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6560-50-P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 52

[EPA-R05-OAR-2015-0196; FRL-9934-15-Region 5]

Air Plan Approval; Minnesota and Michigan; Revision to Taconite Federal Implementation Plan

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: The Environmental Protection Agency (EPA) is proposing revisions to a Federal implementation plan (FIP) addressing the requirement for best available retrofit technology (BART) for taconite plants in Minnesota and Michigan. In response to petitions for reconsideration, we are proposing to revise the nitrogen oxides (NO_X) limits for taconite furnaces at facilities owned and operated by Cliffs Natural Resources (Cliffs) and ArcelorMittal USA LLC (ArcelorMittal). We are also proposing to revise the sulfur dioxide (SO_2) requirements at two of Cliffs' facilities. We are proposing these changes because new information has come to light that was not available when we originally promulgated the FIP on February 6, 2013.

DATES: Comments must be received on or before **[insert date 30 days after the date of publication in the Federal Register]**.

ADDRESSES: Submit your comments, identified by Docket ID No. EPA-R05-OAR-2015-0196, by one of the following methods:

1. www.regulations.gov: Follow the on-line instructions for submitting comments.

2. E-mail: aburano.douglas@epa.gov.

3. Fax: (312)408-2279.

4. Mail: Douglas Aburano, Chief, Attainment Planning and Maintenance Section, Air Programs Branch (AR-18J), U.S. Environmental Protection Agency, 77 West Jackson Boulevard, Chicago, Illinois 60604.

5. Hand Delivery: Douglas Aburano, Chief, Attainment Planning and Maintenance Section, Air Programs Branch (AR-18J), U.S. Environmental Protection Agency, 77 West Jackson Boulevard, Chicago, Illinois 60604. Such deliveries are only accepted during the Regional Office normal hours of operation, and special arrangements should be made for deliveries of boxed information. The Regional Office official hours of business are Monday through Friday, 8:30 a.m. to 4:30 p.m., excluding Federal holidays.

Instructions: Direct your comments to Docket ID Nos.EPA-R05-OAR-2015-0196. EPA's policy is that all comments received will be included in the public docket without change and may be made available online at www.regulations.gov, including any personal

information provided, unless the comment includes information claimed to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Do not submit information that you consider to be CBI or otherwise protected through www.regulations.gov or e-mail. The www.regulations.gov website is an "anonymous access" system, which means EPA will not know your identity or contact information unless you provide it in the body of your comment. If you send an e-mail comment directly to EPA without going through www.regulations.gov your e-mail address will be automatically captured and included as part of the comment that is placed in the public docket and made available on the Internet. If you submit an electronic comment, EPA recommends that you include your name and other contact information in the body of your comment and with any disk or CD-ROM you submit. If EPA cannot read your comment due to technical difficulties and cannot contact you for clarification, EPA may not be able to consider your comment. Electronic files should avoid the use of special characters, any form of encryption, and be free of any defects or viruses. For additional instructions on submitting comments, go to Section I of the SUPPLEMENTARY INFORMATION section of this document.

Docket: All documents in the docket are listed in the www.regulations.gov index. Although listed in the index, some information is not publicly available, *e.g.*, CBI or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, will be publicly available only in hard copy. Publicly available docket materials are available either electronically in www.regulations.gov or in hard copy at the Environmental Protection Agency, Region 5, Air and Radiation Division, 77 West Jackson Boulevard, Chicago, Illinois 60604. This facility is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding Federal holidays. We recommend that you telephone Steven Rosenthal at (312) 886-6052 before visiting the Region 5 office.

FOR FURTHER INFORMATION CONTACT: Steven Rosenthal, Environmental Engineer, Attainment Planning & Maintenance Section, Air Programs Branch (AR-18J), U.S. Environmental Protection Agency, Region 5, 77 West Jackson Boulevard, Chicago, Illinois 60604, (312) 886-6052, rosenthal.steven@epa.gov.

SUPPLEMENTARY INFORMATION: Throughout this document whenever "we," "us," or "our" is used, we mean EPA. This notice is arranged as follows:

I. What Should I Consider as I Prepare My Comments for EPA?

When submitting comments, remember to:

1. Identify the rulemaking by docket number and other identifying information (subject heading, Federal Register date, and page number).

2. Follow directions - The EPA may ask you to respond to specific questions or organize comments by referencing a Code of Federal Regulations (CFR) part or section number.

3. Explain why you agree or disagree; suggest alternatives and substitute language for your requested changes.

4. Describe any assumptions and provide any technical information and/or data that you used.

5. If you estimate potential costs or burdens, explain how you arrived at your estimate in sufficient detail to allow for it to be reproduced.

6. Provide specific examples to illustrate your concerns, and suggest alternatives.

7. Explain your views as clearly as possible, avoiding the use of profanity or personal threats.

8. Make sure to submit your comments by the comment period deadline identified.

II. What Action Is EPA Taking?

On February 6, 2013, EPA promulgated a FIP that included BART limits for certain taconite furnaces in Minnesota and Michigan (2013 Taconite FIP; 78 FR 8706). EPA is proposing to revise the 2013 Taconite FIP with respect to the BART emission limitations and compliance schedules for the following taconite plants: United Taconite, Hibbing Taconite, Tilden Mining, and ArcelorMittal Minorca Mine. Cliffs is the owner and operator of the United Taconite and Tilden Mining facilities and part owner and operator of Hibbing Taconite. ArcelorMittal is the owner and operator of the Minorca Mine facility and a part owner of the Hibbing Taconite facility. Specifically, EPA is proposing to revise the NO_X limits and compliance schedules for these four facilities and is also proposing to revise the SO_2 requirements for Tilden Mining and United Taconite.

III. Background

A. Requirements of the Clean Air Act and EPA's Regional Haze Rule

In section 169A of the 1977 Amendments to the Clean Air Act (CAA), Congress created a program for protecting visibility in the nation's national parks and wilderness areas. This section of the CAA establishes as a national goal the "prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class I Federal areas[1] which impairment results from manmade air pollution." Congress added section 169B to the CAA in 1990 to address regional haze issues. EPA promulgated a rule to address regional haze on July 1, 1999. 64 FR 35714 (July 1, 1999), codified at 40 CFR part 51, subpart P (herein after referred to as the "Regional haze Rule"). The Regional Haze Rule revised the existing visibility regulations to add provisions addressing regional haze impairment and established a comprehensive visibility protection program for Class I areas. The requirements for regional haze, found at 40

[1] Areas designated as mandatory Class I Federal areas consist of national parks exceeding 6000 acres, wilderness areas and national memorial parks exceeding 5000 acres, and all international parks that were in existence on August 7, 1977. 42 U.S.C. 7472(a). In accordance with section 169A of the CAA, EPA, in consultation with the Department of Interior, promulgated a list of 156 areas where visibility is identified as an important value. 44 FR 69122 (November 30, 1979). The extent of a mandatory Class I area includes subsequent changes in boundaries, such as park expansions. 42 U.S.C. 7472(a). Although states and tribes may designate as Class I additional areas which they consider to have visibility as an important value, the requirements of the visibility program set forth in section 169A of the CAA apply only to ''mandatory Class I Federal areas." Each mandatory Class I Federal area is the responsibility of a ''Federal Land Manager.'' 42 U.S.C. 7602(i). When we use the term "Class I area" in this action, we mean a "mandatory Class I Federal area."

CFR 51.308 and 51.309, are included in EPA's visibility protection regulations at 40 CFR 51.300-309.

B. Best Available Retrofit Technology (BART)

Section 169A of the CAA directs states, or EPA if developing a FIP, to evaluate the use of retrofit controls at certain larger, often uncontrolled, older stationary sources in order to address visibility impacts from these sources. Specifically, section 169A(b)(2)(A) of the CAA requires EPA to develop a FIP that contains such measures as may be necessary to make reasonable progress toward the natural visibility goal, including a requirement that certain categories of existing major stationary sources[2] built between 1962 and 1977 procure, install, and operate the "Best Available Retrofit Technology" as determined by EPA. Under the Regional Haze Rule, states (or in the case of a FIP, EPA) are directed to conduct BART determinations for such "BART-eligible" sources that may reasonably be anticipated to cause or contribute to any visibility impairment in a Class I area.

On July 6, 2005, EPA published the *Guidelines for BART Determinations Under the Regional Haze Rule* at appendix Y to 40 CFR part 51 (hereinafter referred to as the "BART Guidelines")

[2] The set of "major stationary sources" potentially subject to BART is listed in CAA section 169A(g)(7), and includes "taconite ore processing facilities."

to assist states and EPA in determining which sources should be subject to the BART requirements and in determining appropriate emission limits for each applicable source. 70 FR 39104.

The process of establishing BART emission limitations follows three steps: first, identify those sources which meet the definition of "BART-eligible source" set forth in 40 CFR 51.301;[3] second, determine which of these sources "emits any air pollutant which may reasonably be anticipated to cause or contribute to any impairment of visibility in any such area" (a source which fits this description is "subject to BART"); and third, for each source subject to BART, identify the best available type and level of control for reducing emissions.

States, or EPA if developing a FIP, must address all visibility-impairing pollutants emitted by a source in the BART determination process. The most significant visibility impairing pollutants are SO_2, NO_X, and particulate matter (PM).

A state implementation plan (SIP) or FIP addressing regional haze must include source-specific BART emission limits and compliance schedules for each source subject to BART. Once a state or EPA has made a BART determination, the BART controls

[3] BART-eligible sources are those sources that have the potential to emit 250 tons or more of a visibility-impairing air pollutant, were not in operation prior to August 7, 1962, but were in existence on August 7, 1977, and whose operations fall within one or more of 26 specifically listed source categories. 40 CFR 51.301.

must be installed and operated as expeditiously as practicable, but no later than five years after the date of the final SIP or FIP. *See* CAA section 169A(g)(4) and 40 CFR 51.308(e)(1)(iv). In addition to what is required by the Regional Haze Rule, general SIP requirements mandate that the SIP or FIP include all regulatory requirements related to monitoring, recordkeeping, and reporting for the BART controls on the source. *See* CAA section 110(a).

C. Regulatory and Legal History of the 2013 Taconite FIP

On February 6, 2013, EPA promulgated a FIP (78 FR 8706) that included BART limits for taconite furnaces subject to BART in Minnesota and Michigan. EPA took this action because Minnesota and Michigan had failed to meet a statutory deadline to submit their Regional Haze SIPs and subsequently failed to require BART at the taconite facilities. Cliffs, ArcelorMittal, and the State of Michigan petitioned the Eighth Circuit Court of Appeals for review of the FIP, and, on May 17, 2013, Cliffs and ArcelorMittal filed a joint motion for stay of the final rule, which was granted by the Eighth Circuit on June 14, 2013, and is still in effect.

EPA received petitions for reconsideration of the 2013 Taconite FIP from the National Mining Association on March 8, 2013, ArcelorMittal on March 22, 2013, the State of Michigan on

April 1, 2013, Cliffs on April 3, 2013, Congressman Richard M. Nolan on April 8, 2013, the State of Minnesota on April 8, 2013, and United States Steel Corporation (U.S. Steel) on November 26, 2013.

In a related action, EPA published a final partial disapproval of the Michigan and Minnesota Regional Haze SIPs on September 30, 2013 (78 FR 59825), for failure to require BART for SO_2 and NO_X emissions from taconite furnaces subject to BART. By petitions dated November 26, 2013, Cliffs and U.S. Steel petitioned EPA pursuant to section 307(d)(7)(B) of the CAA for reconsideration of EPA's partial disapproval of the Michigan and Minnesota Regional Haze SIPs. Further, Cliffs, ArcelorMittal, Michigan and U.S. Steel petitioned the Eight Circuit Court of Appeals for review of the final rule partially disapproving the Michigan and Minnesota Regional Haze SIPs.

EPA subsequently reached a settlement agreement with Cliffs, ArcelorMittal, and Michigan regarding issues raised by these parties in their petitions for review and reconsideration. Notice of the settlement was published in the *Federal Register* on January 30, 2015 (80 FR 5111), and the settlement agreement was fully executed on April 9, 2015. Pursuant to the settlement agreement, EPA granted partial reconsideration of the 2013 Taconite FIP on July 2, 2015, based on new information raised in

Cliffs, ArcelorMittal, and Michigan's petitions for reconsideration. EPA did not grant reconsideration of the 2013 SIP disapprovals because EPA continues to believe that BART for taconite plants involves significant reductions of NO_X and SO_2 emissions that were not required in the Michigan and Minnesota SIPs.

