzer	Performed necessary maintenance
Line 7	SO3	SV151	03/16/2020 07:00:00	03/16/2020 07:59:00	60	Automatic Calibration	Performed necessary maintenance
				3i) Total duration of downtime:	**422**	**hours**	

4) Duration of Excess Emissions: Provide the following information regarding each individual excess emission identified by a monitor. Make a separate table for each monitor, as needed.

4a) Emission Unit ID Number	4b) Monitor ID Number	4c) Pollutant or Parameter Monitored	4d) Beginning Date and Time of EE	4e) End Date and Time of EE	4f) Limit and Averaging Period	4g) Highest Reading of EE with Units (example: 5 lb/hr, etc)	4h) Duration of Exempt EE (include these entries as part of 4i)	4i) Total Duration of All EE	4j) Cause of EE (clarifying comments)	4k) Corrective Action Taken (clarifying comments)
SV-103	MR 001	Nox/SO2	N/A	N/A	N/A	N/A	0	0	N/A	N/A
SV-118	MR 002	Nox/SO2	N/A	N/A	N/A	N/A	0	0	N/A	N/A
SV-127	MR 003	Nox/SO2	N/A	N/A	N/A	N/A	0	0	N/A	N/A
SV-144	MR 004	Nox/SO2	N/A	N/A	N/A	N/A	0	0	N/A	N/A
SV-151	MR 005	Nox/SO2	N/A	N/A	N/A	N/A	0	0	N/A	N/A
						4l) Cumulative Duration of Exempt Excess Emissions:		0	4m) Cumulative Total	0

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system *See Minn. R. 7017.1110 subp. 2c*

5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollutant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (minutes)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 3	SV103	NOx/SO2	1/2/20 19:27	1/2/20 19:31	5	YES	5	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	1/22/20 14:42	1/22/20 15:39	58	YES	58	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	2/9/20 5:51	2/9/20 6:30	39	YES	39	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	2/9/20 6:30	2/9/20 9:59	209	YES	209	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	2/10/20 7:59	2/10/20 14:30	391	YES	391	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	2/10/20 14:30	2/10/20 22:30	480	YES	480	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	2/10/20 22:30	2/10/20 23:40	70	YES	70	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	2/14/20 9:31	2/14/20 11:59	148	YES	148	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	2/25/20 22:31	2/25/20 22:59	28	YES	28	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	2/26/20 11:59	2/26/20 14:30	151	YES	151	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	2/26/20 14:30	2/26/20 22:30	480	YES	480	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	2/26/20 22:30	2/26/20 23:21	51	YES	51	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	3/8/20 10:37	3/8/20 11:08	31	YES	31	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	3/11/20 10:02	3/11/20 10:43	42	YES	42	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	3/12/20 7:57	3/12/20 12:09	253	YES	253	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	3/16/20 7:33	3/16/20 14:30	417	YES	417	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	3/16/20 14:30	3/16/20 16:07	97	YES	97	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	3/19/20 9:53	3/19/20 11:28	95	YES	95	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	3/20/20 14:12	3/20/20 14:30	18	YES	18	Bypass necessary to protect plant equipment.	N/A

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system *See Minn. R. 7017.1110 subp. 2c*

5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollutant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (minutes)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 3	SV103	NOx/SO2	3/20/20 14:30	3/20/20 14:59	29	YES	29	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	3/24/20 0:51	3/24/20 1:42	51	YES	51	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	3/27/20 9:51	3/27/20 11:58	127	YES	127	Bypass necessary to protect plant equipment.	N/A
Line 3	SV103	NOx/SO2	3/28/20 15:24	3/28/20 16:32	68	YES	68	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	1/7/20 14:16	1/7/20 14:30	14	YES	14	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	1/7/20 14:30	1/7/20 16:07	97	YES	97	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	1/12/20 16:24	1/12/20 18:26	122	YES	122	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	1/12/20 22:13	1/12/20 22:30	17	YES	17	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	1/12/20 22:30	1/13/20 0:37	127	YES	127	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	1/13/20 6:45	1/13/20 6:59	14	YES	14	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	1/13/20 7:00	1/13/20 9:59	179	YES	179	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	2/3/20 20:59	2/4/20 6:30	571	YES	571	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	2/4/20 6:30	2/4/20 14:30	480	YES	480	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	2/4/20 14:30	2/4/20 20:09	339	YES	339	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	2/4/20 20:10	2/4/20 20:42	31	YES	31	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	2/4/20 21:20	2/4/20 22:27	67	YES	67	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	2/4/20 22:56	2/5/20 0:04	68	YES	68	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	2/5/20 0:38	2/5/20 1:35	57	YES	57	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	2/5/20 7:30	2/5/20 7:38	8	YES	8	Bypass necessary to protect plant equipment.	N/A

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system *See Minn. R. 7017.1110 subp. 2c*

