

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: On-site Inspection

B488567531

FACILITY: TILDEN MINING COMPANY LC		SRN / ID: B4885
LOCATION: 1 TILDEN MINE ROAD, ISHPEMING		DISTRICT: Marquette
CITY: ISHPEMING		COUNTY: MARQUETTE
CONTACT: THOMAS W O'BRIEN , ENVIRONMENTAL ENGINEER		ACTIVITY DATE: 02/21/2023
STAFF: Michael Conklin	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Targeted inspection for FY 23.		
RESOLVED COMPLAINTS:		

Facility: Tilden Mining Company L.C. (SRN: B4885)

Location: 1 Tilden Mine Road, Ishpeming, MI 49849

Contact: Thomas O'Brien, Environmental Engineer, 906-475-3306

Facility Description

Tilden Mine L.C. (Tilden) is a taconite ore mine located in the Marquette Iron Range, five miles south of Ishpeming in Marquette County, Michigan. The mine is owned and operated by Cleveland-Cliffs Inc. (Cliffs), a major iron and steel producer based out of Cleveland, Ohio. Cliffs specializes in mining, pelletizing iron ore, and steelmaking operations. The facility can produce "high-grade" iron ore pellets from "low-grade" hematite and magnetite ore for use in the steel industry. Currently, Tilden is only processing hematite concentrates and has an annual production of 6.3 million long tons of iron ore pellets as of 2020.

Tilden consists of open-pit mining areas, a processing mill, tailings basin, and a wastewater treatment plant. Basic processes at the facility include open-pit truck and shovel mining, crushing, autogenous grinding, concentrating, drying, and pelletizing. The pelletizing process includes the oxidation of green (unfired) balls in two grate-kiln systems. The grate-kiln systems expose the green balls to an oxidizing atmosphere at high temperatures for several minutes. The system includes a traveling grate followed by a rotary kiln. The resulting pellets are then air cooled and either loaded directly into rail cars for shipment or sent to storage for future shipping. The pellets are transported by the Lake Superior & Ishpeming Railroad to the shipping port in Marquette where they are shipped by ore freighters to steel mills in the United States and Canada.

Emissions

Emissions from mining and processing of taconite ore can include, but not limited to, PM, NO_x, CO, VOC, SO₂, and hazardous air pollutants (HAPs). The HAP emissions can be categorized by three types: metallic HAPs in the form of PM, acid gases (HCl and HF), and products of incomplete combustion. The ore handling, crushing, screening, and conveying generates PM emissions and are controlled through hood-and-duct systems with wet scrubbers at Tilden. The two (2) induration furnaces, two (2) ore dryers, and five (5) boilers produce products of incomplete

combustion such as NO_x, VOC, CO, PM, SO₂, along with other toxic air contaminants. Tilden operates two 590 MMBtu/hr grate-kiln indurating furnaces that can fire natural gas, coal, and used oil. The facility also operates one 70 MMBtu/hr ore dryer and one 125 MMBtu/hr ore dryer that can fire natural gas and used oil. The ore concentrate dryers and induration furnaces are a large source of PM emissions. The ore concentrate dryers are controlled by cyclone pre-cleaners and dynamic wet scrubbers. The induration units are controlled by dry electrostatic precipitators (ESP). The induration units are also a large source of SO₂ emissions from the firing of coal or used oil, and the drying of flux pellets. Fugitive dust PM emissions occur from mining areas, haul roads, tailing basins, material transfer points, pellet loading areas, and stockpiles.

Emissions Reporting

Tilden is considered a “major source” and is required to report its annual emissions through the Michigan Air Emissions Reporting System (MAERS). The following table lists stationary source emission information as reported to MAERS for the year 2022.

Pollutant	Amount (tons)
CO	231
NO _x	10,320
PM ₁₀ , Filterable	371
PM ₁₀ , Primary	75
PM _{2.5} , Primary	2
SO ₂	310
VOC	94

Regulatory Analysis

Tilden is currently subject to MI-ROP-B4885-2017b and PTI No. 76-20. The facility submitted an administratively complete ROP renewal application on 12/14/2021. An application shield was granted at this time.

The federal regulations applicable to Tilden include 40 CFR Part 63 Subpart RRRRR – NESHAP for Taconite Ore Processing, 40 CFR Part 63 Subpart DDDDD – NESHAP for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters, 40 CFR Part 63 Subpart ZZZZZ – NESHAP for Stationary Reciprocating Internal Combustion Engines, and 40 CFR Part 52 Subpart X – Visibility Protection. For the purposes on 40 CFR 52.21, both Empire and Tilden are considered one stationary source due to being on contiguous or adjacent properties, under common control, and belonging to the same industrial grouping.

Compliance History

In the last five years, one violation notice (VN) was issued on 12/17/2020 for fugitive dust emissions from the tailings basin and subsequent fallout on residential property. The VN was considered resolved on 03/08/2021 with an updated fugitive dust plan submitted to the AQD. The revised plan (Rev. 4/28/2021) includes additional monitoring and control practices for fugitive dust control during freeze-dry periods.

Inspection

An on-site targeted inspection was performed on 2/21/2023 to verify compliance with MI-ROP-B4885-2017b and PTI No. 76-20. AQD staff (Michael Conklin) arrived at 10:30 AM and met with Tom O'Brien, Environmental Engineer, and Brent Ketzenberger, Environmental Manager. A pre-inspection meeting occurred to discuss the inspection and the ROP renewal. Next, a tour of the facility was provided with an emphasis on the emission units listed in the ROP. Operational data was collected from the CMS before touring the mill. The following is a summary of compliance with MI-ROP-B4885-2017b and PTI No. 76-20 based on the inspection conducted and records reviewed.

EUOREDRYER1

Ore Concentrate Dryer #1 has a maximum heat input of 70 MMBtu/hr and a rated throughput of 400 long tons per hour. The dryer can fire natural gas and used oil, but used oil has not been fired in the ore dryer in the last five years. The used oil is now supplied from a 15,000 gallon tank instead of the 1.5 million gallon tank that is currently listed in the ROP. Ore Concentrate Dryer #1 is controlled by one cyclone pre-cleaner and one dynamic wet scrubber. The purpose of the ore dryer is to dry the concentrate before it goes to the pelletizing plant. This emission unit is subject to the Taconite MACT. At the time of the inspection, Ore Concentrate Dryer #1 was not operating.

Emission Limits

Ore Concentrate Dryer #1 contains emission limits for arsenic, cadmium, chromium (total), lead, and PM. Compliance is demonstrated through emission calculations and stack testing. All the emission limits, besides PM, apply only when firing used oil. According to Cliffs, the ore dryer has not fired used oil since 2010.

Material Limits

The used oil combusted in Ore Concentrate Dryer #1 cannot have a sulfur content exceeding 1.50%, nor a halogen content greater than 1000 parts per million by weight. Used oil was last fired in EUOREDRYER1 in October 2010.

Process/Operational Restrictions

The used oil for EUOREDRYER1 is now supplied from a 15,000 gallon tank. The 1.5 million gallon tank is no longer used due to the facility no longer burning used oil in the induration units.

Deign/Equipment Parameters

The dynamic wet scrubber is equipped with a monitor for differential pressure, liquid flow rate, and fan amperage. These parameters can be continuously monitored from the CMS. During the inspection, the ore dryer was not in operation and neither was the wet scrubber with the fan amperage reading 0 amps.

Testing/Sampling

Ore Concentrate Dryer #1 was last tested for PM emission rates on 11/30/2021. The average PM emission rate was 0.0031 lbs/1000 lbs of exhaust gas on a dry gas basis and 0.0016 grains/dscf. The mass emission rate was 0.77 lb/hr. Testing for PM will next be required by 11/30/2026.

Monitoring/Recordkeeping

Used oil has not been fired in the Ore Concentrate Dryer since 2010. The PM emission limit is a CAM subject emission limit and requires monitoring of control equipment parameters. Currently, pressure drop and scrubber liquid flow rate are being monitored and recorded every 15-minutes for a daily average. Tilden is using the monitoring requirements of the taconite MACT as presumptively assurance monitoring (PAM) to fulfill the CAM requirements. The current ROP does not have an indicator range specified in the CAM requirements, however, the MACT requires operating the dynamic wet scrubber above the minimum liquid flow rate and fan amperage established during the initial or any subsequent performance test to demonstrate compliance with the applicable PM limit in the taconite MACT. The current operating parameter

limits are a daily average flowrate of greater than 34.80 gpm and fan amperage of greater than 114 amps. Dryer #1 and the scrubber were not in operation at the time of the inspection.

Reporting

Tilden has been submitting semiannual and annual compliance reports and noting areas of deviation from permit conditions as acknowledged. The facility has not been providing semiannual excursion/exceedance and monitor downtime reports for CAM as required in SC VII.4 and 5. This was conveyed to the facility during the inspection. Tilden will need to begin submitting these with the semiannual reports.

Stack/Vent

No visible emissions were observed from Ore Concentrator Dryer #1.

EUOREDRYER2

Ore Concentrate Dryer #2 has a maximum heat input of 125 MMBtu/hr and a rated throughput of 800 long tons per hour. The dryer can fire natural gas and used oil, but used oil has not been fired in the ore dryer in the last five years. The used oil is now supplied from a 15,000 gallon tank instead of the 1.5 million gallon tank that is currently listed in the ROP. Ore Concentrate Dryer #2 is controlled by two cyclone pre-cleaners and two dynamic wet scrubbers. The purpose of the ore dryer is to dry the concentrate before it goes to the pelletizing plant. This emission unit is subject to the Taconite MACT. At the time of the inspection, Dryer #2 was operating.

Emission Limits

Ore Concentrate Dryer #2 contains emission limits for arsenic, cadmium, chromium (total), lead, and PM. Compliance is demonstrated through emission calculations and stack testing. All the emission limits, besides PM, apply only when firing used oil. According to Cliffs, the ore dryer has not fired used oil since 2010.