IV. Petitions for Reconsideration of 2013 Taconite FIP

A. Summary of Petitions for Reconsideration

1. National Mining Association petitioned for reconsideration because EPA promulgated the 2013 FIP before finalizing its disapproval of the Michigan and Minnesota regional haze SIPs.

2. Michigan Department of Environmental Quality (MDEQ) petitioned for reconsideration because, in its view: (1) there was no information available prior to the close of Michigan's public comment period on June 23, 2010, indicating that low NO_X burners (LNBs) had been successfully utilized on indurating furnaces; (2) the FIP schedule for compliance did not provide sufficient time for the permitting process necessary for the installation of the LNBs; and (3) EPA had not followed proper procedure by finalizing the FIP for Tilden while at the same time asking for additional comment on the SIP disapproval for Tilden.

3. Congressman Richard M. Nolan petitioned for reconsideration

because, in his view: (1) new information came to his attention concerning the accuracy of EPA's visibility modeling; (2) the feasibility of LNB technology was not established at the time EPA intervened in the process; and (3) it was doubtful that LNBs could be successfully installed and operated in the 26 months called for in the FIP.

4. Minnesota Pollution Control Agency (MPCA) petitioned for reconsideration of the compliance schedules in the FIP and asked for a 10-month extension of the compliance deadlines for affected facilities with more than one affected process line to provide adequate time for MPCA to issue the required air quality permits.

5. Cliffs petitioned for reconsideration because of perceived procedural defects in EPA's decision to issue the FIP rule while it was simultaneously evaluating Minnesota and Michigan's SIPs. Cliffs also raised technical issues based on new information not available at the time EPA promulgated the 2013 FIP. These technical issues included the following: (a) the FIP imposed a new 0.60% sulfur limit on coal combusted at United Taconite that was not proposed and was inappropriate because it would require the use of a new type of coal that the facility is not designed to handle, (b) the 2013 FIP restricts Tilden to combusting natural gas instead of coal, and (c) installation of LNBs will

require a minimum of 34 months for the first straight-grate furnace and a minimum of 39 months for the first grate kiln furnace, instead of the 26 months provided in the original 2013 FIP compliance schedule. Cliffs also provided additional evidence that, in its view, indicates that installation and operation of LNBs would be more costly and would require more time to install than EPA estimated, including (1) estimates by furnace engineers and burner manufacturers that LNB capital costs for Cliffs' furnaces will be a minimum of 4-5 times higher than EPA's Minntac-based cost estimate,(2) estimates by Cliffs' furnace designer, Metso Minerals (Metso), and burner manufacturer, Fives North America (Fives), that there would be an energy penalty of 20-40% while operating the LNBs, and (3) an analysis by Metso indicating that Cliffs would lose approximately $195 million in production costs across its six lines because installing LNB cannot be accomplished within normal annual outage time and will also impair production during the shakedown period after installation.

6. ArcelorMittal petitioned for reconsideration because of perceived procedural defects in EPA's decision to finalize the 2013 Taconite FIP while still working to evaluate Minnesota's SIP. ArcelorMittal claimed that EPA can only issue a FIP after it has fully and properly evaluated the SIP, found it to be

deficient, and provided a reasonable opportunity for the state to address EPA's concerns. ArcelorMittal also raised the following technical issues in the attachment to its petition for reconsideration: (1) the costs of LNBs, (2) the lack of any existing straight-grate furnaces with LNB technology and the resulting unwillingness of vendors to provide performance guarantees, (3) significant production losses because of the downtime resulting from installation and adjustment of LNBs at Hibbing, and (4) energy penalties due to the need for 25% more natural gas at Hibbing and 10% to 20% more natural gas at Minorca to operate the LNBs.

7. U.S. Steel petitioned for reconsideration because it had obtained new information showing that variations in kiln configuration may have a substantial impact on the cost and performance of LNBs installed on grate-kiln furnaces. In its November 26, 2013 petition for reconsideration of the September 30, 2013 partial disapproval of the Michigan and Minnesota regional haze SIPs, Cliffs referenced U.S. Steel's petition for reconsideration in which it cited concerns related to the high costs and energy penalties associated with the installation of LNBs, as well as pellet quality issues.

B. Issues for Which EPA Has Granted Reconsideration

EPA believes that the new information contained in the

petitions for reconsideration, as well as other supporting information provided by Cliffs, represents significant new information that warrants reconsideration of many of the emission limits that EPA promulgated for the taconite facilities in 2013. As a result, on July 2, 2015, EPA sent letters to Cliffs, ArcelorMittal, and Michigan granting portions of their petitions for reconsideration. Specifically, EPA is granting reconsideration, pursuant to section 307(d)(7)(b) of the CAA, of the NO_X and SO_2 emission limits for the grate-kiln furnaces and the NO_X emission limits for the straight-grate furnaces listed in the following table.

State	Facility - Owner	Unit(s)	Pollutant(s)
Minnesota	United Taconite - Cliffs	Grate-Kiln Lines 1 and 2	NO_X and SO_2
Minnesota	Minora Mine - ArcelorMittal	Straight-Grate Line 1	NO_X
Minnesota	Hibbing Taconite – Cliffs (operator and part owner) ArcelorMittal (part owner) U.S. Steel (part owner)	Straight-Grate Lines 1-3	NO_X
Michigan	Tilden Mining - Cliffs	Grate-Kiln Line 1	NO_X and SO_2

The U.S. taconite iron ore industry uses two types of pelletizing machines or processes: straight-grate kilns and

grate-kilns. In a straight-grate kiln, a continuous bed of agglomerated green pellets is carried through different temperature zones with upward draft or downward draft blown through the pellets on the metal grate. The grate-kiln system consists of a traveling grate, a rotary kiln, and an annular cooler. A significant difference between these designs is that straight-grate kilns do not burn coal and therefore have a much lower potential for emitting SO_2. Further, even within the same kiln type or process, individual (referred to as indurating or pelletizing) furnaces or processes have distinct equipment and process characteristics that may affect the compatibility and performance of certain types of burners. The differences between these kilns and processes form a key basis for the changes to the emissions limits proposed in this action.

EPA is not reconsidering all elements of its 2013 FIP. The 2013 FIP contains SO_2 and NO_X limits for U.S. Steel's Minntac and Keetac taconite furnaces in Minnesota. EPA has not granted U.S. Steel's petition and is not proposing any revisions of the BART limits for these U.S. Steel facilities at this time. Also, EPA is not reconsidering the NO_X limits at Cliffs' Northshore taconite plant because this facility is already complying with the 1.2 pounds per million Btu (lb/mmBtu) NO_X limit in the 2013

FIP. Finally, EPA is not reconsidering the SO_2 limits at the Hibbing, ArcelorMittal, or Northshore straight-grate furnaces.

V. EPA's Basis for Granting Reconsideration

The 2013 Taconite FIP established BART NO_x limits for all straight-grate and grate-kiln taconite furnaces. The limits are 1.2 lbs NO_X/MMBtu when burning natural gas and 1.5 lbs/MMBtu when burning a gas/coal mix. These limits were based upon the performance of high stoichiometric (high-stoich) LNBs[4] at two of U.S. Steel Minntac's grate-kilns. As explained in more detail below, we granted reconsideration of the NO_X limits for the United Taconite and Tilden grate-kilns, as well as for the Hibbing and ArcelorMittal straight-grate kilns, because information that became available after the close of the public comment period (September 28, 2012) suggests that the installation of high-stoich LNBs at these furnaces could lead to serious technical hurdles. In addition, we granted reconsideration of the SO_2 limits for the United Taconite and Tilden grate-kilns because of information that became available after the close of the public comment period regarding the inability of United Taconite to handle and burn very low sulfur coal and Tilden's intent to burn mixed fuels.

[4] Stoichiometry refers to the relationship between the actual quantity of combustion air to the theoretical minimum quantity of air needed for 100 percent combustion of the fuel.

In determining whether to grant reconsideration of certain provisions of the 2013 Taconite FIP, the requirements of section 307(d)(7)(B) of the CAA apply. Section 307(d)(7)(B) provides a two-step test to determine whether reconsideration should be granted. The petitioner must first show that it was impracticable to raise the comment or objection within the time period for public comment of the rule, or, that the grounds for the comment or objection arose after the period for public comment. Secondly, the petitioner must show that the comment or objection is of "central relevance to the outcome of the rule."

Cliffs and ArcelorMittal provided significant new information in their petitions for reconsideration and supplemental submittals directly relevant to the outcome of the 2013 Taconite FIP. The following discussion details the new information upon which EPA is relying to base reconsideration of the BART emission limits and compliance schedules for these facilities, and how the information meets the criteria of section 307(d)(7)(B) of the CAA.

A. United Taconite

1. NO_x Emission Limit

EPA determined the NO_x emission limits for BART in the 2013 Taconite FIP primarily from data arising from the installation of high-stoich LNBs at U.S. Steel Minntac's furnaces 6 and 7.

Although the United Taconite furnaces and the Minntac furnaces are all grate-kiln furnaces, Cliffs provided new information after the close of the comment period that described various differences between the furnaces. These differences included the structure of the kiln, the use of pre-heaters, and the types of ore and pellets processed. Cliffs indicated that because of these differences, the installation of high-stoich LNBs at United Taconite would likely result in the impairment of pellet quality and production, as well as increased fuel usage and emissions. Cliffs subsequently provided modeling analyses that detailed the impacts arising from the installation of high-stoich LNBs at United Taconite.

Cliffs submitted a declaration by Eric Wagner (of Metso) dated November 26, 2013, which describes the differences relevant to NO_X emissions between US Steel's Minntac furnaces 6 and 7, upon which the 2013 Taconite FIP NO_X limits were based, and Cliffs' grate-kiln furnaces at United Taconite. The declaration describes several differences that EPA believes are relevant to the development of BART NO_x emission limits. For example, whereas United Taconite uses a single large kiln burner, Minntac furnaces 6 and 7 operate preheat burners, which supply about one-third of the heat input from fuel, in addition to a large kiln burner. The smaller preheat burners at Minntac

achieve very low NO_X rates (0.1-0.3 lbs/MMBtu) due to a more favorable NO_X reduction combustion environment in the preheat zone as compared to the firing end of the kiln. Correspondingly, the lower NO_X emissions from the preheaters result in a lower combined NO_X emission rate than the emissions arising from a large single kiln LNB.

Another example in the declaration notes that the ore processed at the facilities is different, resulting in different heat values. U.S. Steel's Minntac facility processes an ore high in magnetite that contributes heat to the kiln when oxidized. Correspondingly, by processing high magnetite ore at Minntac furnaces 6 and 7, U.S. Steel is able to effectively use ported kilns to maximize the benefit of the ore. Ported kilns allow the introduction of additional air directly to the kilns which helps oxidize the high magnetite ore, and changes the heat balance of the furnace. In contrast, United Taconite processes ores with a lower concentration of magnetite than the ore processed at Minntac, and correspondingly, cannot effectively use ported kilns. Because ported kilns change the heat balance of the furnace, U.S Steel's experience with high-stoich LNBs at the Minntac furnaces may not be directly applicable to the United Taconite furnaces.

A final example from the declaration states that the application of high-stoich LNB technology at United Taconite would require additional air to reduce burner flame temperature, which would result in increased airflow through the grate drying section and increased pressure drop across the greenballs, which are the raw feed to the indurating furnace. This higher bed pressure would result in deformed pellets, reduced pellet quality, and lost production. Further, the increased air flow would also likely cause pellet breakage that would reduce production. The declaration notes that to avoid these impacts, United Taconite likely would have to limit the dryer section air flow and drying rate by reducing the amount of recovered heat from the cooler. However, any unrecovered heat would have to be replaced with additional heat from the burner, with corresponding increased fuel usage and emissions.