5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollutant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (minutes)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 4	SV118	NOx/SO2	2/5/20 8:26	2/5/20 10:20	114	YES	114	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	2/5/20 10:28	2/5/20 11:18	51	YES	51	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	2/5/20 11:54	2/5/20 12:49	55	YES	55	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	2/25/20 10:10	2/25/20 11:11	61	YES	61	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	2/27/20 7:12	2/27/20 7:32	21	YES	21	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	2/28/20 19:51	2/28/20 20:27	36	YES	36	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	3/4/20 13:01	3/4/20 13:15	14	YES	14	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	3/5/20 9:58	3/5/20 12:33	155	YES	155	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	3/9/20 14:35	3/9/20 17:59	204	YES	204	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	3/10/20 1:59	3/10/20 6:30	271	YES	271	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	3/10/20 6:30	3/10/20 14:30	480	YES	480	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	3/10/20 14:30	3/10/20 17:44	194	YES	194	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	3/10/20 18:16	3/10/20 22:11	235	YES	235	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	3/11/20 8:13	3/11/20 8:32	19	YES	19	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	3/13/20 15:52	3/13/20 16:33	40	YES	40	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	3/17/20 16:08	3/17/20 16:30	21	YES	21	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	3/18/20 8:56	3/18/20 9:50	54	YES	54	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	3/20/20 19:54	3/20/20 21:02	68	YES	68	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	3/24/20 9:58	3/24/20 11:31	93	YES	93	Bypass necessary to protect plant equipment.	N/A

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system *See Minn. R. 7017.1110 subp. 2c*

5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollutant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (minutes)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 4	SV118	NOx/SO2	3/24/20 13:49	3/24/20 14:30	41	YES	41	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	3/24/20 14:30	3/24/20 15:05	35	YES	35	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	3/28/20 11:12	3/28/20 11:26	14	YES	14	Bypass necessary to protect plant equipment.	N/A
Line 4	SV118	NOx/SO2	3/31/20 15:27	3/31/20 15:45	18	YES	18	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	1/7/20 22:30	1/7/20 22:59	29	YES	29	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	1/8/20 8:59	1/8/20 14:30	331	YES	331	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	1/8/20 14:30	1/8/20 20:51	381	YES	381	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	1/12/20 13:53	1/12/20 14:19	26	YES	26	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	1/12/20 14:53	1/12/20 15:06	14	YES	14	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	1/15/20 22:42	1/15/20 23:03	21	YES	21	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	1/16/20 3:32	1/16/20 3:43	11	YES	11	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	1/17/20 12:41	1/17/20 13:51	70	YES	70	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	1/19/20 18:09	1/19/20 18:46	37	YES	37	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	1/21/20 8:01	1/21/20 8:25	24	YES	24	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	1/21/20 8:55	1/21/20 10:00	65	YES	65	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	1/21/20 15:04	1/21/20 15:12	9	YES	9	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	1/22/20 14:41	1/22/20 15:13	32	YES	32	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	1/23/20 8:25	1/23/20 10:30	126	YES	126	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	1/24/20 11:15	1/24/20 11:29	15	YES	15	Bypass necessary to protect plant equipment.	N/A

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system *See Minn. R. 7017.1110 subp. 2c*

5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollutant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (minutes)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 5	SV127	NOx/SO2	1/26/20 22:27	1/26/20 22:30	3	YES	3	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	1/26/20 22:30	1/26/20 22:59	29	YES	29	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	1/27/20 8:59	1/27/20 14:30	331	YES	331	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	1/27/20 14:30	1/27/20 22:30	480	YES	480	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	1/27/20 22:30	1/28/20 0:08	98	YES	98	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	1/28/20 0:18	1/28/20 3:35	197	YES	197	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	1/28/20 3:58	1/28/20 4:10	12	YES	12	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	1/28/20 4:23	1/28/20 5:07	44	YES	44	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	2/17/20 14:22	2/17/20 14:30	8	YES	8	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	2/17/20 14:30	2/17/20 15:20	50	YES	50	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	2/18/20 5:11	2/18/20 6:05	54	YES	54	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	2/19/20 5:51	2/19/20 6:30	39	YES	39	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	2/19/20 6:30	2/19/20 8:49	139	YES	139	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	2/19/20 14:20	2/19/20 14:24	4	YES	4	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	2/19/20 14:30	2/19/20 14:40	10	YES	10	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	2/20/20 23:51	2/20/20 23:58	7	YES	7	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	2/21/20 10:00	2/21/20 14:30	270	YES	270	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	2/21/20 14:30	2/21/20 15:36	66	YES	66	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	2/21/20 16:23	2/21/20 16:53	30	YES	30	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	2/22/20 8:58	2/22/20 9:38	40	YES	40	Bypass necessary to protect plant equipment.	N/A

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system *See Minn. R. 7017.1110 subp. 2c*