Material Limits

The used oil combusted in Ore Concentrate Dryer #2 cannot have a sulfur content exceeding 1.50%, nor a halogen content greater than 1000 parts per million by weight. Used oil was last fired in EUOREDRYER2 in October 2010.

Process/Operational Restrictions

The used oil for EUOREDRYER2 is now supplied from a 15,000 gallon tank. The 1.5 million gallon tank is no longer used due to the facility no longer burning used oil in the induration units.

Deign/Equipment Parameters

The dynamic wet scrubbers are equipped with a monitor for differential pressure, liquid flow rate, and fan horsepower. These parameters can be continuously monitored from the CMS. During the inspection, these monitors were operating and reporting data through the CMS.

Testing/Sampling

Ore Concentrate Dryer #2 was last tested for PM emission rates on 11/16/2021. The average PM emission rate was 0.0051 lbs/1000 lbs of exhaust gas on a dry gas basis and 0.0027 grains/dscf. The mass emission rate was 1.55 lb/hr. Testing for PM will next be required by 11/16/2026.

Monitoring/Recordkeeping

Used oil has not been fired in the Ore Concentrate Dryer since 2010. The PM emission limit is a CAM subject emission limit and requires monitoring of control equipment parameters. Currently, pressure drop and scrubber liquid flow rate are being monitored and recorded every 15-minutes for a daily average. Tilden is using the monitoring requirements of the taconite MACT as presumptively assurance monitoring (PAM) to fulfill the CAM requirements. The current ROP does not have an indicator range specified in the CAM requirements, however, the MACT requires operating the dynamic wet scrubber above the minimum liquid flow rate and fan amperage established during the initial or any subsequent performance test to demonstrate compliance with the applicable PM limit in the Taconite MACT.

At the time of the inspection, Ore Concentrate Dryer #2 was operating. At 12:30 PM, the dryer had a throughput of 404 long tons per hour and a temperature of 2380 degrees Fahrenheit. The CMS showed the north scrubber had a differential pressure of 1.5" water, a liquid flow rate of 29.0 gpm, and fan power at 192 HP. The south scrubber had a differential pressure of 1.1" water, a liquid flow rate of 26.7 gpm, and fan power at 194 HP. The current operating parameter limits are a daily average flowrate of greater than 26.70 gpm and fan amperage of greater than 10 amps for the north scrubber. For the south scrubber, a daily average flowrate of greater than 26.90 gpm and fan amperage of greater than 10 amps.

Reporting

Tilden has been submitting semiannual and annual compliance reports and noting areas of deviation from permit conditions as acknowledged. The facility has not been providing semiannual excursion/exceedance and monitor downtime reports for CAM as required in SC VII.4

and 5. This was conveyed to the facility during the inspection. Tilden will need to begin submitting these reports with the semiannual ROP reports.

Stack/Vent

No visible emissions were observed from the north and south stacks of Ore Concentrate Dryer #2.

EUKILN1

Unit 1 Grate Kiln Indurating Furnace (EUKILN1) dries and preheats pellets on a traveling grate and then heats the pellets in a rotary kiln for final induration. The grate kiln system is a counterflow heat exchanger that is direct fired. EUKILN1 has a single burner rated at 590 MMBtu/hr heat input that can be fired with coal, natural gas, or used oil. However, in the recent ROP renewal application, Tilden is requesting to remove the used oil requirements and will no longer be firing used oil in Kiln #1. Kiln #1 is controlled by three (3) electrostatic precipitators for PM control. The unit has also undergone a NOx reduction technology review as part of the requirements in 40 CFR 52.1183(k).

At the time of the inspection, Kiln #1 was operating and had a pellet throughput of 697 long tons per hour and a temperature of 2025 degrees Fahrenheit. The unit was firing natural gas only at the time and had a fuel flow rate of 468 MMCF.

Emission Limits

Kiln #1 contains emission limits for arsenic, cadmium, chromium (total), and lead when firing used oil. The unit also has emission limits for PM, SO₂, and NO_x. Compliance with these emission limits is demonstrated through used oil analysis, CEMS for NO_x and SO₂, along with COMS and stack testing for PM. Compliance with the emission limits is also demonstrated through emission calculations and operating the ESPs within the established operating parameters. Note, used oil has not been fired in Kiln #1 within the last five years, according to Cliffs, and the company is requesting the TAC emission limits associated with firing used oil be removed in the next ROP renewal.

Material Limits

Kiln #1 contains material limits for used oil and coal. The halogen content of the used oil cannot exceed 1000 parts per million by weight and the sulfur content of the coal burned cannot exceed 0.60% by weight based on a monthly block average. Compliance is demonstrated through fuel analysis. Used oil is no longer fired in EUKILN1 and has not been used within the last five years. Coal was last fired in EUKILN1 during the period of 9/19/22 – 9/22/22.

Process/Operational Restrictions

The three (3) ESPs for Kiln #1 were in operation at the time of the inspection. From the CMS, the last logged 6-minute average opacity was 3.15% for the stack with 2A-1 and 2B-1 ESPs, and 1.47% for the stack with 2C-1 ESP.

No used oil was being fired in Kiln #1 during the inspection, only natural gas was being fired. Used oil is no longer being supplied to Kiln #1, according to Cliffs.

Design/Equipment Parameters

Kiln #1 is equipped with a CEMS for NO_x on both the north and south stacks. During the inspection, the monitoring system showed NO_x emission rates to be 302.3 ppm at 19% O₂ on the north stack and 549.5 ppm at 17% O₂ on the south stack. The total values were 2344 lb/hr (1-minute average) and 4.50 lbs/MMBtu (1-hour average). The unit is also equipped with a CEMS for SO₂ emissions on both the north and south stack. Data from the monitoring system showed SO₂ emissions to be 49.1 lb/hr on the south stack and 19.5 lb/hr on the north stack. This equates to a total of 68.6 lb/hr for SO₂.

Testing/Sampling

Stack testing on Kiln #1 for compliance with MI-ROP-B4885-2017b and the Taconite MACT was last performed on 9/29/2021. The total emission rates were 0.0177 lbs/1000 lbs dry, 0.0093 grains/dscf, and 55.90 lbs/hr.

The last RATA performed for the North and South stack CEMS occurred on 9/20/22 – 9/21/22. For SO₂, the relative accuracy was 3.3%, for NO_x the relative accuracy was 2.8%, and stack flow was 1.9%. All relative accuracies were less than 20% of the reference method test data.

Monitoring/Recordkeeping

A coal analysis was performed in 2022. The coal sample was received by an independent laboratory (SGS) on 9/26/2022 and analyzed for ash content, sulfur content, and BTU content. The analysis report, dated 10/16/2022, showed an ash content of 7.54% (wet), the sulfur content was 0.36% (wet), and the heat content was 8159 Btu/lb (wet). These results are summarized in the second semiannual report for 2022.

There has been no used oil burned in EUKILN1 in the last five years, according to Cliffs. This has been documented in the semiannual reports. Since no used oil has been fired in EUKILN1, there are no 12-month rolling time period emission calculations for arsenic, cadmium, chromium (total), and lead being reported.

Daily SO₂ emissions are calculated from EUKILN1 based on the sulfur content of the green balls, pellets, and coal fired. The emissions are calculated on a daily average pound per hour and compared to the 1,200 lbs/hr limit, which is the daily average limit of 28,800 lbs/day. Tilden is currently using a mass balance approach by taking the total sulfur inputs of the green balls and coal, minus the sulfur content remaining in the pellets to calculate the total sulfur emissions. It should be noted EUKILN1 does have a SO₂ CEMS that can provide a daily emission rate. The daily SO₂ emissions are provided in the semiannual reports. A review of the 2022 annual report shows the SO₂ emissions for EUKILN1 to remain below the daily limit.

Tilden submits quarterly excess emissions and monitor downtime reports for NO_x and SO₂ CEMS on the North and South stacks for EUKILN1. However, the NO_x CEMS excess emissions reports only include the following statement: "There are no excess NO_x emissions to report because the NO_x BART limit in permit to install 148-12 is not effective. When this permit was issued on August 23, 2013, the permit included the State's proposed NO_x BART emission limit and made that NO_x emission limit effective six months after the effective date of US EPA's approval of the State's BART determination. US EPA denied the State's BART determination and issued a federal implementation plan with a different NO_x BART determination that becomes effective only after US EPA publishes the furnace-specific limit in the Federal Register. This has not occurred for Tilden. The State's NO_x BART limit is the subject of ongoing legal proceedings with no clear timetable for becoming effective under the terms of this permit." Appendix 3 to MI-ROP-B4885-2017b states exceedances above 2,270 lbs NO_x/hr during normal operations, measured on a 30-day rolling average, shall be reported. This limit comes from PTI No. 148-12A. There was an attempt to streamline/subsume this limit with the NO_x BART FIP limit in MI-ROP-B4885-2017b. The limit should be included in the ROP with the underlying applicable requirements of R 336.1971 and not streamlined since the NO_x BART FIP limit is not yet effective. Therefore, Tilden should follow the requirements in Appendix 3 for reporting excess emissions. The 30-day rolling average NO_x lb/hr emissions from the CEMS was requested for the second semiannual period of 2022. A review of the provided data shows the rolling 30-day average NO_x emissions to be below 2,270 lbs/hr.

The 30-day rolling average SO₂ lb/hr emissions from the CEMS was requested for the second semiannual period of 2022. A review of the provided data shows the rolling 30-day average SO₂ emissions to be well below 500 lb/hr.

Reporting

Annual and semiannual certification of compliance reports are being submitted. Periods of startup and shutdown are noted in these reports and when there is excess opacity as recorded by the COMS. The Ozone Control Period reports are also being submitted for EUKILN1. As noted above with the ore dryers, the facility has not been submitting semiannual CAM reports for monitoring downtimes and exceedances as required in SC VII.5 and 6.

Stack/Vent Restrictions

No visible emissions were observed from the north and south stack of EUKILN1.

EUKILN2

Kiln #2 is identical to Kiln#1 and is also controlled by three (3) ESPs. At the time of the inspection, Kiln #2 was operating and showed a throughput of 746 long tons per hour. The temperature in the kiln was 2153 degrees Fahrenheit and the natural gas flow rate was 482 MMCF. Only natural gas was being fired.