Subsequent to the submission of the declaration, Cliffs provided a modeling analysis that supported the information provided in the declaration. A report by Metso dated August 7, 2014, entitled "Technical Analysis for applying LNB technology to (United Taconite) UTAC Line 2 Grate-Kiln," provides a detailed analysis of expected impacts from using high-stoich LNBs on pellet quality, fuel usage, and emissions. Metso analyzed the effects of LNB technology on the United Taconite

Line 2 Grate-Kiln by using simulation modeling in which Metso compared Line 2's normal operating conditions, which result in the production of quality pellets, with simulations performed using high-stoich LNBs (which are the basis of the 2013 Taconite FIP limits). The report indicates that to maintain airflow, temperature, and pressures sufficient to minimize pellet quality issues would require a significant increase in fuel rates and corresponding emissions. Further, the use of high-stoich LNBs would result in decreased oxygen in the preheat zone gases from the kiln. The corresponding reduction in the oxidation heat on the grate would result in lower pellet temperatures at the point where the pellets leave the grate and enter the kiln. This would likely result in pellet breakage and a corresponding reduction in production.

Finally, Cliffs provided additional information to EPA in a July 28, 2014 meeting, which Cliffs summarized in an August 8, 2014 letter to EPA. The information provided included data comparing performance, costs, and fuel usage between high-stoich LNBs and low-stoich LNBs. Much of the information set forth in the August 8 letter is presented in section VI of this notice, pertaining to the NO_x BART analysis. In general, the information pertains to advantages of the low-stoich LNBs over the high-stoich LNBs.

The information provided by Cliffs in its petition for reconsideration and subsequent submittals arose from recent, time-consuming research and analysis that could not have been completed and made available during the public comment period. Therefore, Cliffs has met the first requirement of the criteria for reconsideration set forth at section 307(d)(7)(B) of the CAA. Significantly, the information that Cliffs provided is of central relevance to the outcome of the 2013 Taconite FIP. EPA extensively based its NO_x BART analysis on the results arising from the installation of high-stoich LNBs at U.S. Steel's Minntac furnaces 6 and 7. Step one of a BART analysis requires the identification of all available retrofit control technologies. Step two of a BART analysis requires the elimination of technically infeasible control technologies. The new information provided by Cliffs directly bears on the evaluation of the selection and feasibility of high-stoich LNBs for use in the grate-kiln indurating furnaces at the United Taconite facility. On this basis, we granted reconsideration of the NO_x determination for United Taconite (Lines 1 and 2) and for the corresponding emission limits and compliance schedule.

2. SO_2 Emission Limit

The 2013 Taconite FIP set a 0.60% sulfur limit on coal combusted at United Taconite. We promulgated this limit in

response to a proposal by Cliffs to use low sulfur fuel at United Taconite to decrease baseline SO_2 emissions. However, Cliffs did not have an opportunity to comment on the specific numeric stringency of the limit we promulgated. In other words, it was impracticable for Cliffs to comment on the final sulfur limit prior to the close of the public comment period.

In its petition for reconsideration, Cliffs also presented new information directly pertaining to the criteria for determining BART limits. Cliffs stated that the United Taconite facility had been designed to handle and burn eastern bituminous coal, not the low sulfur, western subbituminous coals from the Powder River Basin (PRB) that Cliffs would be required to use to meet the 0.60% sulfur content limit. For example, PRB coal is more prone to explosion and fire and has a lower heat value than eastern bituminous coal. These differences, among others, would require Cliffs to expend significant costs to change operations, address safety issues, and increase the amount of coal required to be burned to meet furnace and pellet temperature requirements.

The information that Cliffs presented pertains to the feasibility and costs of implementing the sulfur limit, which are criteria to be used in determining BART. Therefore, the information provided by Cliffs after the close of the comment

period is of central relevance to the outcome of the 2013 Taconite FIP. On this basis, we granted reconsideration of the 0.60% sulfur limit on coal combusted at United Taconite.

B. Tilden

1. NO_x Emission Limit

EPA determined the NO_x emission limits for BART in the 2013 Taconite FIP primarily from data arising from the installation of high-stoich LNBs at US Steel's Minntac furnaces 6 and 7. Although the Tilden furnace and the Minntac furnaces are all grate-kiln furnaces, Cliffs provided new information after the close of the comment period that described various differences between the furnaces. These differences included the structure of the kiln, the use of pre-heaters, and the ore and pellet types processed. Cliffs indicated that because of these differences, the installation of high-stoich LNBs at Tilden would likely result in the impairment of pellet quality and production, as well as increased fuel usage and emissions. Cliffs subsequently provided a modeling analysis that detailed the impacts arising from the installation of high-stoich LNBs at Tilden.

Cliffs submitted a declaration by Eric Wagner (of Metso) dated November 26, 2013, which describes the differences relevant to NO_X emissions between U.S. Steel's Minntac furnaces 6 and 7, upon which the 2013 Taconite FIP NO_X limits were based, and Cliffs' grate-kiln furnaces at Tilden. The declaration describes several differences that EPA believes are relevant to

the development of BART NO_x emission limits. For example, whereas Tilden uses a single large kiln burner, Minntac furnaces 6 and 7 operate preheat burners, which supply about one third of the heat input from fuel, in addition to a large kiln burner. The smaller preheat burners at Minntac achieve very low NO_X rates (0.1-0.3 lbs/MMBtu) due to a more favorable NO_X reduction combustion environment in the preheat zone as compared to the firing end of the kiln. Correspondingly, the lower NO_X emissions from the preheaters result in a lower combined NO_X emission rate than the emissions arising from a large single kiln LNB.

Another example in the declaration notes that the ore processed at the facilities is different, resulting in different heat values. U.S. Steel's Minntac facility processes an ore high in magnetite that contributes heat to the kiln when oxidized. Correspondingly, by processing high magnetite ore at Minntac furnaces 6 and 7, U.S. Steel is able to effectively use ported kilns to maximize the benefit of the ore. Ported kilns allow the introduction of additional air directly to the kilns, which helps oxidize the high magnetite ore and changes the heat balance of the furnace. In contrast, Tilden primarily processes hematite, which is not a source of heat for kilns. Correspondingly, Tilden cannot effectively use ported kilns. Because ported kilns change the heat balance of the furnace,

U.S. Steel's experience with high-stoich LNBs at the Minntac furnaces may not be directly applicable to the Tilden furnace.

A final example from the declaration states that the application of high-stoich LNB technology at Tilden would require additional air to reduce burner flame temperature, which would result in increased airflow through the grate drying section and increased pressure drop across the greenballs. This higher bed pressure would result in deformed pellets and reduced pellet quality. Further, the increased air flow would also likely cause pellet breakage which would reduce production. The declaration notes that to likely avoid these impacts, Tilden would have to limit the dryer section air flow and drying rate by reducing the amount of recovered heat from the cooler. However, any unrecovered heat would have to be replaced with additional heat from the burner, with corresponding increased fuel usage and emissions.

In addition to the submission of the November 26, 2013 declaration, Cliffs provided modeling and technical analyses that supported the comments made in the declaration. In reports prepared by Metso dated September 14, 2012, and January 13, 2015, Cliffs provided technical analyses for applying LNB technology to the Tilden Line 1 grate kiln through modeling simulations that compare current operations to operations using

high-stoich LNBs. Current operating conditions at Tilden 1 were simulated using such factors as existing air flow studies, operating parameters, and feed mineralogy. This baseline model was then modified to simulate LNB operating conditions. The current operating parameters and anticipated high-stoich LNB operating conditions were then compared.

High-stoich LNBs reduce NO_x emissions by introducing comparatively large amounts of cooler ambient air through the main burner. Less NO_x is produced at lower temperatures. The FIP NO_x limits were established based upon high-stoich LNBs operating with air flow at 100 percent of stoichiometric through the primary burner. Tilden currently operates with primary combustion air at 15.5 percent of stoichiometric, and Metso estimated that primary combustion air at 100 to 110 percent of the stoichiometric rate is required to meet the 2013 Taconite FIP limits. Metso performed three simulations in which it maintained peak pellet temperature and final product temperature. The total air supplied to the cooler was adjusted as needed to maintain final product temperature across all three simulations. These simulations were intended to isolate the effects of various process parameters when applying high-stoich LNB technology to Tilden 1.

The analysis indicated, among other things, that high-stoich LNB technology would alter the flame temperature profile, which may adversely affect pellet quality, and that the fuel usage rate would increase by approximately 25 to 35 percent. Further, higher temperatures and air flow rates through the grate would result in a 10 to 20 percent increase in exhaust gas volumes.

The Metso comparative analysis dated January 2015 applies current operating data to the high-stoich LNB design conditions, required for NO_X reduction, provided by COEN Company (COEN), a burner manufacturer, in its Final Report for Tilden Line 1. The engineering simulations held key process parameters constant, including pellet production rate, greenball moisture, bentonite, and flux rate. The total air supplied to the cooler was adjusted as needed to maintain final product temperature across all simulations. Maintaining these parameters ensures that fuel changes are not due to altered processing requirements.

The engineering simulations and comparisons reveal a number of significant operational and environmental impacts arising from the installation of a COEN high-stoich LNB. These impacts include a significant change to the use of primary and secondary cooling air, which will alter the cooling down cycle of pellets, create an imbalance between primary and secondary cooling, and

likely affect pellet quality. The volume of secondary cooling air exiting the cooler vent stack is projected to increase between 415 and 360 percent. This may adversely affect the process and pellet quality and also increase dust loading. Further, the increase in unheated primary combustion air to the burner will require an increase in fuel to replace the heat not used from heated secondary combustion air. It is expected that this will result in an increase in the fuel rate from between 21 to 28 percent. In addition, the high-stoich LNB will alter the flame temperature profile, which may affect pellet quality.

The information provided by Cliffs in its petition for reconsideration and subsequent submittals arose from recent, time-consuming research and analysis that could not have been completed and made available during the public comment period. Therefore, Cliffs has met the first requirement of the criteria for reconsideration set forth in section 307(d)(7)(B) of the CAA. Significantly, the information that Cliffs provided is of central relevance to the outcome of the 2013 Taconite FIP. EPA extensively based its NO_x BART analysis on the results arising from the installation of high-stoich LNBs at U.S. Steel's Minntac furnaces 6 and 7. Step one of a BART analysis requires the identification of all available retrofit control technologies. Step two of a BART analysis requires the

elimination of technically infeasible control technologies. The new information provided by Cliffs directly bears on the selection and feasibility of high-stoich LNBs for use in the grate-kiln indurating furnace at the Tilden facility. On this basis, we granted reconsideration of the NO_x determination for Tilden (grate-kiln line 1) and for the corresponding emission limits and compliance schedule.

2. SO_2 Emission Limit

The 2013 Taconite FIP required the Tilden grate-kiln Line 1 to burn 100% natural gas. However, although mentioned in discussions with Cliffs, this requirement had not been proposed before the final rule. Therefore, it was impracticable for Cliffs to comment on the final BART requirement to burn solely natural gas.

Cliffs more recent intent to burn mixed fuels at Tilden is new information that we did not consider in determining BART for Tilden. The burning of mixed fuels will significantly increase SO_2 emissions, resulting in Cliffs' inability to meet the BART limit. Therefore, the new information is of central relevance to the outcome of the 2013 Taconite FIP. On this basis, we granted reconsideration to the 2013 Taconite FIP requirement to burn only natural gas at the Tilden grate-kiln Line 1.

C. ArcelorMittal Minorca Mine and Hibbing Taconite: NO_x Limit

The 2013 Taconite FIP established NO_x emission limits for both grate-kiln and straight-grate kiln taconite furnaces. The limits that EPA developed were based solely upon the performance of high-stoich LNBs installed at two of U.S. Steel Minntac's grate-kilns. However, as explained above, there are significant differences between straight-grate kiln and grate-kiln furnaces that must be considered in setting emissions limits.

ArcelorMittal's Minorca taconite facility and the Hibbing taconite facility, which is jointly owned by Cliffs, ArcelorMittal, and U.S. Steel, operate straight-grate furnaces that are required to meet the 1.2 lbs NO_x/MMBT BART limit under the 2013 Taconite FIP. In the petitions for reconsideration submitted by ArcelorMittal and Cliffs, the petitioners provided new information directly bearing on the criteria used to establish BART NO_x limits. Their comments reflected similar issues to those that Cliffs presented in its analysis of grate-kiln furnaces at the United Taconite and Tilden facilities, including cost, increased fuel usage, the potential impact on production, and the feasibility of meeting the BART NO_x limit. Further, it is significant that at the time of promulgation of the 2013 Taconite FIP, no LNB had been installed on a straight grate furnace. Correspondingly, ArcelorMittal reported that

none of the vendors it had contacted were willing to guarantee the successful installation or operation of a LNB on a straight-grate furnace.