5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollutant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (minutes)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 5	SV127	NOx/SO2	2/24/20 7:51	2/24/20 9:51	121	YES	121	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	2/27/20 17:10	2/27/20 17:46	36	YES	36	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	3/2/20 21:30	3/2/20 21:48	18	YES	18	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	3/2/20 22:22	3/2/20 22:30	8	YES	8	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	3/2/20 22:30	3/2/20 23:10	40	YES	40	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	3/3/20 16:58	3/3/20 17:59	61	YES	61	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	3/4/20 21:59	3/5/20 6:30	511	YES	511	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	3/5/20 6:30	3/5/20 14:30	480	YES	480	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	3/5/20 14:30	3/5/20 16:40	130	YES	130	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	3/5/20 17:09	3/5/20 17:17	8	YES	8	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	3/5/20 20:28	3/5/20 20:37	9	YES	9	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	3/10/20 8:46	3/10/20 10:15	89	YES	89	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	3/12/20 1:52	3/12/20 2:22	30	YES	30	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	3/20/20 8:04	3/20/20 10:02	118	YES	118	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	3/23/20 20:24	3/23/20 21:02	38	YES	38	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	3/24/20 14:44	3/24/20 15:51	67	YES	67	Bypass necessary to protect plant equipment.	N/A
Line 5	SV127	NOx/SO2	3/26/20 10:17	3/26/20 10:47	29	YES	29	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	1/2/20 7:50	1/2/20 9:14	83	YES	83	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	1/4/20 12:49	1/4/20 13:59	70	YES	70	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	1/5/20 16:54	1/5/20 17:36	42	YES	42	Bypass necessary to protect plant equipment.	N/A

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system *See Minn. R. 7017.1110 subp. 2c*

5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollutant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (minutes)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 6	SV144	NOx/SO2	1/5/20 21:23	1/5/20 22:30	67	YES	67	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	1/5/20 22:30	1/5/20 22:39	9	YES	9	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	1/5/20 23:36	1/6/20 0:01	25	YES	25	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	1/6/20 10:18	1/6/20 11:23	65	YES	65	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	1/7/20 9:38	1/7/20 9:56	18	YES	18	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	1/7/20 11:15	1/7/20 11:36	21	YES	21	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	1/8/20 12:28	1/8/20 14:30	122	YES	122	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	1/8/20 22:30	1/9/20 6:30	480	YES	480	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	1/9/20 6:30	1/9/20 14:30	480	YES	480	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	1/9/20 14:30	1/9/20 19:52	322	YES	322	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	1/10/20 10:04	1/10/20 10:21	16	YES	16	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	1/10/20 10:21	1/10/20 10:23	2	YES	2	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	1/10/20 13:54	1/10/20 14:05	11	YES	11	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	1/10/20 23:09	1/10/20 23:35	26	YES	26	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	1/15/20 7:31	1/15/20 13:00	329	YES	329	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	1/16/20 11:07	1/16/20 14:30	203	YES	203	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	1/16/20 14:30	1/16/20 22:30	480	YES	480	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	1/16/20 22:30	1/17/20 6:30	480	YES	480	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	1/17/20 6:30	1/17/20 12:20	350	YES	350	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	1/18/20 5:53	1/18/20 6:29	36	YES	36	Bypass necessary to protect plant equipment.	N/A

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5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollutant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (minutes)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 6	SV144	NOx/SO2	1/18/20 19:17	1/18/20 20:35	78	YES	78	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	1/21/20 11:06	1/21/20 12:26	80	YES	80	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	1/24/20 22:09	1/24/20 22:26	17	YES	17	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	1/28/20 2:59	1/28/20 3:58	59	YES	59	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	2/6/20 20:38	2/6/20 21:59	81	YES	81	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	2/7/20 6:59	2/7/20 14:30	451	YES	451	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	2/7/20 14:30	2/7/20 15:26	56	YES	56	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	2/8/20 10:23	2/8/20 11:17	55	YES	55	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	2/8/20 11:23	2/8/20 14:30	187	YES	187	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	2/8/20 14:30	2/8/20 16:08	98	YES	98	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	2/10/20 5:39	2/10/20 6:30	51	YES	51	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	2/10/20 6:30	2/10/20 7:19	49	YES	49	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	2/11/20 3:43	2/11/20 6:30	167	YES	167	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	2/11/20 6:30	2/11/20 11:02	272	YES	272	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	2/13/20 22:59	2/13/20 23:16	17	YES	17	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	2/18/20 22:28	2/18/20 22:30	2	YES	2	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	2/18/20 22:30	2/18/20 22:59	29	YES	29	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	2/19/20 9:59	2/19/20 14:30	271	YES	271	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	2/19/20 14:30	2/19/20 22:30	480	YES	480	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	2/19/20 22:30	2/20/20 6:30	480	YES	480	Bypass necessary to protect plant equipment.	N/A

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system *See Minn. R. 7017.1110 subp. 2c*