Emission Limits

Kiln #2 contains emission limits for arsenic, cadmium, chromium (total), and lead when firing used oil. The unit also has emission limits for PM and SO₂. Compliance with these emission limits is demonstrated through used oil analysis, COMS and stack testing for PM, and emission calculations for SO₂. Note, used oil has not been fired in Kiln #2 within the last five years, according to Cliffs, and the company is requesting the TAC emission limits for firing used oil be removed in the next ROP renewal.

Material Limits

Kiln #2 contains material limits for used oil. The halogen content of the used oil cannot exceed 1000 parts per million by weight. Used oil is no longer being fired in Kiln #2. Compliance is demonstrated through fuel analysis. Used oil is no longer fired in EUKILN1 and has not been used within the last five years. At the time of the inspection, only natural gas was being fired. No coal was fired in EUKILN2 during 2022.

Process/Operational Restrictions

The three (3) ESPs for Kiln #2 were in operation at the time of the inspection. From the CMS, the last logged 6-minute average opacity was 4.34% for the South stack with 2A-2 and 2B-1 ESPs, and 3.44% for the North stack with 2C-2.

No used oil was being fired in Kiln #2 during the inspection, only natural gas was being fired. Used oil is no longer being supplied to Kiln #2, according to Cliffs.

Testing/Sampling

Stack testing for Kiln #2 for compliance with MI-ROP-B4885-2017b and the Taconite MACT was last performed on 9/30/2021. The total PM emission rates were 0.0060 lbs/1000 lbs dry, 0.0032 grains/dscf, and 17.56 lbs/hr.

Monitoring/Recordkeeping

The induration units (EUKILN1 and EUKILN2) draw from a common source of coal onsite. A coal analysis was performed in 2022. The coal sample was received by an independent laboratory (SGS) on 9/26/2022 and analyzed for ash content, sulfur content, and BTU content. The analysis report, dated 10/16/2022, showed an ash content of 7.54% (wet), the sulfur content was 0.36% (wet), and the heat content was 8159 Btu/lb (wet). These results are summarized in the second semiannual report for 2022.

There has been no used oil burned in EUKILN2 in the last five years, according to Cliffs. This has been documented in the semiannual reports. Since no used oil has been fired in EUKILN1, there are no 12-month rolling time period emission calculations for arsenic, cadmium, chromium (total), and lead being reported.

Daily SO₂ emissions are calculated from EUKILN2 based on the sulfur content of the green balls, pellets, and coal fired. The emissions are calculated on a daily average pound per hour and compared to the 1,200 lbs/hr limit, which is the daily average limit of 28,800 lbs/day. Tilden is currently using a mass balance approach by taking the total sulfur inputs of the green balls and coal, minus the sulfur content remaining in the pellets to calculate the total sulfur emissions. The daily SO₂ emissions are provided in the semiannual reports. A review of the 2022 annual report shows the SO₂ emissions for EUKILN2 to remain below the daily limit.

Reporting

Annual and semiannual certification of compliance reports are being submitted. Periods of startup and shutdown are noted in these reports and when there is excess opacity as recorded by the COMS. The Ozone Control Period reports are also being submitted for EUKILN2. As noted above with the ore dryers, the facility has not been submitting semiannual CAM reports for monitoring downtimes and exceedances as required in SC VII.5 and 6.

Stack/Vent Restrictions

No visible emissions were observed from the north and south stack of EUKILN2.

EUBOILER1

Boiler #1 is a 225 MMBtu/hr boiler that is fired on natural gas. Cliffs no longer fires used oil in Boiler 1 and is requesting the requirements associated with used oil be removed from the ROP. At the time of the inspection, Boiler #1 was not in operation and the burner was removed. A tune-up for Boiler #1 was last conducted during the period of 08/14/2022 – 08/27/2022.

EUBOILER3

Boiler #3 is a 240 MMBtu/hr boiler that is fired on natural gas. Cliffs no longer fires used oil in Boiler #3 and is requesting the requirements associated with used oil be removed from the ROP. At the time of the inspection, Boiler #3 was in operation. From the CMS, the steam flow was 71.4 1000lbs/hr and the boiler was only firing natural gas. No visible emissions were observed from the stack. Boiler #3 appeared to be operating properly during the inspection. A tune-up for Boiler #3 was last conducted during the period 06/25/2022 – 06/18/2022.

EUBOILER4

Boiler #4 is a natural gas-fired boiler with a rated heat input capacity of 300 MMBtu/hr. The boiler is equipped with a low NOx burner. This boiler is subject to NSPS Db and MACT DDDDD. Boiler #4 replaced Boiler #2. At the time of the inspection, Boiler #4 was operating with a natural gas flow rate of 116.51 kscf/hr and steam flow of 98.36 klb/hr. Boiler #4 utilizes a PEMS for NOx emissions monitoring.

Emission Limits

Boiler #4 contains emission limits for NOx, CO, and SO2. Compliance with these emission limits is demonstrated through PEMS, stack testing, and emission calculations. During the inspection, the PEMS for Boiler #4 was operational and displaying actual NOx values in ppm and O2 percent, along with calculated NOx values in lb/MMBtu. The 1-minute NOx lb/MMBtu value from the PEMS showed 0.030, a 1-hour average of 0.029 lb/MMBtu, a 3-hour rolling average of 0.029 lb/MMBtu, and a 30-day rolling average of 0.031 lb/MMBtu.

Material Limits

Only natural gas is fired in Boiler #4. The natural gas fuel lines to the burner were observed during the inspection. The PEMS showed the 1-minute flow rate to be 116.51 kscf/hr and the 1-

hour average to be 134.29 kscf/hr. The PEMS also showed the 1-hour heat input to be 138.99 MMBtu/hr.

Tilden only burns pipeline quality natural gas with a total sulfur content of less than 0.2 grains per 100 standard cubic feet. During the inspection, the PEMS showed the 12-month rolling natural gas fuel usage to be 767.28 mmscf.

Process/Operational Restrictions

Boiler #4 appeared to be operating properly and in a manner consistent with good air pollution control practices for minimizing emissions. This was confirmed by reviewing emissions and operational data shown through the PEMS.

Design/Equipment Parameters

Boiler #4 has a heat input capacity limit of 300 MMBtu/hr with firing natural gas. During the inspection, the PEMS showed the boiler had a heat input of 120.59 MMBtu/hr while firing 116.51 kscf/hr of natural gas. Boiler #4 is required to be equipped with a low NOx burner. Although this was not able to be verified during the inspection, the PEMS for Boiler #4 showed the unit was in compliance with the NOx emission limits. A device is installed on the boiler and connected to the PEMS to monitor the natural gas flowrate on a continuous basis.

Tilden is required to monitor and record NOx and O2 emissions from Boiler 4 on a continuous basis. The emissions are monitored using a non-linear polynomial regression-based predictive emissions monitoring system (PEMS). QA/QC requirements for PEMS are contained in 40 CFR Part 60, Appendix B, Performance Specification 16 (PS-16). The QA/QC procedures specified in PS-16 are to be used for the initial certification of PEMS after installation and periodically thereafter to ensure the PEMS is working properly. Network Environmental, Inc. was contracted by Tilden to perform all required stack testing for the Boiler 4 PEMS. In May 2019, model training emission stack data was collected with a certified mobile continuous emission monitoring system (CEMS) and paired with the collected plant sensor data. After the model development was complete, the PEMS models were installed, deployed, and successfully certified with the initial Relative Accuracy Test Audit (RATA) completed by Network. The RATA was conducted in accordance with PS-16.

Testing/Sampling

Tilden follows the QA/QC requirements for the PEMS as noted in 40 CFR Part 60, Appendix B, Performance Specification 16.

Boiler #4 was last tested for CO emission rates on 5/14/2019. The average CO emission rate from three test runs was 0.0030 lb/MMBtu.

The last RATA on the PEMS was performed on 9/22/22. The relative accuracy was 14.29% of the mean of the portable analyzer samples.

Monitoring/Recordkeeping

NOx and O2 emissions are monitored continuously with the PEMS. The PEMS uses multiple input parameters on the boiler to calculate NOx emissions and heat input. The PEMS provides NOx emission rates in lb/MMBtu based on a 30-day rolling average. During the inspection, the PEMS showed the 30-day rolling average to be 0.031 lb/MMbtu. The 12-month rolling NOx tons at the time of the inspection was 11.65 tons. The PEMS also monitors the natural gas usage in Boiler #4. The 12-month rolling natural gas usage at the time of the inspection was 767.28 mmscf.

The 12-month rolling CO emissions are calculated using emission factors from the most recent stack test. For 2022, the CO emissions were less than 2 tpy for each 12-month rolling period as calculated in records provided.

Tilden maintains all compliance tests reports, monitoring data, heat input calculations, fuel certifications, and emission calculations as specified in the ROP. The last tune-up conducted was during 6/05/22 – 6/18/22.

Reporting

Tilden submits semiannual compliance and excess emission reports. A review of the first semiannual excess emissions report for 2022 shows no excess emission events and the monitor was down for 0.03% of Boiler #4 total operation time during the semiannual period.

Stack/Vent

No visible emissions were observed from the Boiler #4 stack.

FGDUSTCOLLECTORS

This flexible group is for various ore, concentrate, and finished pellet handling processes throughout the facility including primary and secondary ore crushing, conveyor transfer points, bentonite feeders and mixer blenders, pellet cooler discharge hoppers, low head feeders, transfer

towers, etc. The various emission units are controlled with wet scrubbers. These emission units and wet scrubbers are subject to the Taconite MACT.

Emission Limits

Each emission unit in FGDUSTCOLLECTORS is subject to a PM emission limit of 0.10 lb/1000 lbs of exhaust gases calculated on a dry gas basis. The facility is currently using the Taconite MACT requirements to demonstrate compliance with this emission limit.