The information provided by ArcelorMittal and Cliffs in their petitions for reconsideration and subsequent submittals arose from recent, time-consuming research and analysis that was not and could not have been completed and made available during the public comment period. Therefore, they have met the first requirement of the criteria for reconsideration set forth at section 307(d)(7)(B) of the CAA. The new information provided by the petitioners directly addresses the costs and feasibility of LNB controls, which are criteria to be used in determining BART. The cost and feasibility of the LNB controls are of central relevance to the outcome of the 2013 Taconite FIP. On this basis, we granted reconsideration to the NO_x BART limits for straight grate taconite furnaces at the ArcelorMittal Minorca facility and the Hibbing facility.

VI. Basis for Proposed Revisions to 2013 Taconite FIP Requirements

A. Revised BART Determinations

i. United Taconite and Tilden Grate-Kilns – Five Step BART Evaluation for NO_x

1) Step 1: Identify All Available Retrofit Control Technologies

As discussed in the August 15, 2012 proposed FIP, the following control technologies were identified: external flue gas recirculation, low-NOx burners, induced flue gas recirculation burners, energy efficiency projects, ported kilns, and selective catalytic reduction (SCR). High-stoich and low-stoich low-NO_x burners were subsequently considered separately.

2) Step 2: Eliminate Technically Infeasible Options

External flue gas recirculation and induced flue gas recirculation burners were eliminated from consideration since they are technically infeasible for the specific application to pellet furnaces due to the high oxygen content of the flue gas. Energy efficiency projects were eliminated due to the difficulty of assigning a general potential emission reduction for this category. EPA agrees that SCR controls are infeasible for indurating furnaces based on two SCR vendors declining to bid on NO_x reduction testing at Minntac. The following three Metso reports provide detailed analyses of expected adverse impacts of using high-stoich LNBs, which are in use at U.S. Steel Minntac, on both pellet quality and increased fuel use: an August 7, 2014, report entitled "Technical Analysis for applying LNB technology to United Taconite Line 2 Grate-Kiln," a September 14, 2012 report titled "Technical Analysis for Appling LNB Technology to Tilden 1 Grate Kiln System," and a January 13, 2015 report titled "Technical Analysis for Tilden

Phase III Additional Simulations while Applying COEN LNB Technology." A summary of the results from these Metso reports is contained in an August 13, 2015 technical support document.

A mass emission rate comparison between high-stoich and low-stoich LNB options was presented by Metso, during a July 28, 2014 meeting between EPA and Cliffs and summarized in a subsequent August 8, 2014 letter to EPA. Metso's analysis compared the amount of NO_x that would be generated when a furnace is retrofitted with a high-stoich LNB and low-stoich staged combustion LNB options. This analysis demonstrated that although the lbs NO_x/MMBtu may be lower from a high-stoich burner, the high-stoich LNB will require more fuel (and BTUs) and result in higher NO_x emissions. A more detailed discussion of this analysis is contained in an August 13, 2015 technical support document.

The declaration by Eric Wagner (of Metso) dated November 26, 2013 consists mainly of a description of differences relevant to NO_X emissions between U.S. Steel's Minntac furnaces 6 and 7, upon which the 2013 Taconite FIP NO_X limits were based, and Cliffs' grate-kiln furnaces at Tilden and United Taconite. The declaration noted these differences:

- Minntac furnaces 6 and 7 operate preheat burners, which supply about one third of the heat input from fuel, in addition to the large kiln burner. United Taconite and Tilden use a

single kiln burner. These smaller preheat burners can achieve very low NO_X rates (0.1-0.3 lbs/MMBtu) due to a more favorable NO_X reduction combustion environment in the preheat zone as compared to the firing end of the kiln. These lower NO_X emissions produce a lower combined NO_X rate than from the large kiln LNB.

- Minntac furnaces 6 and 7 process high magnetite ore that contributes heat to the kiln when oxidized. Tilden's ores are primarily hematite, which is not a source of heat for the kilns, and United Taconite processes ores with a lower concentration of magnetite than Minntac. Therefore, Tilden and United Taconite's furnaces must add more fuel to achieve final product requirements than Minntac. The associated energy penalties are predicted to remain 25-45 percent for Cliffs' grate-kiln furnaces even after energy efficiency improvements at United Taconite and Tilden.

- Minntac furnaces 6 and 7 use ported kilns to maximize the benefit of their high magnetite ore bodies. Ported kilns allow the introduction of additional air directly to the kilns where it helps to oxidize the high magnetite ore that Minntac processes. United Taconite and Tilden do not use ported kilns because porting will not produce significant benefits for the type of ore they process. Ported kilns significantly change the

heat balance of the furnace, making it difficult to generalize from Minntac's experience.

- Minntac furnaces 6 and 7 are also unique because they produce high flux magnetite pellets. By contrast, United Taconite produces primarily standard (low flux) magnetite pellets, and Tilden produces high flux hematite pellets. Retrofitting a furnace with the Coen-type high-stoich LNB burner introduces more air, requires more fuel, and at different locations. As a result, the high-stoich LNB retrofit must be evaluated in the context of the unique furnace design for that specific pellet product from that specific ore type. The Minntac experience cannot therefore be generalized to other furnaces.

- The application of high-stoich LNB technology at Tilden and United Taconite would require additional air to reduce burner flame temperature, which would result in increased airflow through the grate drying section and increased pressure drop across the greenballs. This higher bed pressure would result in deformed pellets and reduced pellet quality. The increased air flow would also cause pellet breakage leading to decreased production. In order to maintain pellet quality and production rate, the overall dryer section air flow and drying rate must be limited by reducing the amount of recovered heat

from the cooler. This unrecovered heat must be replaced with additional burner fuel, further increasing fuel requirements.

EPA agrees with the results of the Metso reports and declaration and have therefore determined that high-stoich LNBs are technically infeasible for the United Taconite and Tilden grate-kilns. Low-stoich grate-kilns remain technically feasible for grate-kilns.

3) Step 3: Evaluate Control Effectiveness of Remaining Control Technologies

Low-stoich burners, as designed by FCT Combustion (FCT), are expected to avoid the previously described drawbacks from high-stoich burners and can be designed to meet 2.8 lbs/MMBtu when burning natural gas and 1.5 lbs/MMBtu when burning a gas/coal mix. This technology is described in the "FCT Combustion Cliffs UTAC Line 2 Phase 3 Modeling Report" and August 8, 2014 letter from Douglas McWilliams. FCT supplies a LNB, called the FCT COMBUSTION Gyro-Therm MKII burner. This FCT low-stoich Gyro-Therm burner design achieves NOx reductions by reducing flame temperature by mixing fuel and air to simulate the effects of staged combustion for NO_X reduction. This burner uses a special gas nozzle that injects the gas in a stirring type of motion. The fluid mechanics resulting from use of this nozzle create a dramatically different flame and NO_X is greatly reduced through

natural staging of the fuel-air mixing. This FCT low-stoich LNB would not require additional primary air, which would eliminate the air velocity and pressure contributions to pellet quality problems. FCT's proposed low-stoich burner also does not require substantial additional fuel because it is not introducing cool primary air that must be heated to sustain critical furnace temperatures.

FCT performed CFD modeling at United Taconite in order to design a new burner that will reduce NO_X, but maintain product quality, production and optimize fuel efficiency. The modeling for combusting solely natural gas indicated a reduction from a base case of 5.3-6.4 lb NO_X/MMBtu to 2.91 lbs NO_X/MMBtu; the modeling for co-firing at 30 percent gas and 70 percent coal indicated a reduction from a base case of 1.6-5.4 (although the upper bound is generally closer to 2.8 lbs/MMBtu), with a typical baseline value of 2.5 lbs/MMBtu, to 2.04 lbs NO_X/MMBtu. The NO_X reduction technology appropriate for United Taconite would also be appropriate for Tilden (and vice versa) because they have similar grate-kilns.

4) Step 4: Evaluate Impacts of Remaining Control Technologies

There will be an estimated total of 3000 tons per year of NO_X reductions from the use of the low-stoich technology at Tilden and United Taconite. There are no significant costs or

environmental impacts associated with this technology that would necessitate its elimination from consideration as BART.

5) Step 5: Evaluate Visibility Impacts

There is about a 16% overall decrease in the amount of NO_x and SO_2 reductions anticipated as a result of the control technologies (and resulting emission limits) required by this rulemaking, as compared to the 2013 FIP. EPA finds that the candidate BART technologies would be expected to achieve substantial visibility improvements, although slightly less than what would be achieved from the 2013 FIP by an amount roughly corresponding to the decrease in emission reductions.

6) Propose BART

In EPA's view, the CFD modeling that FCT has conducted provides the best currently available evidence as to the NO_X emission levels that this technology will achieve. According to this modeling and engineering reports provided by (the burner manufacturer) Coen, a low-stoich burner can be designed to meet 2.8 lbs/MMBtu when burning natural gas and 1.5 lbs/MMBtu when burning a gas/coal mix. BART requires that the burners be designed to meet these limits and we expect that these limits will be met. However, because of the lack of experience with these low-stoich burners, including their impact on pellet quality, we are proposing to increase the final limits up to 3.0 lbs/MMBtu when burning natural

gas only, and up to 2.5 lbs/MMBtu when burning a gas/coal mix if a rigorous demonstration is made that the 2.8 lbs/MMBtu and 1.5 lbs/MMBtu limits cannot be met.

ii. Hibbing Taconite and ArcelorMittal Minorca Mine Straight-Grate Kilns – Five Step BART Evaluation for NO_x

1) Step 1: Identify All Available Retrofit Control Technologies

As discussed in the August 15, 2012 proposed FIP, the following control technologies were identified: external flue gas recirculation, low-NOx burners (including both high-stoich and low-stoich), induced flue gas recirculation burners, energy efficiency projects, ported kilns, and selective catalytic reduction (SCR). Water injection in the preheat zone, a pre-combustion approach at the main burners and steam injection to the fuel stream were subsequently considered technologies.

2) Step 2: Eliminate Technically Infeasible Options

External flue gas recirculation and induced flue gas recirculation burners were eliminated from consideration because they are technically infeasible for the specific application to pellet furnaces due to the high oxygen content of the flue gas. Energy efficiency projects were eliminated due to the difficulty of assigning a general potential emission reduction for this category. EPA agrees that SCR controls are infeasible for indurating furnaces

based on two SCR vendors declining to bid on NO_x reduction testing at Minntac.

In addition, LNBs were eliminated from consideration due to the technical challenges associated with their installation and operation on the straight-grate kilns at Minorca Mine and Hibbing, which we explained in detail in section V above - especially the fact that high-stoich burners have never been used on any straight-grate kilns. Low-stoich burners have also been eliminated from consideration because they have never been used on straight-grate kilns and also because they would be expected to result in higher NOx emissions than the technologies being assessed by ArcelorMittal. As described in more detail below, water injection in the preheat zone, a pre-combustion approach at the main burners, and steam injection to the fuel stream are considered to be feasible technologies.

3) Step 3: Evaluate Control Effectiveness of Remaining Control Technologies

ArcelorMittal has retained engineering firms to assess NO_X reduction technologies for Minorca's straight-grate indurating furnace. The results of this assessment are described in an August 11, 2014 report titled "ArcelorMittal Straight-Grate NO_X Reduction Technology Development Efforts." Testing has revealed that NO_X can be reduced using water injection in the preheat and

the main burners, although it is significantly more effective at reducing NO_X in the preheat burners than the main burners. Additional options for NO_X reduction at straight grate furnaces are: pre-combustion optimizations, steam injection, and multiple point injection. The viability of these options will be based on NO_X reduction potential, impacts to pellet quality and process, installation and operational downtime, and any energy penalty and capital and operating costs.

Test results have raised the prospect of optimizing NO_X reductions using both water injection in the preheat zone (where it appears more effective) and a pre-combustion approach at the main burners. This approach resulted in a 70% or greater reduction on a lbs/MMBtu basis. Efforts have also been made to evaluate steam injection to the fuel stream, which has the potential to provide better mixing in the flame zone with increasing NO_X reductions where distribution concerns exist. Another alternative to reduce NO_X formation at the main combustion chambers is through a number of smaller “surface spray” injectors.