5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollutant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (minutes)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 6	SV144	NOx/SO2	2/20/20 6:30	2/20/20 14:30	480	YES	480	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	2/20/20 14:30	2/20/20 22:30	480	YES	480	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	2/20/20 22:30	2/21/20 0:06	96	YES	96	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	3/6/20 8:16	3/6/20 10:01	104	YES	104	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	3/7/20 13:12	3/7/20 14:30	79	YES	79	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	3/7/20 14:30	3/7/20 15:39	69	YES	69	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	3/7/20 15:39	3/7/20 15:41	2	YES	2	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	3/7/20 15:39	3/7/20 15:41	2	YES	2	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	3/8/20 10:41	3/8/20 10:54	12	YES	12	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	3/12/20 21:00	3/12/20 21:11	11	YES	11	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	3/14/20 13:18	3/14/20 13:22	5	YES	5	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	3/14/20 13:35	3/14/20 14:30	55	YES	55	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	3/14/20 14:30	3/14/20 15:41	71	YES	71	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	3/17/20 12:27	3/17/20 13:00	33	YES	33	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	3/26/20 18:36	3/26/20 20:13	96	YES	96	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	3/27/20 14:57	3/27/20 15:17	20	YES	20	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	3/30/20 8:04	3/30/20 10:52	167	YES	167	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	3/30/20 22:28	3/30/20 22:30	2	YES	2	Bypass necessary to protect plant equipment.	N/A
Line 6	SV144	NOx/SO2	3/30/20 22:30	3/30/20 22:59	29	YES	29	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	1/5/20 11:20	1/5/20 11:49	29	YES	29	Bypass necessary to protect plant equipment.	N/A

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system *See Minn. R. 7017.1110 subp. 2c*

5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollutant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (minutes)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 7	SV151	NOx/SO2	1/5/20 12:45	1/5/20 13:20	35	YES	35	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	1/5/20 13:20	1/5/20 13:23	3	YES	3	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	1/6/20 4:48	1/6/20 6:30	102	YES	102	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	1/6/20 6:30	1/6/20 8:43	133	YES	133	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	1/29/20 15:37	1/29/20 15:53	16	YES	16	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	1/31/20 7:55	1/31/20 9:28	93	YES	93	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	2/6/20 23:31	2/7/20 0:21	50	YES	50	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	2/8/20 12:18	2/8/20 13:38	80	YES	80	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	2/8/20 14:21	2/8/20 14:30	9	YES	9	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	2/8/20 14:30	2/8/20 14:47	17	YES	17	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	2/9/20 20:02	2/9/20 20:56	54	YES	54	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	2/11/20 8:10	2/11/20 8:30	20	YES	20	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	2/11/20 9:33	2/11/20 10:17	44	YES	44	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	2/11/20 22:30	2/11/20 22:59	29	YES	29	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	2/12/20 8:59	2/12/20 14:30	331	YES	331	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	2/12/20 14:30	2/12/20 22:30	480	YES	480	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	2/12/20 22:30	2/12/20 23:05	35	YES	35	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	2/13/20 0:01	2/13/20 2:37	156	YES	156	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	2/27/20 10:07	2/27/20 10:46	39	YES	39	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	2/28/20 10:42	2/28/20 10:48	6	YES	6	Bypass necessary to protect plant equipment.	N/A

5) Monitor Bypasses: Provide the following information for each period in which an emission unit is operating but is not being monitored because emissions were either partially or totally diverted around the monitoring system *See Minn. R. 7017.1110 subp. 2c*

5a)	5b)	5c)	5d)	5e)	5f)	5g)	5h)	5i)	5j)
Monitor ID number	Emission Unit Required to be Monitored	Pollutant and Limit Required to be Monitored	Beginning Date and Time of Bypass Period	End date and time of bypass period	Duration of monitor bypass (minutes)	Was P.C.E. operating during bypass period?	Duration of allowable monitor bypass	Reason for monitor bypass (clarifying comments)	Corrective action taken (clarifying comments)
Line 7	SV151	NOx/SO2	3/13/20 11:42	3/13/20 12:09	27	YES	27	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	3/17/20 18:29	3/17/20 20:54	146	YES	146	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	3/20/20 22:40	3/20/20 23:28	48	YES	48	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	3/22/20 20:14	3/22/20 20:45	31	YES	31	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	3/25/20 22:17	3/25/20 22:30	13	YES	13	Bypass necessary to protect plant equipment.	N/A
Line 7	SV151	NOx/SO2	3/25/20 22:30	3/25/20 22:59	29	YES	29	Bypass necessary to protect plant equipment.	N/A
				5k) Total duration of allowable monitor bypass:			**388**	**hours**	

6) CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Signature of Responsible Official	Lukas Klemke Printed Name of Responsible Official
Plant Manager - Minntac Title	April 28, 2020 Date