Design/Equipment Parameters

Each scrubber in FGDUSTCOLLECTORS is required to be equipped with a least one of the following monitors listed in SC IV.1. The Taconite MACT requires monitoring of differential pressure and water flow rate through the scrubbers. During the inspection, the scrubbers observed were equipped with flow meters and differential pressure gauges. A summary of scrubber operating parameters can be viewed through the CMS.

It was noted during the inspection the primary crusher, drive tower, and 4c conveyor scrubbers were not operating. In a follow-up information request, Tilden stated the Primary Crusher and Drive Tower were down during this timeframe. The 4C Conveyor scrubber was also down for maintenance, however, the conveyor remained operational. The conveyor does not directly emit to the atmosphere unless the scrubber fan is operational.

Monitoring/Recordkeeping

The monitoring and recordkeeping requirements include CAM conditions. Both the scrubber liquid flow rate and the differential pressure are monitored through a CMS. This was observed during the inspection. The current CAM conditions in the ROP do not list indicator ranges. However, the facility is using the Taconite MACT monitoring requirements as PAM. A summary of the parameter limits is attached.

Reporting

Tilden submits annual and semiannual compliance reports and notes deviations with FGDUSTCOLLECTORS as acknowledged. The facility has not been submitting CAM Monitor Downtime and Excursion/Exceedance reports. Tilden will need to begin submitting these reports as part of the semiannual reporting requirements.

Stack/Vent

Visible emission checks from each of the scrubbers was not able to be performed during this inspection.

FGBOILERS

This flexible group is for one or more propane or natural gas-fired boilers, each with a maximum heat input of 100 MMBtu/hr and equipped with low-NOx burners. These boilers were permitted under PTI No. 147-13, however, to-date the facility has not begun construction or installation of these emission units. This flexible group will be removed from the ROP during the upcoming renewal.

FGTACONITEMACT

The affected source is an existing taconite iron ore processing plant, that is (or is part of) a major source of hazardous air pollutant (HAP) emissions. An existing affected source is a source that commenced construction or reconstruction before December 18, 2002. The regulations cover emissions from ore crushing and handling emission units, ore dryer stacks, indurating furnace stacks, finished pellet handling emission units, and fugitive dust emissions.

The emission units subject to the Taconite MACT include EUOREDRIYER1, EUOREDRIYER2, EUKILN1, EUKILN2, and FGDUSTCOLLECTORS (18 ore crushing and handling, 7 finished pellet handling). The federal regulation covers metallic HAPs in the form of PM, acid gases, and products of incomplete combustion (PIC). The indurating units contribute almost 80 percent of the PM emissions and almost 99 percent of the HAP emissions from the facility.

Emission Limits

The Taconite MACT specifies PM emission limits for all affected sources. Compliance is demonstrated through stack testing and monitoring control parameters.

Process/Operational Restrictions

Each affected source with a wet scrubber (except dynamic wet scrubbers) is required to be operated at or above a pressure drop and water flow rate, based on a daily average, minimum level that was established during an initial or subsequent performance test. Each of the dynamic wet scrubbers for the ore dryers are required to be operated at or above the water flow rate and fan amperage, based on a daily average, minimum level that was established during an initial or subsequent performance test. For each ESP with the indurating units, the 6-minute average opacity must be maintained at or below the maximum level established during the initial or subsequent performance test.

A summary of the parameter limits is attached. The CPMS during the inspection was displaying the operating parameters for the various control devices. For example, the 4A Conveyor scrubber showed a differential pressure of 8.6" WC and liquid flow rate of 25 gpm. The established operating parameter limits for this scrubber are a minimum differential pressure of 5.50" WC and 16.0 gpm that were established on a test date of 07/17/2012. The CPMS for EUKILN1 showed a 6-minute average opacity of 3.15% for the South stack and 1.47% on the North stack. The maximum opacity limits for EUKILN1 are 7.10% on the North Stack and 8.37% on the South stack which were established on 3/27/07. These limits are for when EUKILN1 is producing hematite pellets. For EUKILN2, the CPMS showed a 6-minute average opacity of 4.34% for the South stack and 3.44% on the North stack. The maximum opacity limits for EUKILN2 are 10.91% on the North Stack and 7.98% on the South stack which were established on 3/28/07.

Records of operating parameter values for the dates 2/21/22, 4/3/22, 7/22/22, and 10/5/22 were requested. The 6-minute block average opacity values for the North stack on EUKILN1 were under 7.10% and for the South stack, the values were under 8.37%. For EUKILN2, the 6-minute block average opacity limit for the North stack is 10.91% and 7.98% for the South stack. A review of the 6-minute block averages on 2/21/22 show the South stack opacity over the operating limit at certain times. These exceedances were corrected to below the established limit. All other data reviewed for the other dates showed the 6-minute block averages to be below the established limits while EUKILN2 was operating. Daily average operating parameters were also provided for the ore and pellet handling equipment scrubbers, along with the ore dryers.

Testing/Sampling

A summary of the most recent Taconite MACT compliance testing is shown below for all affected sources at Tilden.

Tilden Mine MACT Affected Source	MACT Stack Test Date	Wet Scrubber Description	Stack Vent No.	PM Concentration, C (gr/dscf)				Stack Gas Flow Rate, Q (dscf/min)				Average Q _{ij} ⁽²⁾ (dscf/hr)	C _{ij} * Q _{ij}	Affected Source PM FWMC, C _{a,s} (gr/dscf)	MACT PM Limit
				Run 1 C ₁	Run 2 C ₂	Run 3 C ₃	Average C _{ij} ⁽¹⁾	Run 1 Q ₁	Run 2 Q ₂	Run 3 Q ₃	Average Q _{ij}				
Ore Crushing and Handling (n = 18)	03/11/20	Primary Crusher	SVA0011570	0.0015	0.0012	0.0005	0.0011	23034	23037	22663	22985	1379080	1471.02	0.0046	≤0.008
	11/17/21	Conveyor 1 to 2	SVA0010460	0.0015	0.0012	0.0013	0.0013	7208	6899	7138	7082	424900	566.53		
	12/02/21	Conveyor 4A-4A1	SVA0013480	0.0015	0.0008	0.0009	0.0010	4517	4549	4558	4541	272480	275.20		
	03/12/20	Conveyor 4B-4C	SVA0007880	0.0148	0.0195	0.0097	0.0147	13596	12162	13229	12966	779740	11436.19		
	12/02/21	Conveyor 4C-4D	SVA0007910	0.0083	0.0044	0.0058	0.0062	3320	3385	3377	3361	201640	1243.45		
	03/10/20	Conveyor 12A-13	SVC0005037	0.0007	0.0004	0.0003	0.0005	2866	2627	2865	2653	159160	74.27		
	03/10/20	Conveyor 12B-13	SVC0005042	0.0009	0.0012	0.0007	0.0009	1529	1505	1510	1515	90880	84.82		
	03/03/20	Conveyor 13-17.1	SVC0005047	0.0058	0.0051	0.0024	0.0044	6165	6161	6454	6260	375600	1640.12		
	03/03/20	Conveyor 15-15.1	SVC0005057	0.0056	0.0051	0.0024	0.0044	6165	6161	6454	6260	375600	1640.12		
	03/03/20	Conveyor 14-15-16	SVC0005052	0.0056	0.0051	0.0024	0.0044	6165	6161	6454	6260	375600	1640.12		
	12/01/21	Conveyor 19&19A-17	SVC0005067	0.0080	0.0078	0.0079	0.0078	3590	3558	3423	3524	211420	1656.12		
	12/01/21	Conveyor 15.8-15.9	SVP0033820	0.0080	0.0078	0.0079	0.0078	3590	3558	3423	3524	211420	1656.12		
	12/01/21	Conveyor 15.9-16.1	SVP0033840	0.0080	0.0078	0.0079	0.0078	3590	3558	3423	3524	211420	1656.12		
	12/01/21	Conveyor 16.1-17.1	SVC0005062	0.0008	0.0007	0.0012	0.0009	3655	3493	3569	3572	214340	166.48		
	11/30/21	Conveyor 17.1-17.2	SVP0018930	0.0079	0.0071	0.0076	0.0075	7277	7256	7316	7283	436980	3291.92		
	11/30/21	T1 Bentonite Feed	SVP0016100	0.0028	0.0014	0.0015	0.0019	4049	3843	4081	3991	239460	454.97		
	11/30/21	T2 Bentonite Feed	SVP0016230	0.0028	0.0014	0.0015	0.0019	4049	3843	4081	3991	239460	454.97		
	11/30/21	Screen Reclaim	SVC0005072	0.0028	0.0014	0.0015	0.0019	4049	3843	4081	3991	239460	454.97		
Ore Dryers	11/30/21	Dryer # 1	SVP0082951	0.0020	0.0017	0.0011	0.0016	55132	54081	57962	55725	3343500	5349.60	0.002	≤ 0.052
	11/16/21	Dryer #2 North Stack	SVP0092851	0.0031	0.0034	0.0049	0.0036	28194	27649	26590	27478	1648660	6264.91	0.003	
	11/16/21	Dryer #2 South Stack	SVP0092861	0.0023	0.0016	0.0022	0.0020	40277	38545	38961	39261	2355660	4711.32	0.003	
Grate Kiln Indurating Furnaces Proc. Magnetite	02/08/07	U1 North Stack	SVP0051981	0.0018	0.0018	0.0016	0.0017	235735	261554	263901	253730	15223800	26387.92	0.002	≤ 0.01
	02/08/07	U1 South Stack	SVP0051711	0.0034	0.0029	0.0021	0.0028	572694	573123	589300	578372	34702340	97166.56	0.004	
	01/24/08	U2 North Stack	SVP0052431	0.0042	0.0064	0.0051	0.0052	219314	218832	213985	217377	13042620	68256.4	0.004	
01/24/08	U2 South Stack	SVP0052431	0.0034	0.0037	0.0020	0.0030	447823	455103	463946	455624	27337440	82923.8	0.004		
Grate Kiln Indurating Furnaces Proc. Hematite	09/29/21	U1 North Stack	SVP0051981	0.0105	0.0105	0.0129	0.0113	259114	252389	253682	256052	15303100	172925.0	0.009	≤ 0.03
	09/29/21	U1 South Stack	SVP0051711	0.0071	0.0069	0.0105	0.0082	454017	450534	436145	446899	26813920	218980.3	0.003	
	09/30/21	U2 North Stack	SVP0052431	0.0061	0.0054	0.0056	0.0057	217537	214765	212291	214864	12891860	73483.6	0.003	
	09/30/21	U2 South Stack	SVP0052431	0.0020	0.0021	0.0016	0.0019	440959	426274	420403	429212	25752720	48930.2	0.003	
Finished Pellet Handling (n = 7)	03/05/20	T1 Cooler	SVP0014430	0.0013	0.0007	0.0027	0.0016	22779	22469	21693	22314	1338820	2097.48	0.0013	≤0.008
	03/05/20	T2 Cooler	SVP0014490	0.0013	0.0007	0.0027	0.0016	22779	22469	21693	22314	1338820	2097.48		
	03/05/20	T1 Low Head Feeder	SVP0014160	0.0017	0.0014	0.0004	0.0012	19726	19740	20170	19879	1192720	1391.51		
	03/05/20	T2 Low Head Feeder	SVP0014290	0.0017	0.0014	0.0004	0.0012	19726	19740	20170	19879	1192720	1391.51		
	03/05/20	T1 Transfer Tower	SVP0016620	0.0017	0.0014	0.0004	0.0012	19726	19740	20170	19879	1192720	1391.51		
	03/05/20	T2 Transfer Tower	SVP0016690	0.0017	0.0014	0.0004	0.0012	19726	19740	20170	19879	1192720	1391.51		
	03/05/20	U2 Product Conveyor	SVE3100694	0.0008	0.0009	0.0009	0.0009	9350	9279	8927	9165	551120	477.84		