In conclusion, combined modeling indicates that water injection in the preheat zone, a pre-combustion approach at the main burners and steam injection to the fuel stream technologies can reasonably be expected to achieve a 70% NO_X

reduction on a lbs/MMBtu basis. EPA expects these technologies to be equally effective at reducing NO_X emissions at Hibbing as well as at Minorca Mine.

4) Step 4: Evaluate Impacts of Remaining Control Technologies

There will be a total estimated 7,400 tons per year of NO_x reductions from water injection in the preheat zone, a pre-combustion approach at the main burners, and steam injection to the fuel stream at Minorca Mine and Hibbing. There are no significant costs or environmental impacts associated with these control technologies.

5) Step 5: Evaluate Visibility Impacts

There is about a 16% overall decrease in the amount of NO_x and SO_2 reductions anticipated as a result of the control technologies (and resulting emission limits) required by this rulemaking, as compared to the 2013 FIP. EPA finds that the candidate BART technologies would be expected to achieve substantial visibility improvements, although slightly less than what would be achieved from the 2013 FIP by an amount roughly corresponding to the decrease in emission reductions.

6) Propose BART

Based upon the engineering report prepared for ArcelorMittal in which the use of water and steam injection and pre-combustion technologies is described, EPA is confident that

ArcelorMittal Minorca Mine and Hibbing Taconite can meet a limit of 1.2 lbs NO_X/MMBtu. BART requires that these technologies be designed to meet a limit of 1.2 lbs/MMBtu and we expect that these limits will be met. However, because the particular combination of water and steam injection and pre-combustion technologies being considered has not previously been used on straight-grate kilns, and there is some uncertainty with respect to their effect on pellet quality, we are proposing to increase the final limit up to 1.8 lbs/MMBtu if a rigorous demonstration is made that the 1.2 lbs/MMBtu limit cannot be met.

iii. United Taconite - Five Step BART Evaluation for SO_2

1) Step 1: Identify All Available Control Technologies

Flue gas desulfurization (FGD) and use of low sulfur fuels are the most appropriate available technologies.

2) Step 2: Eliminate Technically Infeasible Options

FGD and use of low sulfur fuels are both technically feasible.

3) Step 3: Evaluate Control Effectiveness of Remaining Control Technologies

FGD can achieve 90 percent control and the reduction from the use of low sulfur fuels varies depending upon the fuel mix and the sulfur content of the fuel.

4) Step 4: Evaluate Impacts of Remaining Control Technologies

Dry FGD can achieve SO_2 reductions of about 3600 tons per year from lines 1 and 2. Based upon information supplied by Cliffs in its response to comments on the proposed 2013 Taconite FIP, EPA subsequently determined the annualized dollars per ton for FGD controls to be $5,911/ton for Line 1 and $5,303/ton for Line 2. These cost-effectiveness values were based upon prior baseline SO_2 emission levels. In light of the reduction in SO_2 emissions that will result from the use of low-sulfur fuels at United Taconite, the cost effectiveness of additional controls has increased to $12,021 per ton for Line 1 and $7,680 per ton for Line 2. Thus, EPA believes that the installation of such controls is not economically feasible.

United Taconite subsequently proposed an alternate BART definition based on burning low sulfur fuels, including increased use of natural gas. This alternative will result in about 1,900 tons per year of SO_2 reductions. There are no other significant impacts or costs associated with this alternative.

5) Step 5: Evaluate Visibility Impacts

There is about a 16% overall decrease in the amount of NO_x and SO_2 reductions anticipated as a result of the control technologies (and resulting emission limits) required by this rulemaking, as compared to the 2013 FIP. EPA finds that the candidate BART technologies would be expected to achieve

substantial visibility improvements, although slightly less than what would be achieved from the 2013 FIP by an amount roughly corresponding to the decrease in emission reductions.

6) Propose BART

The proposed BART is based on burning low sulfur fuels, including increased use of natural gas, sufficient to meet a Federally enforceable aggregate emission limit of 529 lbs SO_2/hr, based on a 30-day rolling average. This alternative will result in about 1900 tons per year of SO_2 reductions. In addition to the emission limit proposed by Cliffs, to ensure the use of low-sulfur fuels and SO_2 reductions resulting from the use of low-sulfur fuels at United Taconite, EPA is also establishing a limitation on the coal to be used by requiring the coal have a sulfur content no greater than 1.50 percent sulfur by weight based on a monthly block average.

The 529 lbs SO_2/hour and 1.5 percent sulfur limit constitute BART because of the economic infeasibility of FGD controls and also because the facility is not designed to handle lower sulfur coal.

iv. Tilden - Five Step BART Evaluation for SO_2

1) Step 1: Identify All Available Control Technologies

FGD and use of low sulfur fuels are the most appropriate available technologies.

2) Step 2: Eliminate Technically Infeasible Options

FGD and use of low sulfur fuels are both technically feasible.

3) Step 3: Evaluate Control Effectiveness of Remaining Control Technologies

FGD can achieve 90 percent control and the reduction from the use of low sulfur fuels varies depending upon the fuel mix and the sulfur content of the fuel.

4) Step 4: Evaluate Impacts of Remaining Control Technologies

Dry FGD can achieve SO_2 reductions of about 1100 tons per year from Tilden's line 1. In its September 28, 2012 comments on the proposed 2013 Taconite FIP, Cliffs documented dry FGD costs of between $11,450 and $15,750 per ton of SO_2 removed. These costs are not economically reasonable.

The use of low sulfur fuels, consisting of the use of either natural gas or coal with no more than 0.6 percent sulfur, is expected to result in a reduction in SO_2 emissions of about 300 tons per year from baseline conditions. There are no significant costs or energy impacts associated with use of these low sulfur fuels.

5) Step 5: Evaluate Visibility Impacts

There is about a 16% overall decrease in the amount of NO_x and SO_2 reductions anticipated as a result of the control

technologies (and resulting emission limits) required by this rulemaking, as compared to the 2013 FIP. EPA finds that the candidate BART technologies would be expected to achieve substantial visibility improvements, although slightly less than what would be achieved from the 2013 FIP by an amount roughly corresponding to the decrease in emission reductions.

6) Proposed BART

BART for SO_2 at Tilden's Grate Kiln Line 1 furnace is proposed to be met by the use of low sulfur coal and natural gas. Beginning six months after the effective date of the rule, any coal burned on Tilden Grate Kiln Line 1 shall have no more than 0.60 percent sulfur by weight based on a monthly block average. This furnace shall also meet an initial emission limit of 500 lbs SO_2/hr based on a 30-day rolling average beginning six months after the effective date of the rule. The owner or operator must subsequently calculate a permanent lbs SO_2/hr mass emission limit based on 12 continuous months of CEMS emissions data.

In light of the reduction in SO_2 emissions that will result from the use of low-sulfur fuels at Tilden, it is expected that the dollars per ton of SO_2 reduction through FGD would be even higher than previously estimated. Thus, EPA believes that the installation of such controls is no longer economically

reasonable. The use of low sulfur fuels is therefore the most viable option and a 0.6 percent sulfur content represents the use of very low sulfur coal. The initial mass limit of 500 lbs/hr is expected to be reduced after obtaining a year's worth of CEMS data.

B. Compliance Schedule

The staggered NO_X compliance schedule proposed in this action is generally consistent with the schedule in the February 6, 2013 FIP, as to the number of months to achieve compliance from the effective date of the rule. The main differences are that under this proposed revised FIP, at Tilden, installation of controls is required after 50 months, not the 26 months in the 2013 Taconite FIP, and at ArcelorMittal Minorca Mine, installation of controls is required within 44 months, not 26 months. The following summarizes the dates following the effective date of the final action on reconsideration by which EPA plans to publish notices making the NO_X emission limits effective:

Tilden – 60 months

Hibbing Line 1 – 37 months

Hibbing Line 2 – 55 months

Hibbing Line 3 – 60 months

United Taconite Line 2 – 55 months

United Taconite Line 1 – 37 months

ArcelorMittal – 55 months

The staggered schedule is necessary because there is a limited downtime each year for each furnace during which the low NO_X burner(s) can be installed without interfering with production, experience gained on the earlier installations can be applied to the ones installed later, and installation costs may be spread out.

The staggered schedule, including additional time at Tilden and ArcelorMittal, is even more necessary for the proposed revisions to the 2013 Taconite FIP because, although the NO_X controls that are expected to be implemented as a result of the settlement agreement and this proposed action have been subject to extensive engineering studies, they have not been used on taconite furnaces in the US. There will also be an eight month period after installation of controls during which emission and pellet quality data will be evaluated and a subsequent three month period during which a final emission limit will be set by EPA based upon this data. The controls are being designed to meet the lower end of the range and it is expected that the limits will be set close to the lower end. The actual limit will be based upon the UPL statistical test.

C. Averaging Times

The limits in the 2013 Taconite FIP were expressed in terms of a 30-day average. A 30-day period in many cases would involve both operation with only natural gas and operation with at least some firing of coal. EPA prefers to require the companies to meet the limits with a coal/gas mix and with only natural gas independently, rather than imposing a variable limit computed as a composite of the limits with a gas/coal mix and with only natural gas weighted according to time in each operating mode. Therefore, EPA is proposing to require separate compliance with two limits. One of these limits would govern the emissions averaged over 720 successive hours in which the unit burns only natural gas. The other limit would govern emissions averaged over the 720 successive hours in which the unit burns a gas/coal mix. These 720-hour rolling average would correspond to a 30-day rolling average, as used in the 2013 Taconite FIP, in cases when the fuel use remains either natural gas or a gas/coal mix over 30 days. However, a 720-hour rolling average ensures that the NO_X emission rate will be properly compared with the appropriate fuel based limit.

An example helps illustrate the nature of these limits. Suppose that a subject facility burns only natural gas on Days 1-12, burns a coal/gas mix on Days 13-16, burns gas again on Days 17-30, does not operate on Days 31 and 32, burns gas on

Days 33-40, then burns a coal/gas mix from Days 41-70. This example assumes 24 hours/day operation for each operating day. In this case, compliance with the natural gas-based limit would be determined by dividing total NO_X emissions by total heat input for the 720 hours on Days 1-12, Days 17-30, and Days 33-36, as well as on each of the 96 additional sets of 720 successive hours of burning natural gas up to and including the period ending at the end of Day 40. Compliance with the coal or gas/coal mixed fuel limit would be determined by dividing total NO_X emissions by total heat input for the 720 hours on Days 13-16 and Days 41-66, as well as on each of the 96 additional sets of 720 successive hours of burning coal or mixed fuel up to and including the period ending at the end of day 70.

D. Procedures for Promulgating Revised FIP Limits

The regulatory text that follows specifies a process for establishing limits to which the identified facilities shall become subject. While the text identifies limits that are to apply, the text also states that these limits shall become enforceable only after EPA publishes notice either confirming these limits or modifying the limits within a range that EPA is proposing here to establish. The regulatory text also specifies equations that are to be used to establish any adjusted limit. Stated more generally, this action is proposing not just a final

action that will initiate a process to lead to establishment of emission limits; today's action is also proposing the criteria for determining the level of the ultimate limits and the procedure by which these limits are to be made enforceable.

EPA is proposing for the publication of the final rule to trigger a number of subsequent requirements for implementing BART controls on the affected taconite plants. Specific dates, defined as a given number of months following the effective date of the final rule, are given for deadlines for commencing operation of CEMS for NO_X and SO_2, for submitting a report describing planned NO_X emission controls, for installing the planned NO_X emission controls, for reporting results of pellet quality analyses and simultaneous NO_X emission data, for the source to submit any report recommending confirmation of modification of the emission limit, and for EPA to publish a notice either confirming the limit promulgated in 2016 or establishing an alternate limit (within a range proposed here). The following summarizes the dates following the effective date of the final action on reconsideration by which EPA plans to publish notices making the NO_X emission limits effective:

Tilden – 60 months

Hibbing Line 1 – 37 months

Hibbing Line 2 – 55 months

Hibbing Line 3 – 60 months

United Taconite Line 2 – 55 months

United Taconite Line 1 – 37 months

ArcelorMittal – 55 months

Based on the above schedule, EPA anticipates publishing a notice 37 months (addressing 2 units), 55 months (addressing 3 units), and 60 months (addressing 1 unit) after the effective date of the final rule on reconsideration. In each case, the rulemaking will cause a limit to become enforceable. EPA is proposing here that the limit will be either the limit that is promulgated in the final rule on reconsideration or a revised limit. In either case, EPA anticipates that the limit to which each unit will ultimately be subject will be in accordance with the equations being proposed here, within the upper and lower bounds promulgated in the final rule on reconsideration.