COMS audits

Subject item	Operating hours	Monitor ID	Pollutant	Last audit date	Cal error results	Pass/fail	Next test due by:	Comments
N/A								

Cylinder gas audit's (CGA)

Emission unit	Operating hours	Monitor ID	Pollutant	Last audit date	Cal error results	Pass/fail	Next test due by:	Comments
SV103	2173	MR001	NOx	2/13/2020	Low 0.61% Mid 0.14%	Pass	9/30/2020	RATA 2nd Qtr
SV118	1925	MR002	NOx	2/13/2020	Low 1.77% Mid 0.72%	Pass	9/30/2020	RATA 2nd Qtr
SV127	2184	MR003	NOx	2/13/2020	Low 0.40% Mid 0.59%	Pass	9/30/2020	RATA 2nd Qtr
SV144	2163	MR004	NOx	2/11/2020	Low 0.51% Mid 0.47%	Pass	9/30/2020	RATA 2nd Qtr
SV151	2053	MR005	NOx	2/11/2020	Low 1.51% Mid 0.22%	Pass	9/30/2020	RATA 2nd Qtr
SV103	2173	MR001	SO2	2/13/2020	Low 3.70% Mid 1.27%	Pass	9/30/2020	RATA 2nd Qtr
SV118	1925	MR002	SO2	2/13/2020	Low 1.19% Mid 0.30%	Pass	9/30/2020	RATA 2nd Qtr
SV127	2184	MR003	SO2	2/13/2020	Low 2.12% Mid 2.59%	Pass	9/30/2020	RATA 2nd Qtr
SV144	2163	MR004	SO2	2/11/2020	Low 1.31% Mid 0.92%	Pass	9/30/2020	RATA 2nd Qtr
SV151	2053	MR005	SO2	2/11/2020	Low 0.65% Mid 1.05%	Pass	9/30/2020	RATA 2nd Qtr

Linearity

Emission unit	Operating hours	Monitor ID	Pollutant	Last audit date	Cal error results	Pass/fail	Next test due by:	Comments
N/A					Low Mid High			

Relative accuracy test audit (RATA)

Emission unit	Operating hours	Monitor ID	Pollutant	Last audit date	Relative accuracy	Pass/fail	Next test due by:	Comments
SV103		MR001	SO2	5/15/2019	4.6%	Pass	2nd Qtr 2020	
SV103		MR001	NOx	5/15/2019	6.3%	Pass	2nd Qtr 2020	
SV118		MR002	SO2	5/16/2019	16.2%	Pass	2nd Qtr 2020	
SV118		MR002	NOx	5/16/2019	6.3%	Pass	2nd Qtr 2020	
SV127		MR003	SO2	5/20/2019	4.9%	Pass	2nd Qtr 2020	
SV127		MR003	NOx	5/20/2019	16.7%	Pass	2nd Qtr 2020	
SV144		MR004	SO2	5/22/2019	4.0%	Pass	2nd Qtr 2020	
SV144		MR004	NOx	5/22/2019	13.1%	Pass	2nd Qtr 2020	
SV151		MR005	SO2	5/21/2019	17.3%	Pass	2nd Qtr 2020	
SV151		MR005	NOx	5/21/2019	2.9%	Pass	2nd Qtr 2020	

CGA Test Report

Facility Name: US Steel MinTac

Location: ,

NOX LINE_3 Audit Test Results

Mfr. & Model: AMETEK 920 SO2 NOX

Serial Number: AX-920-9640-1

Test Date: 2/13/2020

Tester: NICHOLAS WILSON

Analyzer Span: 500.000 PPMW

	Low	Mid
Reference Target	20 - 30% of Span	50 - 60% of Span
Range	(100.000 PPMW - 150.000 PPMW)	(250.000 PPMW - 300.000 PPMW)
Concentration	126.400	276.200
Cylinder No	CC314177	CC209033
Expiration Date	3/18/2020	11/3/2024

	Low		Mid	
	Time	Monitor Value	Time	Monitor Value
Run 1	13:18	127.900	13:23	277.600
Run 2	13:33	127.700	13:38	276.400
Run 3	13:48	125.900	13:53	273.400
Avg Monitor Response		127.167		275.800
Calibration Error		0.61		0.14
Absolute Diff		0.767		0.400
Test Status		PASSED		PASSED

$$\text{Calibration Error} = \frac{\text{Avg. Monitor Response - Cal. Gas Concentration}}{\text{Cal. Gas Concentration}} \times 100$$

Acceptable results for a successful CGA Audit are +/- 15% average audit value or +/- 5 PPM, whichever is greater.