Testing for Ore Crushing and Handling and Finished Pellet Handling will next be required by March 2025. Testing for Ore Dryer #1 and #2 will next be required by November 2026. The induration units are required to test at least twice during a 5-year permit term. Prior to the September 2021 test, the kilns were last tested in July 2018.

Monitoring/Recordkeeping

Tilden utilizes a CMS to monitor the scrubber and ESP operating parameters. A Site-Specific Monitoring Plan (Rev. November 2021) is maintained for the CPMS as required in 40 CFR 63.9632 (b). At a minimum, the CPMS at Tilden monitors the liquid flow rate and differential pressure for the scrubbers, the fan amperage/horsepower and liquid flow rate for the dynamic wet scrubbers, and the opacity for the ESPs. The facility maintains required MACT reporting requirements and COMS data. Tilden does not use other control devices for the affected sources other than wet scrubbers and ESPs. The CPMS provides daily averages of all recorded readings. The performance evaluations conducted on the CPMS are summarized below.

Table 7.1 – CPMS Calibration Frequency and Calibration Acceptance Criteria

Measurement Type	Instrument Type	Calibration Frequency	Calibration Acceptance Criteria
Flow Meters (Wet Scrubbers, Dynamic Wet Scrubbers):	Yamatake Mag-flow meter	NA	Factory Calibrated
Pressure Drop Indicators (Wet Scrubbers, Dynamic Wet Scrubbers, Baghouses)	Rosemount Differential Pressure Transmitter, 0-25 in H ₂ O	Yearly	NA
Fan Amp Meters (Dynamic Wet Scrubbers)	Amp/hp meters	NA	NA
Opacity Meters (dry ESPs)	Durag DR290 Opacity Monitor	Daily (Zero and Span)	CD less than 4x
	Durag DR290 Opacity Monitor	Quarterly (Performance Evaluation)	See 40 CFR Part 60 Appendix B PS-1
	Durag DR290 Opacity Monitor	Annually (Zero Alignment)	Re-align meter

Reporting

The facility provides semiannual and annual compliance reports, quarterly COM calibration and certification audit reports, and startup, shutdown, and malfunction reports. Tilden submits the Taconite MACT semiannual report through CEDRI, but MACT deviations or a statement that there were no deviations also needs to be reported in the ROP certification reports that are submitted hard copy to the AQD District Office.

Other Requirements

Tilden has an Operation and Maintenance (O&M) Plan (Rev. November 2021) that addresses the requirements in 40 CFR 63.9600(b). However, the plan does not provide sufficient detail in the preventative maintenance for each control device including items to be maintained and inspected along with the frequency. The corrective action procedures do not align with the MACT requirements for which action is to immediately occur when an operating limit is exceeded. The Good Combustion Practices for each induration furnace do not provide a minimum combustion temperature and a maximum carbon monoxide concentration for the burners. In addition, performance parameters for the induration units are not specified. These items will need to be addressed in a revised plan to meet the requirements of 40 CFR 63.9600(b).

Tilden has a fugitive dust plan (Rev. 4/28/2021), as required by the Taconite MACT, for stockpiles, pellet loading areas, material transfer points, plant roadways and yard areas, tailings basin, and

mining areas. The plan notes control measures, inspections, preventative measures, corrective actions, and maintaining records for each of the fugitive dust sources.

FGBOILERS6-7

Kewaunee Boilers 6 and 7 (FGBOILERS6-7) are located at the Pit Service Building. Each boiler is rated at 19.46 million BTU per hour. The boilers are capable of burning natural gas, No. 2 fuel oil and/or used oil fuel. These boilers were not covered during this inspection.

Monitoring/Recordkeeping

No used oil or No.2 fuel oil was fired in FGBOILER6-7 during 2022. The last time used oil was fired in FGBOILERS6-7 was in 2014. A tune-up was last conducted on Boiler 6 and 7 on 06/08/22, 07/28/22, 08/17/22, and 08/30/22.

Compliance

Based on the inspection performed and records reviewed, Tilden appears to be in compliance with MI-ROP-B4885-2017b. It was conveyed to the facility that no violations were observed during the inspection.

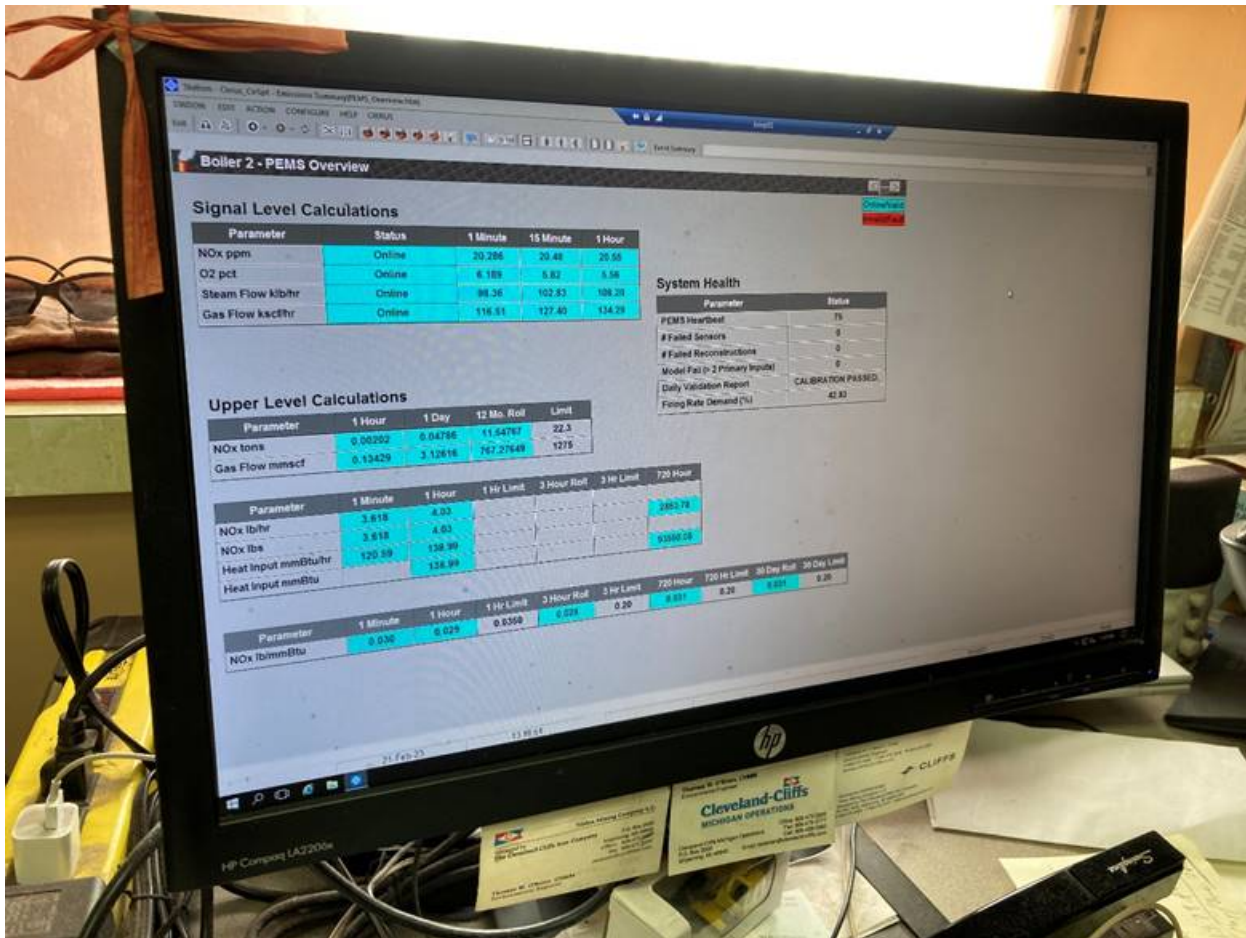
Tilden will need to begin submitting CAM excursion and monitor downtime reports as part of the semiannual reporting requirements, even with Taconite MACT monitoring being used as PAM. These requirements are specified in 40 CFR 64.9(a)(2)(i) and 40 CFR 64.9(a)(2)(ii). Also, as discussed above under FGTACTIONEMACT, the O&M Plan will need to be revised to include all requirements of 40 CFR 63.9600(b). In addition, the excess emission reports for EUKILN1 NOx CEMS should follow the requirements in Appendix 3 of MI-ROP-B4885-2017b for reporting excess emissions above 2,270 lbs/hr based on a 30-day rolling average.