EPA is proposing that these subsequent notices will constitute subsequent final actions to this proposal that require no further opportunity for public comment. Accordingly, today's notice of proposed rulemaking provides adequate information about the basis and timing of the final limits such that no further proposals will be necessary. EPA is taking this approach in order to expedite the establishment of final, enforceable limits for these facilities, within the context of a

process that provides reasonable time to design and install emission controls, to obtain data for determining control effectiveness, and to minimize the time then needed to establish final, enforceable limits. Therefore, commenters should provide comments during the comment period for today's proposed rulemaking on any issues that might be anticipated to arise at any point in the process described in this notice, up to and including during the publication of final action as described above establishing confirmed or modified limits as fully enforceable.

The following is an example, based on Hibbing Line 1, of the process for setting the final limit. The limits and schedules vary by line but the steps are the same for all:

1. A presumptive limit of 1.2 lbs/MMBtu, based on a 30-day rolling average, is established.
2. The owner or operator must install CEMS within 6 months of the effective date of the rule.
3. After installation of the CEMS, CEMS data must be submitted to EPA no later than 30 days from the end of each calendar quarter until 34 months from the effective date of the rule.
4. Within 24 months of the effective date a final report must be submitted to EPA containing a detailed engineering analysis

and modeling of the NO_X reduction technology (which must be designed to meet 1.2 lbs/MMBtu) being installed.

5. The NO_X reduction control technology must be installed no later than 26 months after the effective date of the rule.

6. Within the earlier of 6 months of the installation of the NO_X reduction control technology or 26 months from the effective date of the rule the results of pellet quality analyses must be provided to EPA no later than 30 days from the end of each calendar quarter pellet quality analyses must be provided to EPA until 34 months from the effective date of the rule. For each pellet quality analysis factor, e.g. compression and reducibilty, the following must be provided: (a) The defined acceptable range for each factor as contained in Hibbing's ISO 9001 quality management system, and (b) pellet quality testing results that state the date and time when pellets were produced outside of the defined acceptable range for the indicated pellet quality factors.

7. No later than 34 months after the effective date of the rule, a report may be submitted to EPA either confirming the 1.2 lbs/MMBtu presumptive limit or requesting a modification of the limit up to the upper end of the range (1.8 lbs/MMBtu in this case).

8. The final limit will be based on the CEMS data from the eight month period from the end of month 26 to the end of month 34, excluding any time in which the pellet quality standards are not met. The final limit will be based upon the 95 percent upper predictive limit (UPL). The UPL is a statistical technique that examines an existing set of data points and predicts the chances (*i.e.*, the probability) of future data points (in this case, emission rates). In general terms, the UPL is a value that is calculated from a data set that identifies the emission rate that a source is meeting and would be expected to meet a specified percent of the time that the source is operating. For example, the 95 percent UPL value is the emission level that the source would be predicted to be below during 95 out of 100 hourly intervals. The UPL is calculated using an equation based on the average and variance of a data set, the distribution of the data, and quantity of data points.

9. EPA will take final agency action by publishing its final confirmation or modification of the NO_X limit in the Federal Register no later than 37 months after the effective date of the rule.

VI. Statutory and Executive Order Reviews

A. Executive Order 12866: Regulatory Planning and Review

This proposed action is not a "significant regulatory action" under the terms of Executive Order 12866 (58 FR 51735, October 4, 1993) and is therefore not subject to review under Executive Orders 12866 and 13563 (76 FR 3821, January 21, 2011). As discussed in detail in section VI. C below, the proposed FIP applies to only four sources. It is therefore not a rule of general applicability.

B. Paperwork Reduction Act

This proposed action does not impose an information collection burden under the provisions of the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq*. Under the Paperwork Reduction Act, a "collection of information" is defined as a requirement for "answers to . . . identical reporting or recordkeeping requirements imposed on ten or more persons . . . ." 44 U.S.C. 3502(3)(A). Because the proposed FIP applies to just six facilities, the Paperwork Reduction Act does not apply. *See* 5 CFR 1320(c).

Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information,

processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information.

An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid Office of Management and Budget (OMB) control number. The OMB control numbers for our regulations in 40 CFR are listed in 40 CFR part 9.

C. Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA) generally requires an agency to prepare a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements under the Administrative Procedure Act or any other statute unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small organizations, and small governmental jurisdictions.

For purposes of assessing the impacts of today's proposed rule on small entities, small entity is defined as: (1) a small business as defined by the Small Business Administration’s (SBA)

regulations at 13 CFR 121.201; (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of less than 50,000; and (3) a small organization that is any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.

After considering the economic impacts of this proposed action on small entities, I certify that this proposed action will not have a significant economic impact on a substantial number of small entities. EPA's proposal adds additional controls to certain sources. The Regional Haze FIP that EPA is proposing for purposes of the regional haze program consists of imposing Federal control requirements to meet the BART requirement for NO_X and SO_2 emissions on specific units at three sources in Minnesota and one in Michigan. The net result of the FIP action is that EPA is proposing emission controls on the indurating furnaces at four taconite facilities and none of these sources are owned by small entities, and therefore are not small entities.

D. Unfunded Mandates Reform Act (UMRA)

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Public Law 104-4, establishes requirements for Federal agencies to assess the effects of their regulatory actions on

State, local, and Tribal governments and the private sector. Under section 202 of UMRA, EPA generally must prepare a written statement, including a cost-benefit analysis, for proposed and final rules with "Federal mandates" that may result in expenditures to State, local, and Tribal governments, in the aggregate, or to the private sector, of $100 million or more (adjusted for inflation) in any one year. Before promulgating an EPA rule for which a written statement is needed, section 205 of UMRA generally requires EPA to identify and consider a reasonable number of regulatory alternatives and adopt the least costly, most cost-effective, or least burdensome alternative that achieves the objectives of the rule. The provisions of section 205 of UMRA do not apply when they are inconsistent with applicable law. Moreover, section 205 of UMRA allows EPA to adopt an alternative other than the least costly, most cost-effective, or least burdensome alternative if the Administrator publishes with the final rule an explanation why that alternative was not adopted. Before EPA establishes any regulatory requirements that may significantly or uniquely affect small governments, including Tribal governments, it must have developed under section 203 of UMRA a small government agency plan. The plan must provide for notifying potentially affected small governments, enabling officials of affected small

governments to have meaningful and timely input in the development of EPA regulatory proposals with significant Federal intergovernmental mandates, and informing, educating, and advising small governments on compliance with the regulatory requirements.

Under Title II of UMRA, EPA has determined that this proposed rule does not contain a Federal mandate that may result in expenditures that exceed the inflation-adjusted UMRA threshold of $100 million by State, local, or Tribal governments or the private sector in any one year. In addition, this proposed rule does not contain a significant Federal intergovernmental mandate as described by section 203 of UMRA nor does it contain any regulatory requirements that might significantly or uniquely affect small governments.

E. Executive Order 13132: Federalism

Federalism (64 FR 43255, August 10, 1999) revokes and replaces Executive Orders 12612 (Federalism) and 12875 (Enhancing the Intergovernmental Partnership). Executive Order 13132 requires EPA to develop an accountable process to ensure "meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications." "Policies that have federalism implications" is defined in the Executive Order to include regulations that have

"substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government." Under Executive Order 13132, EPA may not issue a regulation that has federalism implications, that imposes substantial direct compliance costs, and that is not required by statute, unless the Federal government provides the funds necessary to pay the direct compliance costs incurred by State and local governments, or EPA consults with State and local officials early in the process of developing the proposed regulation. EPA also may not issue a regulation that has federalism implications and that preempts State law unless the Agency consults with State and local officials early in the process of developing the proposed regulation.

This rule will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132, because it merely addresses the State not fully meeting its obligation to prohibit emissions from interfering with other states measures to protect visibility established in the CAA. Thus, Executive Order 13132 does not apply to this action. In the spirit of Executive Order 13132,

and consistent with EPA policy to promote communications between EPA and State and local governments, EPA specifically solicits comment on this proposed rule from State and local officials.

F. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments

Executive Order 13175, entitled *Consultation and Coordination with Indian Tribal Governments* (65 FR 67249, November 9, 2000), requires EPA to develop an accountable process to ensure "meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications." This proposed rule does not have tribal implications, as specified in Executive Order 13175. It will not have substantial direct effects on tribal governments. Thus, Executive Order 13175 does not apply to this rule. However, EPA did discuss this action in a June 28 conference call with the Michigan and Minnesota Tribes.

G. Executive Order 13045: Protection of Children from Environmental Health Risks and Safety Risks

Executive Order 13045: *Protection of Children from Environmental Health Risks and Safety Risks* (62 FR 19885, April 23, 1997), applies to any rule that: (1) is determined to be economically significant as defined under Executive Order 12866; and (2) concerns an environmental health or safety risk that we

have reason to believe may have a disproportionate effect on children. EPA interprets EO 13045 as applying only to those regulatory actions that concern health or safety risks, such that the analysis required under section 5-501 of the EO has the potential to influence the regulation. This action is not subject to EO 13045 because it does not establish an environmental standard intended to mitigate health or safety risks. This proposed action addresses regional haze and visibility protection. Further, because this proposed amendment to the current regulation will require controls that will cost an amount equal to or less than the cost of controls required under the current regulation, it is not an economically significant regulatory action. However, to the extent this proposed rule will limit emissions of NO_X, SO_2, and PM, the rule will have a beneficial effect on children's health by reducing air pollution.

H. Executive Order 13211: Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use

This action is not subject to Executive Order 13211 (66 FR 28355 (May 22, 2001)), because it is not a significant regulatory action under Executive Order 12866.

I. National Technology Transfer and Advancement Act

Section 12 of the National Technology Transfer and

Advancement Act (NTTAA) of 1995 requires Federal agencies to evaluate existing technical standards when developing a new regulation. To comply with NTTAA, EPA must consider and use "voluntary consensus standards" (VCS) if available and applicable when developing programs and policies unless doing so would be inconsistent with applicable law or otherwise impractical.

VCS are inapplicable to this action because application of those requirements would be inconsistent with the CAA.

J. Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

Executive Order 12898 (59 FR 7629, February 16, 1994), establishes Federal executive policy on environmental justice. Its main provision directs Federal agencies, to the greatest extent practicable and permitted by law, to make environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations in the United States.

We have determined that this proposed rule, if finalized, will not have disproportionately high and adverse human health

or environmental effects on minority or low-income populations because it increases the level of environmental protection for all affected populations without having any disproportionately high and adverse human health or environmental effects on any population, including any minority or low-income population.

List of Subjects in 40 CFR Part 52

Environmental protection, Air pollution control, Incorporation by reference, Intergovernmental relations, Nitrogen dioxide, Particulate matter, Reporting and recordkeeping requirements, Sulfur oxides, Volatile organic compounds.

Dated: September 8, 2015.

Susan Hedman
Regional Administrator, Region 5

40 CFR part 52 is proposed to be amended as follows:

PART 52—APPROVAL AND PROMULGATION OF IMPLEMENTATION PLANS

1. The authority citation for part 52 continues to read as follows:

Authority: 42 U.S.C. 7401 et seq.

2. Section 52.1183 is amended by revising paragraphs (k), (l), (m), and (n) and adding paragraph (o) to read as follows:

§52.1183 Visibility protection.

* * * * *

(k) Tilden Mining Company, or any subsequent owner/operator of the Tilden Mining Company facility in Ishpeming, Michigan, shall meet the following requirements:

(1) *NO_x Emission Limits*.

(i) An emission limit of 2.8 lbs NO_x/MMBtu, based on a 720-hour rolling average, shall apply to Tilden Grate Kiln Line 1 when burning natural gas, and an emission limit of 1.5 lbs NO_x/MMBtu, based on a 720-hour rolling average, shall apply to Tilden Grate Kiln Line 1 when burning coal or a mixture of coal and natural gas. These emission limits will become enforceable 60 months after [EFFECTIVE DATE OF FINAL RULE] and only after EPA's confirmation or modification of the emission limit in accordance with the procedures set forth below.