CGA Test Report

Facility Name: US Steel MinTac

Location: ,

NOX LINE_4 Audit Test Results

Mfr. & Model: AMETEK 920 SO2 NOX

Serial Number: AX-920-9640-2

Test Date: 2/13/2020

Tester: NICHOLAS WILSON

Analyzer Span: 500.000 PPMW

	Low	Mid
Reference Target	20 - 30% of Span	50 - 60% of Span
Range	(100.000 PPMW - 150.000 PPMW)	(250.000 PPMW - 300.000 PPMW)
Concentration	126.400	276.200
Cylinder No	CC314177	CC209033
Expiration Date	3/18/2020	11/3/2024

	Low		Mid	
	Time	Monitor Value	Time	Monitor Value
Run 1	12:24	125.600	12:28	275.300
Run 2	12:36	124.400	12:40	273.600
Run 3	12:48	122.500	12:52	273.700
Avg Monitor Response		124.167		274.200
Calibration Error		1.77		0.72
Absolute Diff		2.233		2.000
Test Status		PASSED		PASSED

$$\text{Calibration Error} = \frac{\text{Avg. Monitor Response - Cal. Gas Concentration}}{\text{Cal. Gas Concentration}} \times 100$$

Acceptable results for a successful CGA Audit are +/- 15% average audit value or +/- 5 PPM, whichever is greater.

CGA Test Report

Facility Name: US Steel MinTac

Location: ,

NOX LINE_5 Audit Test Results

Mfr. & Model: AMETEK 920 SO2 NOX

Serial Number: AX-920-9640-3

Test Date: 2/13/2020

Tester: NICHOLAS WILSON

Analyzer Span: 500.000 PPMW

	Low	Mid
Reference Target	20 - 30% of Span	50 - 60% of Span
Range	(100.000 PPMW - 150.000 PPMW)	(250.000 PPMW - 300.000 PPMW)
Concentration	126.400	276.200
Cylinder No	CC314177	CC209033
Expiration Date	3/18/2020	11/3/2024

	Low		Mid	
	Time	Monitor Value	Time	Monitor Value
Run 1	11:31	128.300	11:35	274.700
Run 2	11:43	126.400	11:47	273.300
Run 3	11:55	126.000	11:59	275.700
Avg Monitor Response		126.900		274.567
Calibration Error		0.40		0.59
Absolute Diff		0.500		1.633
Test Status		PASSED		PASSED

$$\text{Calibration Error} = \frac{\text{Avg. Monitor Response - Cal. Gas Concentration}}{\text{Cal. Gas Concentration}} \times 100$$

Acceptable results for a successful CGA Audit are +/- 15% average audit value or +/- 5 PPM, whichever is greater.

CGA Test Report

Facility Name: US Steel MinTac

Location: ,

NOX LINE_6 Audit Test Results

Mfr. & Model: AMETEK 920 SO2 NOX

Serial Number: ZA-920-10336-1

Test Date: 2/11/2020

Tester: NICHOLAS WILSON

Analyzer Span: 500.000 PPMW

	Low	Mid
Reference Target	20 - 30% of Span	50 - 60% of Span
Range	(100.000 PPMW - 150.000 PPMW)	(250.000 PPMW - 300.000 PPMW)
Concentration	123.800	277.400
Cylinder No	CC417095	CC206391
Expiration Date	10/23/2023	11/13/2021

	Low		Mid	
	Time	Monitor Value	Time	Monitor Value
Run 1	11:54	123.100	11:58	274.900
Run 2	12:07	121.600	12:11	273.900
Run 3	12:20	128.600	12:24	279.500
Avg Monitor Response		124.433		276.100
Calibration Error		0.51		0.47
Absolute Diff		0.633		1.300
Test Status		PASSED		PASSED

$$\text{Calibration Error} = \frac{\text{Avg. Monitor Response - Cal. Gas Concentration}}{\text{Cal. Gas Concentration}} \times 100$$

Acceptable results for a successful CGA Audit are +/- 15% average audit value or +/- 5 PPM, whichever is greater.

CGA Test Report

Facility Name: US Steel MinTac

Location: ,

NOX LINE_7 Audit Test Results

Mfr. & Model: AMETEK 920 SO2 NOX

Serial Number: ZA-920-10336-2

Test Date: 2/11/2020

Tester: NICHOLAS WILSON

Analyzer Span: 500.000 PPMW

	Low	Mid
Reference Target	20 - 30% of Span	50 - 60% of Span
Range	(100.000 PPMW - 150.000 PPMW)	(250.000 PPMW - 300.000 PPMW)
Concentration	123.800	277.400
Cylinder No	CC417095	CC206391
Expiration Date	10/23/2023	11/13/2021

	Low		Mid	
	Time	Monitor Value	Time	Monitor Value
Run 1	10:54	126.000	10:58	277.000
Run 2	11:07	126.000	11:11	278.000
Run 3	11:20	125.000	11:24	279.000
Avg Monitor Response		125.667		278.000
Calibration Error		1.51		0.22
Absolute Diff		1.867		0.600
Test Status		PASSED		PASSED

$$\text{Calibration Error} = \frac{\text{Avg. Monitor Response - Cal. Gas Concentration}}{\text{Cal. Gas Concentration}} \times 100$$

Acceptable results for a successful CGA Audit are +/- 15% average audit value or +/- 5 PPM, whichever is greater.