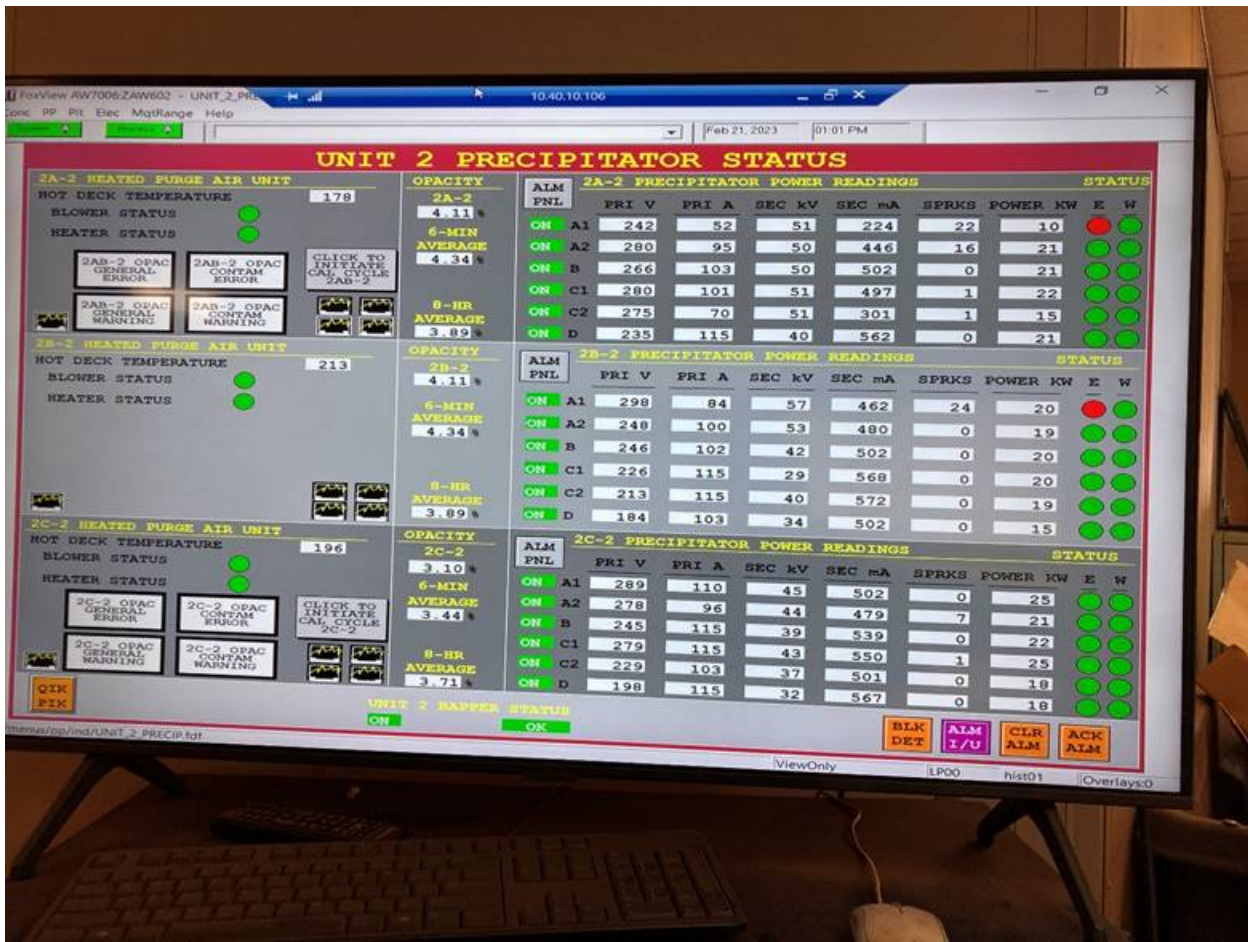
Tilden Mine 40 CFR Part 63 Subpart RRRRR Taconite MACT Parametric Limits

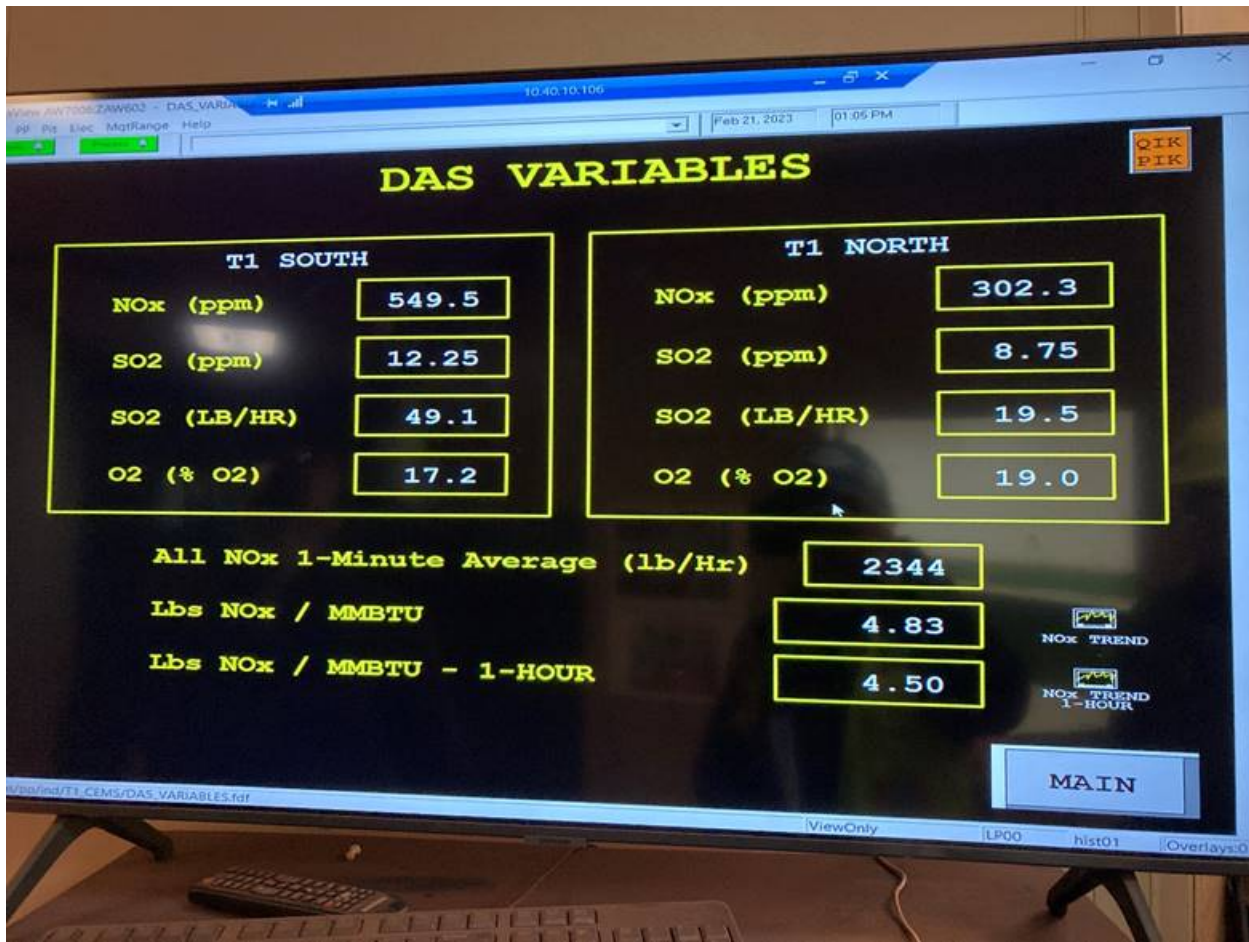
Unit Description	Parameter Monitored	Parameter Limit	Limit Setting Date
EU Conveyor 14 to 15 to 16 transfer points	differential pressure	>= 3.60 in H2O	04/19/07
EU Conveyor 14 to 15 to 16 transfer points	water flow	>= 12.50 gpm	04/19/07
EU Conveyor 15.8 to 15.9 transfer point	differential pressure	>= 0.07 in H2O	07/19/12
EU Conveyor 15.8 to 15.9 transfer point	water flow	>= 18.50 gpm	07/19/12
EU Conveyor 15.9 to 16.1 transfer point	differential pressure	>= 0.07 in H2O	07/19/12
EU Conveyor 15.9 to 16.1 transfer point	water flow	>= 19.00 gpm	07/19/12
EU Conveyor 16.1 to 17.1 transfer point	differential pressure	>= 2.00 in H2O	07/18/12
EU Conveyor 16.1 to 17.1 transfer point	water flow	>= 10.50 gpm	07/18/12
EU Conveyor 17.1 to 17.2 transfer point	differential pressure	>= 5.40 in H2O	03/23/16
EU Conveyor 17.1 to 17.2 transfer point	water flow	>= 28.80 gpm	03/23/16
EU Conveyor 19 and 19A to 17 transfer points	differential pressure	>= 3.70 in H2O	04/24/07
EU Conveyor 19 and 19A to 17 transfer points	water flow	>= 19.0 gpm	04/24/07
EU Conveyor 13 to 17.1 transfer point	differential pressure	>= 3.60 in H2O	04/19/07
EU Conveyor 13 to 17.1 transfer point	water flow	>= 12.50 gpm	04/19/07
EU Conveyor 15 to 15.1 transfer point	differential pressure	>= 1.10 in H2O	07/18/12
EU Conveyor 15 to 15.1 transfer point	water flow	>= 12.0 gpm	07/18/12
EU Conveyor 1 to 2 transfer point	differential pressure	>= 4.00 in H2O	03/08/07
EU Conveyor 1 to 2 transfer point	water flow	>= 20.0 gpm	03/08/07
EU Conveyor 12A to 13 transfer point	differential pressure	>= 3.00 in H2O	07/19/12
EU Conveyor 12A to 13 transfer point	water flow	>= 6.50 gpm	07/19/12
EU Conveyor 12B to 13 transfer point	differential pressure	>= 5.80 in H2O	03/14/07
EU Conveyor 12B to 13 transfer point	water flow	>= 9.0 gpm	03/14/07
EU Conveyor 4A to 4A1 transfer point	differential pressure	>= 5.50 in H2O	07/17/12
EU Conveyor 4A to 4A1 transfer point	water flow	>= 16.0 gpm	07/17/12
EU Conveyor 4B to 4C transfer point	differential pressure	>= 4.70 in H2O	07/17/12
EU Conveyor 4B to 4C transfer point	water flow	>= 31.50 gpm	07/17/12
EU Conveyor 4C to 4D transfer point	differential pressure	>= 5.40 in H2O	07/17/12
EU Conveyor 4C to 4D transfer point	water flow	>= 10.0 gpm	07/17/12
EU U1 Feedmixer bentonite blenders	differential pressure	>= 4.30 in H2O	05/02/12
EU U1 Feedmixer bentonite blenders	water flow	>= 33.0 gpm	05/02/12
EU U2 Feedmixer bentonite blenders	differential pressure	>= 4.30 in H2O	05/02/12
EU U2 Feedmixer bentonite blenders	water flow	>= 33.0 gpm	05/02/12
EU Primary Ore Crusher	differential pressure	>= 0.50 in H2O	03/08/07
EU Primary Ore Crusher	water flow	>= 66.50 gpm	03/08/07
EU Conveyor 19 and 19A to 19B and screen transfer points	differential pressure	>= 4.30 in H2O	05/02/12
EU Conveyor 19 and 19A to 19B and screen transfer points	water flow	>= 33.0 gpm	05/02/12
EU U1 Cooler Discharge	differential pressure	>= 4.90 in H2O	05/03/12
EU U1 Cooler Discharge	water flow	>= 77.0 gpm	05/03/12
EU U2 Cooler Discharge	differential pressure	>= 4.90 in H2O	05/03/12
EU U2 Cooler Discharge	water flow	>= 77.0 gpm	05/03/12
EU U1 Transfertower conveyor transfer point	differential pressure	>= 4.30 in H2O	05/02/12
EU U1 Transfertower conveyor transfer point	water flow	>= 33.0 gpm	05/02/12
EU U2 Transfertower conveyor transfer point	differential pressure	>= 4.30 in H2O	05/02/12
EU U2 Transfertower conveyor transfer point	water flow	>= 33.0 gpm	05/02/12
EU U1 Low Head Feeder	differential pressure	>= 7.40 in H2O	05/03/12
EU U1 Low Head Feeder	water flow	>= 30.0 gpm	05/03/12
EU U2 Low Head Feeder	differential pressure	>= 7.40 in H2O	05/03/12
EU U2 Low Head Feeder	water flow	>= 30.0 gpm	05/03/12
EU U2 Product conveyors transfer points	differential pressure	>= 6.20 in H2O	06/07/12
EU U2 Product conveyors transfer points	water flow	>= 21.50 gpm	06/07/12