(ii) Compliance with these emission limits shall be demonstrated with data collected by a continuous emissions

monitoring system (CEMS) for NO_x. The owner or operator must start collecting CEMS data for NO_x upon [EFFECTIVE DATE OF FINAL RULE] and submit the data to EPA no later than 30 days from the end of each calendar quarter. Any remaining data through the end of the 57^{th} month from [EFFECTIVE DATE OF FINAL RULE], that doesn't fall within a calendar quarter, must be submitted to EPA no later than 7 days from the end of the 57^{th} month. Although CEMS data must continue to be collected, it does not need to be submitted to EPA starting 57 months after [EFFECTIVE DATE OF FINAL RULE].

(iii) No later than 48 months from [EFFECTIVE DATE OF FINAL RULE], the owner or operator must submit to EPA a report, including any final report(s) completed by the selected NO_x reduction technology supplier and furnace retrofit engineer, containing a detailed engineering analysis and modeling of the NO_x reduction control technology being installed on Tilden Grate Kiln Line 1. This report must include a list of all variables that can reasonably be expected to have an impact on NO_x emission control technology performance, as well as a description of how these variables can be adjusted to reduce NO_x emissions to meet the NO_x design emission limit. This NOx reduction control technology must be designed to meet emission limits of 2.8 lbs NO_x/MMBtu when burning natural gas and 1.5 lbs NO_x/MMBtu when burning coal or a mixture of coal and natural gas.

(iv) The NO_x reduction control technology shall be installed on Tilden Grate Kiln Line 1 furnace no later than 50 months from the effective date of the rule.

(v) Commencing on the earlier of:

(A) Six months from the installation of the NO_x reduction control technology; or

(B) 50 months from [EFFECTIVE DATE OF FINAL RULE], the owner or operator must provide to EPA the results from pellet quality analyses. The owner or operator shall provide the results from pellet quality analyses no later than 30 days from the end of each calendar quarter up until 57 months after [EFFECTIVE DATE OF FINAL RULE]. Any remaining results through the end of the 57^{th} month, that do not fall within a calendar quarter, must be submitted to EPA no later than seven days from the end of the 57th month. The pellet quality analyses shall include results for the following factors: compression, reducibility, before tumble, after tumble, and low temperature disintegration. For each of the pellet quality analysis factors, the owner or operator must explain the pellet quality analysis factor, as well as the defined acceptable range for each factor using the applicable product quality standards based upon customers' pellet specifications that are contained in Tilden's ISO 9001 quality management system. The owner or operator shall provide pellet quality analysis testing results

that state the date and time of the analysis and, in order to define the time period when pellets were produced outside of the defined acceptable range for the pellet quality factors listed, provide copies of the production logs that document the starting and ending times for such periods. The owner or operator shall provide an explanation of causes for pellet samples that fail to meet the acceptable range for any pellet quality analysis factor. Pellet quality information and data may be submitted to EPA as Confidential Business Information.

(vi) No later than 57 months after [EFFECTIVE DATE OF FINAL RULE], the owner or operator may submit to EPA a report to either confirm or modify the NO_x limits for Tilden Grate Kiln Line 1 within the upper and lower bounds described below. EPA will review the report and either confirm or modify the NO_x limits. If the CEMS data collected during operating periods between months 50 and 57 that both meet pellet quality specifications and proper furnace/burner operation is normally distributed, the limit adjustment determination shall be based on the appropriate (depending upon whether data are statistically independent or dependent) 95% upper predictive limit (UPL) equations in paragraph (o) of this section. If the CEMS data collected during operating periods between months 50 and 57 that both meet pellet quality specifications and proper furnace/burner operation are not normally distributed, the limit

adjustment determination shall be based on the non-parametric equation provided in paragraph (o) of this section. The data set for the determination shall exclude periods when pellet quality did not fall within the defined acceptable ranges of the pellet quality factors identified pursuant to paragraph (k)(1)(v) of this section and for any subsequent period when production had been reduced in response to pellet quality concerns consistent with Tilden's ISO 9001 operating standards. Any excluded period will commence at the time documented on the production log demonstrating pellet quality did not fall within the defined acceptable range, and shall end when pellet quality within the defined acceptable range has been re-established at planned production levels, which will presumed to be the level that existed immediately prior to the reduction in production due to pellet quality concerns. EPA may also exclude data where operations are inconsistent with the reported design parameters of the NO_x reduction control technology that were installed.

(vii) EPA will take final agency action by publishing its final confirmation or modification of the NO_x limits in the *Federal Register* no later than 60 months after [EFFECTIVE DATE OF FINAL RULE]. The confirmed or modified NO_x limit for Tilden Grate Kiln Line 1 when burning only natural gas may be no lower than 2.8 lbs NO_x/MMBtu, based on a 720-hour rolling average, and may not exceed 3.0 lbs NO_x/MMBtu, based on a 720-hour rolling

average. The confirmed or modified NO_x limit for Tilden Grate Kiln Line 1 when burning coal or a mixture of coal and natural gas may be no lower than 1.5 lbs NO_x/MMBtu, based on a 720-hour rolling average, and may not exceed 2.5 lbs NO_x/MMBtu, based on a 720-hour rolling average.

(viii) If the owner or operator submits a report proposing a single NO_x limit for all fuels, EPA may approve the proposed NO_x limit for all fuels based on a 30-day rolling average. The confirmed or modified limit will be established and enforceable within 60 months from [EFFECTIVE DATE OF FINAL RULE].

(2) *SO_2 Emission Limits*. A fuel sulfur content limit of no greater than 1.20 percent sulfur content by weight shall apply to fuel combusted in Process Boiler #1 (EUBOILER1) and Process Boiler #2 (EUBOILER2) beginning three months from March 8, 2013. A fuel sulfur content limit of no greater than 1.50 percent sulfur content by weight shall apply to fuel combusted in the Line 1 Dryer (EUDRYER1) beginning 3 months from March 8, 2013. The sampling and calculation methodology for determining the sulfur content of fuel must be described in the monitoring plan required at paragraph (n)(8)(x) of this section.

(3) The owner or operator of the Tilden Grate Kiln Line 1 furnace shall meet an emission limit of 500 lbs SO_2/hr based on a 30-day rolling average beginning six months after [EFFECTIVE DATE OF FINAL RULE]. Compliance with these emission limits

shall be demonstrated with data collected by a CEMS for SO_2. The owner or operator must start collecting CEMS data for SO_2 beginning six months after [EFFECTIVE DATE OF FINAL RULE] and submit the data to EPA no later than 30 days from the end of each calendar quarter. The Tilden Grate Kiln Line 1 furnace shall not be limited to natural gas fuel. Beginning 6 months after [EFFECTIVE DATE OF FINAL RULE], any coal burned on Tilden Grate Kiln Line 1 shall have no more than 0.60 percent sulfur by weight based on a monthly block average. The sampling and calculation methodology for determining the sulfur content of coal must be described in the monitoring plan required for this furnace. The owner or operator must calculate an SO_2 limit based on twelve continuous months of CEMS emissions data and submit such limit, calculations, and CEMS data to EPA no later than 36 months after [EFFECTIVE DATE OF FINAL RULE]. If the submitted CEMS SO_2 hourly data is normally distributed, the SO_2 lbs/hr emission rate shall be based on the appropriate (depending upon whether data are statistically independent or dependent) 99% upper predictive limit (UPL) equation. If the submitted CEMS SO_2 hourly data is not normally distributed, the SO_2 lbs/hr emission rate shall be based on the non-parametric equation provided in paragraph (o) of this section. Compliance to the SO_2 lbs/hr emission rate shall be determined on a 30-day rolling average basis. EPA will take final agency action by publishing a

confirmation or modification of the SO_2 limit in the *Federal Register* no later than 39 months after [EFFECTIVE DATE OF FINAL RULE]. EPA may adjust the 500 lbs/hr SO_2 limit downward to reflect the calculated SO_2 emission rate; however, EPA will not increase the SO_2 limit above 500 lbs/hr.

(4) Starting 26 months from [EFFECTIVE DATE OF FINAL RULE], records shall be kept for any day during which fuel oil is burned as fuel (either alone or blended with other fuels) in Grate Kiln Line 1. These records must include, at a minimum, the gallons of fuel oil burned per hour, the sulfur content of the fuel oil, and the SO_2 emissions in pounds per hour.

(5) Starting 26 months from [EFFECTIVE DATE OF FINAL RULE], the SO_2 limit for Grate Kiln Line 1 does not apply for any hour in which it is documented that there is a natural gas curtailment, beyond Cliffs' control, necessitating that the supply of natural gas to Tilden's Line 1 indurating furnace is restricted or eliminated. Records must be kept of the cause of the curtailment and duration of such curtailment. During such curtailment, the use of backup coal is restricted to coal with no greater than 0.60 percent sulfur by weight.

(l) *Testing and Monitoring* (1) The owner or operator shall install, certify, calibrate, maintain and operate a CEMS for NO_X on Tilden Grate Kiln Line 1. Compliance with the emission limits for NO_X shall be determined using data from the CEMS.

(2) The owner or operator shall install, certify, calibrate, maintain and operate a CEMS for SO_2 on Tilden Grate Kiln Line 1. Compliance with the emission standard selected for SO_2 shall be determined using data from the CEMS.

(3) The owner or operator shall install, certify, calibrate, maintain and operate one or more continuous diluent monitor(s) (O_2 or CO_2) and continuous flow rate monitor(s) on Tilden Grate Kiln Line 1 to allow conversion of the NO_X and SO_2 concentrations to units of the standard (lbs/MMBtu and lbs/hr, respectively) unless a demonstration is made that a diluent monitor and continuous flow rate monitor are not needed for the owner or operator to demonstrate compliance with applicable emission limits in units of the standards.

(4) For purposes of this section, all CEMS required by this regulation must meet the requirements of paragraphs (l)(4)(i) through (xiv) of this section.

(i) All CEMS must be installed, certified, calibrated, maintained, and operated in accordance with 40 CFR part 60, appendix B, Performance Specification 2 (PS-2) and appendix F, Procedure 1.

(ii) All CEMS associated with monitoring NO_X (including the NO_X monitor and necessary diluent and flow rate monitors) must be installed and operational upon [EFFECTIVE DATE OF FINAL RULE]. All CEMS associated with monitoring SO_2 must be installed and

operational no later than six months after [EFFECTIVE DATE OF FINAL RULE]. Verification of the CEMS operational status shall, as a minimum, include completion of the manufacturer's written requirements or recommendations for installation, operation, and calibration of the devices.

(iii) The owner or operator must conduct a performance evaluation of each CEMS in accordance with 40 CFR part 60, appendix B, PS-2. The performance evaluations must be completed no later than 60 days after the respective CEMS installation.

(iv) The owner or operator of each CEMS must conduct periodic Quality Assurance, Quality Control (QA/QC) checks of each CEMS in accordance with 40 CFR part 60, appendix F, Procedure 1. The first CEMS accuracy test will be a relative accuracy test audit (RATA) and must be completed no later than 60 days after the respective CEMS installation.

(v) The owner or operator of each CEMS must furnish the Regional Administrator two, or upon request, more copies of a written report of the results of each performance evaluation and QA/QC check within 60 days of completion,.

(vi) The owner or operator of each CEMS must check, record, and quantify the zero and span calibration drifts at least once daily (every 24 hours) in accordance with 40 CFR part 60, appendix F, Procedure 1, Section 4.

(vii) Except for CEMS breakdowns, repairs, calibration checks,

and zero and span adjustments, all CEMS required by this section shall be in continuous operation during all periods of process operation of the indurating furnaces, including periods of process unit startup, shutdown, and malfunction.

(viii) All CEMS required by this section must meet the minimum data requirements at paragraphs (l)(4)(viii)(A) through (C) of this section.

(A) Complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute quadrant of an hour.

(B) Sample, analyze and record emissions data for all periods of process operation except as described in paragraph (l)(4)(viii)(C) of this section.