CGA Test Report

Facility Name: US Steel MinTac

Location: ,

SO2 LINE_3 Audit Test Results

Mfr. & Model: AMETEK 920 SO2 NOX

Serial Number: AX-920-9640-1

Test Date: 2/13/2020

Tester: NICHOLAS WILSON

Analyzer Span: 100.000 PPMW

	Low	Mid
Reference Target	20 - 30% of Span	50 - 60% of Span
Range	(20.000 PPMW - 30.000 PPMW)	(50.000 PPMW - 60.000 PPMW)
Concentration	25.200	55.300
Cylinder No	CC314177	CC209033
Expiration Date	3/18/2020	11/3/2024

	Low		Mid	
	Time	Monitor Value	Time	Monitor Value
Run 1	13:18	25.800	13:23	56.600
Run 2	13:33	26.900	13:38	57.000
Run 3	13:48	25.700	13:53	54.400
Avg Monitor Response		26.133		56.000
Calibration Error		3.70		1.27
Absolute Diff		0.933		0.700
Test Status		PASSED		PASSED

$$\text{Calibration Error} = \frac{\text{Avg. Monitor Response - Cal. Gas Concentration}}{\text{Cal. Gas Concentration}} \times 100$$

Acceptable results for a successful CGA Audit are +/- 15% average audit value or +/- 5 PPM, whichever is greater.

CGA Test Report

Facility Name: US Steel MinTac

Location: ,

SO2 LINE_4 Audit Test Results

Mfr. & Model: AMETEK 920 SO2 NOX

Serial Number: AX-920-9640-2

Test Date: 2/13/2020

Tester: NICHOLAS WILSON

Analyzer Span: 100.000 PPMW

	Low	Mid
Reference Target	20 - 30% of Span	50 - 60% of Span
Range	(20.000 PPMW - 30.000 PPMW)	(50.000 PPMW - 60.000 PPMW)
Concentration	25.200	55.300
Cylinder No	CC314177	CC209033
Expiration Date	3/18/2020	11/3/2024

	Low		Mid	
	Time	Monitor Value	Time	Monitor Value
Run 1	12:24	24.600	12:28	54.600
Run 2	12:36	25.700	12:40	55.900
Run 3	12:48	24.400	12:52	54.900
Avg Monitor Response		24.900		55.133
Calibration Error		1.19		0.30
Absolute Diff		0.300		0.167
Test Status		PASSED		PASSED

$$\text{Calibration Error} = \frac{\text{Avg. Monitor Response - Cal. Gas Concentration}}{\text{Cal. Gas Concentration}} \times 100$$

Acceptable results for a successful CGA Audit are +/- 15% average audit value or +/- 5 PPM, whichever is greater.

CGA Test Report

Facility Name: US Steel MinTac

Location: ,

SO2 LINE_5 Audit Test Results

Mfr. & Model: AMETEK 920 S02 NOX

Serial Number: AX-920-9640-3

Test Date: 2/13/2020

Tester: NICHOLAS WILSON

Analyzer Span: 100.000 PPMW

	Low	Mid
Reference Target	20 - 30% of Span	50 - 60% of Span
Range	(20.000 PPMW - 30.000 PPMW)	(50.000 PPMW - 60.000 PPMW)
Concentration	25.200	55.300
Cylinder No	CC314177	CC209033
Expiration Date	3/18/2020	11/3/2024

	Low		Mid	
	Time	Monitor Value	Time	Monitor Value
Run 1	11:31	25.600	11:35	56.800
Run 2	11:43	24.900	11:47	56.900
Run 3	11:55	23.500	11:59	56.500
Avg Monitor Response		24.667		56.733
Calibration Error		2.12		2.59
Absolute Diff		0.533		1.433
Test Status		PASSED		PASSED

$$\text{Calibration Error} = \frac{\text{Avg. Monitor Response - Cal. Gas Concentration}}{\text{Cal. Gas Concentration}} \times 100$$

Acceptable results for a successful CGA Audit are +/- 15% average audit value or +/- 5 PPM, whichever is greater.

CGA Test Report

Facility Name: US Steel MinTac

Location: ,

SO2 LINE_6 Audit Test Results

Mfr. & Model: AMETEK 920 SO2 NOX

Serial Number: ZA-920-10336-1

Test Date: 2/11/2020

Tester: NICHOLAS WILSON

Analyzer Span: 100.000 PPMW

	Low	Mid
Reference Target	20 - 30% of Span	50 - 60% of Span
Range	(20.000 PPMW - 30.000 PPMW)	(50.000 PPMW - 60.000 PPMW)
Concentration	25.500	54.100
Cylinder No	CC417095	CC206391
Expiration Date	10/23/2023	11/13/2021

	Low		Mid	
	Time	Monitor Value	Time	Monitor Value
Run 1	11:54	24.500	11:58	52.900
Run 2	12:07	25.100	12:11	52.900
Run 3	12:20	25.900	12:24	55.000
Avg Monitor Response		25.167		53.600
Calibration Error		1.31		0.92
Absolute Diff		0.333		0.500
Test Status		PASSED		PASSED

$$\text{Calibration Error} = \frac{\text{Avg. Monitor Response - Cal. Gas Concentration}}{\text{Cal. Gas Concentration}} \times 100$$

Acceptable results for a successful CGA Audit are +/- 15% average audit value or +/- 5 PPM, whichever is greater.