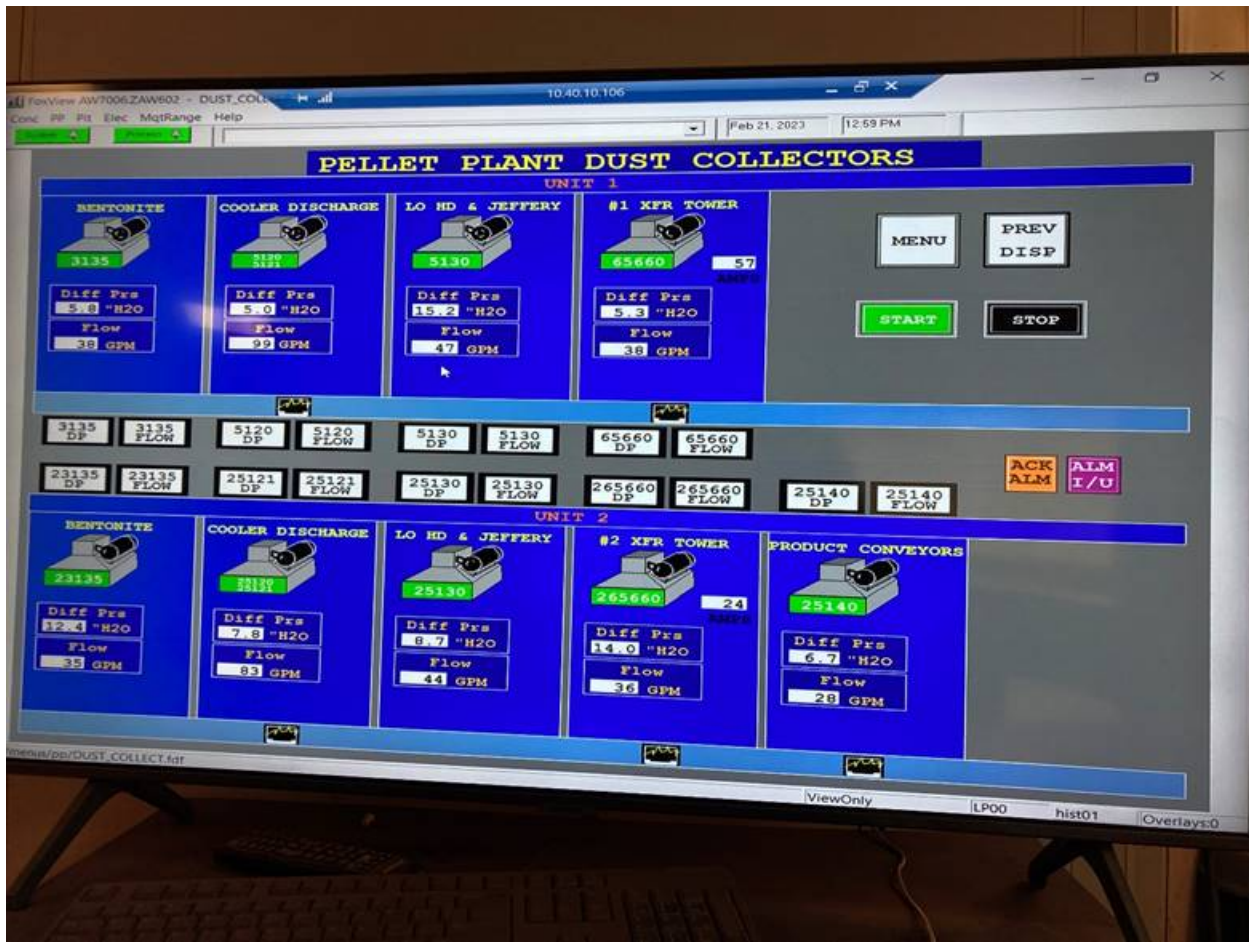
Tilden Mine 40 CFR Part 63 Subpart RRRRR Taconite MACT Parametric Limits

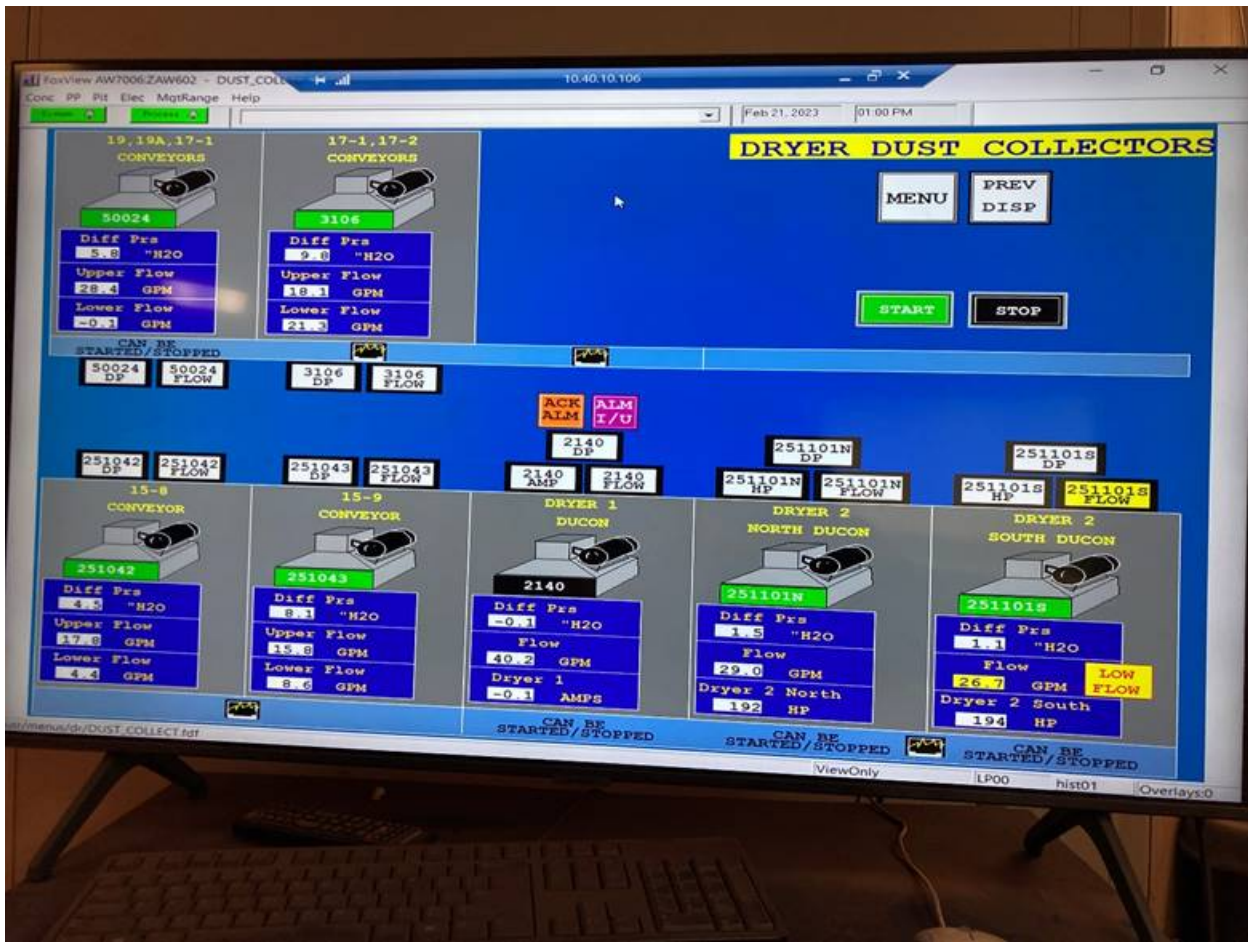
Unit Description	Parameter Monitored	Parameter Limit	Limit Setting Date
EU Oredryer 1	current	>114 Amp	02/14/22
EU Oredryer 1	water flow	>= 34.80 gpm	02/14/11
EU Oredryer 2 North Stack	current	>10 Amp	01/27/22
EU Oredryer 2 North Stack	water flow	>= 26.70 gpm	12/15/11
EU Oredryer 2 South Stack	current	>10 Amp	01/27/22
EU Oredryer 2 South Stack	water flow	>= 26.90 gpm	12/15/11
EU Grate Kiln Induration Unit 1 North Stack Producing Hematite	Opacity	<= 7.10%	03/27/07
EU Grate Kiln Induration Unit 1 South Stack Producing Hematite	Opacity	<= 8.37%	03/27/07
EU Grate Kiln Induration Unit 2 North Stack Producing Hematite	Opacity	<= 10.91%	03/28/07
EU Grate Kiln Induration Unit 2 South Stack Producing Hematite	Opacity	<= 7.98%	03/28/07
EU Grate Kiln Induration Unit 1 North Stack Producing Magnetite	Opacity	<= 3.03%	02/08/07
EU Grate Kiln Induration Unit 1 South Stack Producing Magnetite	Opacity	<= 2.88%	02/08/07
EU Grate Kiln Induration Unit 2 North Stack Producing Magnetite	Opacity	<= 4.97%	02/07/07
EU Grate Kiln Induration Unit 2 South Stack Producing Magnetite	Opacity	<= 2.38%	02/07/07

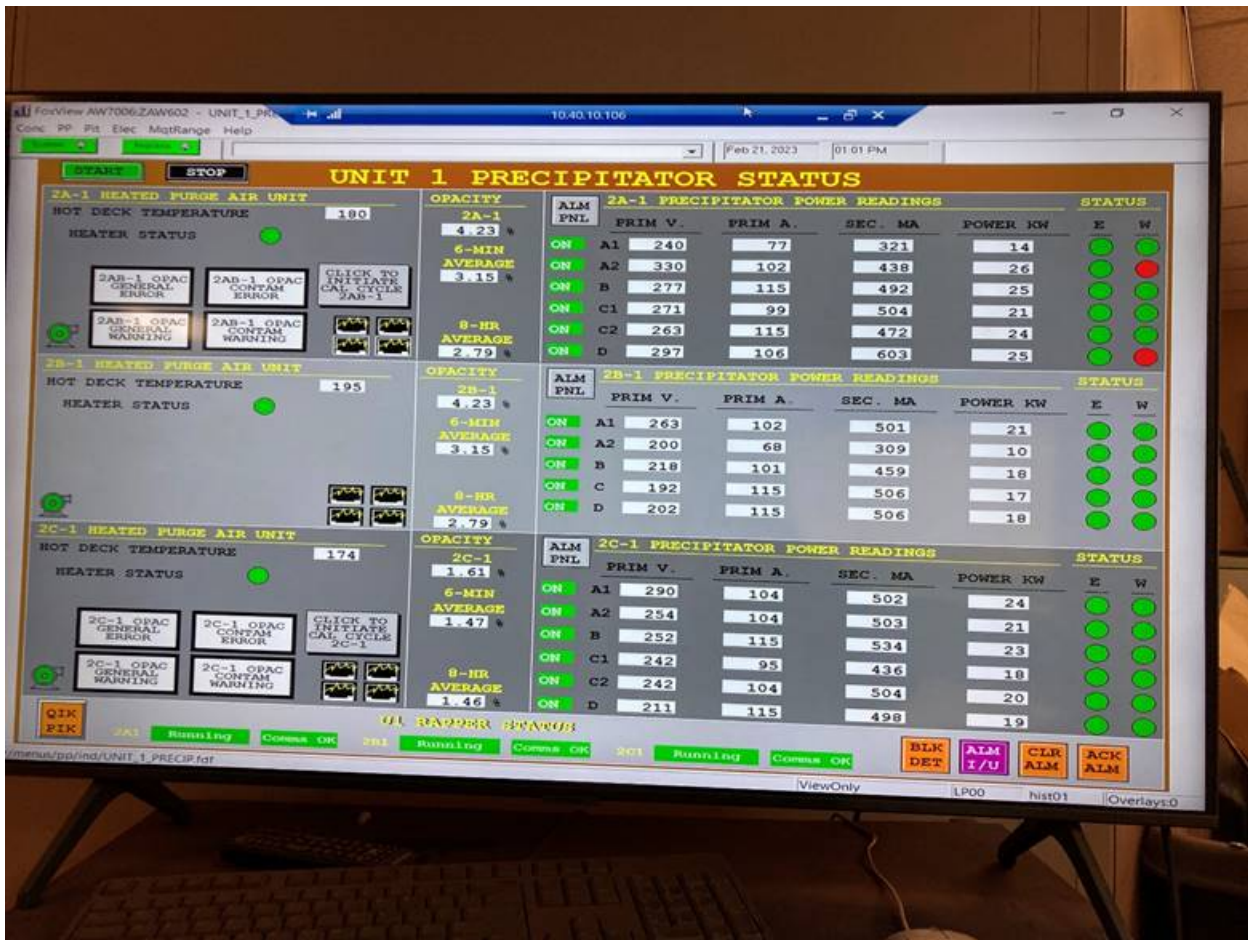


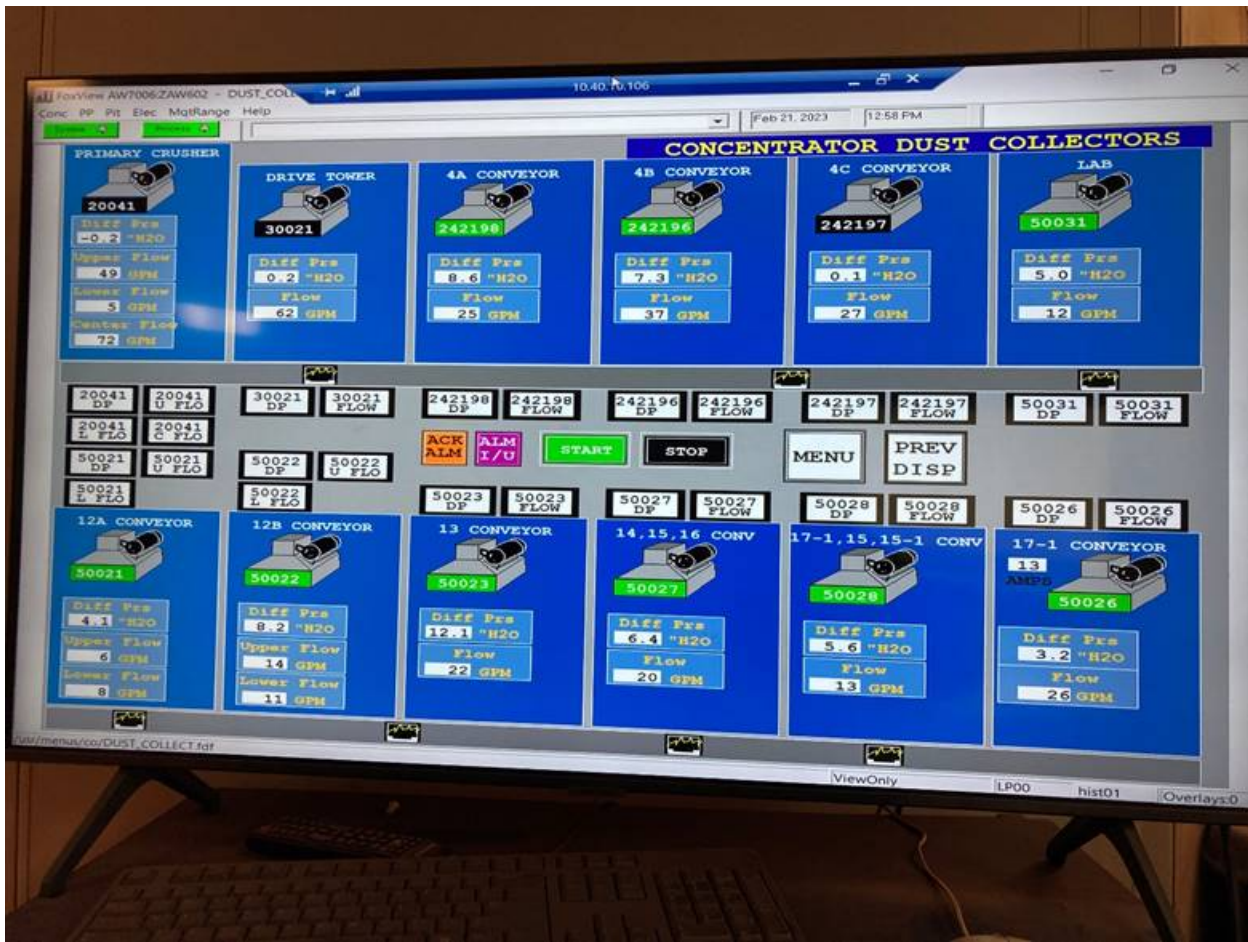














NAM Michael Kaplan

DATE 05/31/23

SUPERVISOR Michael Kaplan