CGA Test Report

Facility Name: US Steel MinTac

Location: ,

SO2 LINE_7 Audit Test Results

Mfr. & Model: AMETEK 920 SO2 NOX

Serial Number: ZA-920-10336-2

Test Date: 2/11/2020

Tester: NICHOLAS WILSON

Analyzer Span: 100.000 PPMW

	Low	Mid
Reference Target	20 - 30% of Span	50 - 60% of Span
Range	(20.000 PPMW - 30.000 PPMW)	(50.000 PPMW - 60.000 PPMW)
Concentration	25.500	54.100
Cylinder No	CC417095	CC206391
Expiration Date	10/23/2023	11/13/2021

	Low		Mid	
	Time	Monitor Value	Time	Monitor Value
Run 1	10:54	26.000	10:58	55.000
Run 2	11:07	25.000	11:11	55.000
Run 3	11:20	25.000	11:24	54.000
Avg Monitor Response		25.333		54.667
Calibration Error		0.65		1.05
Absolute Diff		0.167		0.567
Test Status		PASSED		PASSED

$$\text{Calibration Error} = \frac{\text{Avg. Monitor Response - Cal. Gas Concentration}}{\text{Cal. Gas Concentration}} \times 100$$

Acceptable results for a successful CGA Audit are +/- 15% average audit value or +/- 5 PPM, whichever is greater.

Summary Table by Monitor Downtime Type
U. S. Steel - Minntac
1st Quarter 2020

NOx

Line	Duration (Hrs)	Description
Line 3	5	Automatic Calibration
	0	Data Handling System Malfunction
	0	Excess Drift Ancillary Analyzer
	4	Excess Drift Primary Analyzer
	32	Primary Analyzer Malfunction
	49	Preventative Maintenance
	0	Sample Interface Malfunction
Line 4	3	Automatic Calibration
	0	Data Handling System Malfunction
	0	Excess Drift Ancillary Analyzer
	0	Excess Drift Primary Analyzer
	0	Sample Interface Malfunction
	12	Primary Analyzer Malfunction
Line 5	4	Automatic Calibration
	0	Data Handling System Malfunction
	0	Secondary Analyzer Malfunction
	1	Excess Drift Primary Analyzer
	0	Sample Interface Malfunction
	30	Primary Analyzer Malfunction
Line 6	7	Automatic Calibration
	0	Data Handling System Malfunction
	0	Secondary Analyzer Malfunction
	0	Excess Drift Primary Analyzer
	19	Primary Analyzer Malfunction
	1	Sample Interface Malfunction
Line 7	17	Automatic Calibration
	0	Data Handling System Malfunction
	0	Secondary Analyzer Malfunction
	10	Excess Drift Primary Analyzer
	10	Primary Analyzer Malfunction
	0	Sample Interface Malfunction
	0	Preventative Maintenance

SO2

Line	Duration (Hrs)	Description
Line 3	11	Automatic Calibration
	0	Data Handling System Malfunction
	0	Excess Drift Ancillary Analyzer
	23	Excess Drift Primary Analyzer
	0	Sample Interface Malfunction
	49	Preventative Maintenance
	10	Primary Analyzer Malfunction
Line 4	3	Automatic Calibration
	0	Data Handling System Malfunction
	0	Excess Drift Ancillary Analyzer
	0	Excess Drift Primary Analyzer
	14	Primary Analyzer Malfunction
	0	Sample Interface Malfunction
	0	Preventative Maintenance
Line 5	4	Automatic Calibration
	0	Data Handling System Malfunction
	0	Secondary Analyzer Malfunction
	1	Excess Drift Primary Analyzer
	0	Sample Interface Malfunction
	35	Primary Analyzer Malfunction
	0	Preventative Maintenance
Line 6	8	Automatic Calibration
	0	Sample Interface Malfunction
	0	Secondary Analyzer Malfunction
	0	Excess Drift Primary Analyzer
	20	Primary Analyzer Malfunction
	1	Sample Interface Malfunction
Line 7	19	Automatic Calibration
	0	Data Handling System Malfunction
	0	Secondary Analyzer Malfunction
	13	Excess Drift Primary Analyzer
	10	Primary Analyzer Malfunction
	0	Sample Interface Malfunction