(C) When emission data from CEMS are not available due to continuous monitoring system breakdowns, repairs, calibration checks, or zero and span adjustments, emission data must be obtained using other monitoring systems or emission estimation methods approved by the EPA. The other monitoring systems or emission estimation methods to be used must be incorporated into the monitoring plan required by this section and provide information such that emissions data are available for a minimum of 18 hours in each 24-hour period and at least 22 out of 30 successive unit operating days.

(ix) Owners or operators of each CEMS required by this section

must reduce all data to 1-hour averages. Hourly averages shall be computed using all valid data obtained within the hour but no less than one data point in each fifteen-minute quadrant of an hour. Notwithstanding this requirement, an hourly average may be computed from at least two data points separated by a minimum of 15 minutes (where the unit operates for more than one quadrant in an hour) if data are unavailable as a result of performance of calibration, quality assurance, preventive maintenance activities, or backups of data from data acquisition and handling systems, and recertification events.

(x) The 30-day rolling average emission rate determined from data derived from the CEMS required by this section (in lbs/MMBtu or lbs/hr depending on the emission standard selected) must be calculated in accordance with paragraphs (l)(4)(x)(A) through (F) of this section.

(A) Sum the total pounds of the pollutant in question emitted from the Unit during an operating day and the previous 29 operating days.

(B) Sum the total heat input to the unit (in MMBtu) or the total actual hours of operation (in hours) during an operating day and the previous 29 operating days.

(C) Divide the total number of pounds of the pollutant in question emitted during the 30 operating days by the total heat input (or actual hours of operation depending on the emission

limit selected) during the 30 operating days.

(D) For purposes of this calculation, an operating day is any day during which fuel is combusted in the BART affected Unit regardless of whether pellets are produced. Actual hours of operation are the total hours a unit is firing fuel regardless of whether a complete 24-hour operational cycle occurs (i.e. if the furnace is firing fuel for only five hours during a 24-hour period, then the actual operating hours for that day are five. Similarly, total number of pounds of the pollutant in question for that day is determined only from the CEMS data for the five hours during which fuel is combusted.)

(E) If the owner or operator of the CEMS required by this section uses an alternative method to determine 30-day rolling averages, that method must be described in detail in the monitoring plan required by this section. The alternative method will only be applicable if the final monitoring plan and the alternative method are approved by EPA.

(F) A new 30-day rolling average emission rate must be calculated for the period ending each new operating day.

(xi) The 720-hour rolling average emission rate determined from data derived from the CEMS required by this section (in lbs/MMBtu) must be calculated in accordance with paragraphs (l)(4)(xi)(A) through (C) of this section.

(A) Sum the total pounds of NOx emitted from the unit every

hour and the previous (not necessarily consecutive) 719 hours for which that type of fuel (either natural gas or mixed coal and natural gas) was used.

(B) Sum the total heat input to the unit (in MMBtu) every hour and the previous (not necessarily consecutive) 719 hours for which that type of fuel (either natural gas or mixed coal and natural gas) was used.

(C) Divide the total number of pounds of NOx emitted during the 720 hours, as defined above, by the total heat input during the same 720 hour period. This calculation must be done separately for each fuel type (either for natural gas or mixed coal and natural gas).

(xii) Data substitution must not be used for purposes of determining compliance under this regulation.

(xiii) All CEMS data shall be reduced and reported in units of the applicable standard.

(xiv) A Quality Control Program must be developed and implemented for all CEMS required by this section in accordance with 40 CFR part 60, appendix F, Procedure 1, Section 3. The program will include, at a minimum, written procedures and operations for calibration checks, calibration drift adjustments, preventative maintenance, data collection, recording and reporting, accuracy audits/procedures, periodic performance evaluations, and a corrective action program for

malfunctioning CEMS.

(m) *Recordkeeping Requirements.* (1)(i) Records required by this section must be kept in a form suitable and readily available for expeditious review.

(ii) Records required by this section must be kept for a minimum of 5 years following the date of creation.

(iii) Records must be kept on site for at least 2 years following the date of creation and may be kept offsite, but readily accessible, for the remaining 3 years.

(2) The owner or operator of the BART affected unit must maintain the records identified in paragraphs (m)(2)(i) through (xi) of this section.

(i) A copy of each notification and report developed for and submitted to comply with this section including all documentation supporting any initial notification or notification of compliance status submitted, according to the requirements of this section.

(ii) Records of the occurrence and duration of each startup, shutdown, and malfunction of the BART affected unit, air pollution control equipment, and CEMS required by this section.

(iii) Records of activities taken during each startup, shutdown, and malfunction of the BART affected unit, air pollution control equipment, and CEMS required by this section.

(iv) Records of the occurrence and duration of all major maintenance conducted on the BART affected unit, air pollution control equipment, and CEMS required by this section.

(v) Records of each excess emission report, including all documentation supporting the reports, dates and times when excess emissions occurred, investigations into the causes of excess emissions, actions taken to minimize or eliminate the excess emissions, and preventative measures to avoid the cause of excess emissions from occurring again.

(vi) Records of all CEMS data including, as a minimum, the date, location, and time of sampling or measurement, parameters sampled or measured, and results.

(vii) All records associated with quality assurance and quality control activities on each CEMS as well as other records required by 40 CFR part 60, appendix F, Procedure 1 including, but not limited to, the quality control program, audit results, and reports submitted as required by this section.

(viii) Records of the NO_X emissions during all periods of BART affected unit operation, including startup, shutdown and malfunction, in the units of the standard. The owner or operator shall convert the monitored data into the appropriate unit of the emission limitation using appropriate conversion factors and F-factors. F-factors used for purposes of this section shall be documented in the monitoring plan and developed

in accordance with 40 CFR part 60, appendix A, Method 19. The owner or operator may use an alternate method to calculate the NO_X emissions upon written approval from EPA.

(ix) Records of the SO_2 emissions or records of the removal efficiency (based on CEMS data), depending on the emission standard selected, during all periods of operation, including periods of startup, shutdown and malfunction, in the units of the standard.

(x) Records associated with the CEMS unit including type of CEMS, CEMS model number, CEMS serial number, and initial certification of each CEMS conducted in accordance with 40 CFR part 60, appendix B, Performance Specification 2 must be kept for the life of the CEMS unit.

(xi) Records of all periods of fuel oil usage as required in paragraph (k)(4) of this section.

(n) *Reporting requirements*.

(1) All requests, reports, submittals, notifications, and other communications to the Regional Administrator required by this section shall be submitted, unless instructed otherwise, to the Air and Radiation Division, U.S. Environmental Protection Agency, Region 5 (A-18J) at 77 West Jackson Boulevard, Chicago, Illinois 60604. References in this section to the Regional Administrator shall mean the EPA Regional Administrator for Region 5.

(2) The owner or operator of each BART affected unit identified in this section and CEMS required by this section must provide to the Regional Administrator the written notifications, reports and plans identified at (n)(2)(i) through (viii) of this section. If acceptable to both the Regional Administrator and the owner or operator of each BART affected unit identified in this section and CEMS required by this section the owner or operator may provide electronic notifications, reports and plans.

(i) A notification of the date construction of control devices and installation of burners required by this section commences postmarked no later than 30 days after the commencement date.

(ii) A notification of the date the installation of each CEMS required by this section commences postmarked no later than 30 days after the commencement date.

(iii) A notification of the date the construction of control devices and installation of burners required by this section is complete postmarked no later than 30 days after the completion date.

(iv) A notification of the date the installation of each CEMS required by this section is complete postmarked no later than 30 days after the completion date.

(v) A notification of the startup date for control devices and burners installed as a result of this section postmarked no later than 30 days after the startup date.

(vi) A notification of the startup date for CEMS required by this section postmarked no later than 30 days after the startup date.

(vii) A notification of the date upon which the initial CEMS performance evaluations are planned. This notification must be submitted at least 60 days before the performance evaluation is scheduled to begin.

(viii) A notification of initial compliance, signed by the responsible official who shall certify its accuracy, attesting to whether the source has complied with the requirements of this section, including, but not limited to, applicable emission standards, control device and burner installations, CEMS installation and certification. This notification must be submitted before the close of business on the 60^{th} calendar day following the completion of the compliance demonstration and must include, at a minimum, the information in paragraphs (n)(2)(viii) (A) through (F) of this section.

(A) The methods used to determine compliance.

(B) The results of any CEMS performance evaluations, and other monitoring procedures or methods that were conducted.

(C) The methods that will be used for determining continuing compliance, including a description of monitoring and reporting requirements and test methods.

(D) The type and quantity of air pollutants emitted by the source, reported in units of the standard.

(E) A description of the air pollution control equipment and burners installed as required by this section, for each emission point.

(F) A statement by the owner or operator as to whether the source has complied with the relevant standards and other requirements.

(3) The owner or operator must develop and implement a written startup, shutdown, and malfunction plan for NO_X and SO_2. The plan must include, at a minimum, procedures for operating and maintaining the source during periods of startup, shutdown, and malfunction; and a program of corrective action for a malfunctioning process and air pollution control and monitoring equipment used to comply with the relevant standard. The plan must ensure that, at all times, the owner or operator operates and maintains each affected source, including associated air pollution control and monitoring equipment, in a manner which satisfies the general duty to minimize or eliminate emissions using good air pollution control practices. The plan must

ensure that owners or operators are prepared to correct malfunctions as soon as practicable after their occurrence.

(4) The written reports of the results of each performance evaluation and QA/QC check in accordance with and as required in paragraph (l)(4)(v) of this section.

(5) *Compliance Reports*. The owner or operator of each BART affected unit must submit semiannual compliance reports. The semiannual compliance reports must be submitted in accordance with paragraphs (n)(5)(i) through (iv) of this section, unless the Regional Administrator has approved a different schedule.

(i) The first compliance report must cover the period beginning on the compliance date that is specified for the affected source through June 30 or December 31, whichever date comes first after the compliance date that is specified for the affected source.

(ii) The first compliance report must be postmarked no later than 30 calendar days after the reporting period covered by that report (July 30 or January 30), whichever comes first.

(iii) Each subsequent compliance report must cover the semiannual reporting period from January 1 through June 30 or the semiannual reporting period from July 1 through December 31.

(iv) Each subsequent compliance report must be postmarked no later than 30 calendar days after the reporting period covered by that report (July 30 or January 30).

(6) Compliance report contents. Each compliance report must include the information in paragraphs (6)(i) through (vi) of this section.

(i) Company name and address.

(ii) Statement by a responsible official, with the official's name, title, and signature, certifying the truth, accuracy, and completeness of the content of the report.

(iii) Date of report and beginning and ending dates of the reporting period.

(iv) Identification of the process unit, control devices, and CEMS covered by the compliance report.

(v) A record of each period of a startup, shutdown, or malfunction during the reporting period and a description of the actions the owner or operator took to minimize or eliminate emissions arising as a result of the startup, shutdown or malfunction and whether those actions were or were not consistent with the source's startup, shutdown, and malfunction plan.

(vi) A statement identifying whether there were or were not any deviations from the requirements of this section during the reporting period. If there were deviations from the requirements of this section during the reporting period, then the compliance report must describe in detail the deviations which occurred, the causes of the deviations, actions taken to

address the deviations, and procedures put in place to avoid such deviations in the future. If there were no deviations from the requirements of this section during the reporting period, then the compliance report must include a statement that there were no deviations. For purposes of this section, deviations include, but are not limited to, emissions in excess of applicable emission standards established by this section, failure to continuously operate an air pollution control device in accordance with operating requirements designed to assure compliance with emission standards, failure to continuously operate CEMS required by this section, and failure to maintain records or submit reports required by this section.

(7) Each owner or operator of a CEMS required by this section must submit quarterly excess emissions and monitoring system performance reports to the Regional Administrator for each pollutant monitored for each BART affected unit monitored. All reports must be postmarked by the 30th day following the end of each three-month period of a calendar year (January-March, April-June, July-September, October-December) and must include, at a minimum, the requirements of paragraphs (n)(7)(i)-(xv) of this section.

(i) Company name and address.

(ii) Identification and description of the process unit being monitored.

(iii) The dates covered by the reporting period.

(iv) Total source operating hours for the reporting period.

(v) Monitor manufacturer, monitor model number and monitor serial number.

(vi) Pollutant monitored.

(vii) Emission limitation for the monitored pollutant.

(viii) Date of latest CEMS certification or audit.

(ix) A description of any changes in continuous monitoring systems, processes, or controls since the last reporting period.

(x) A table summarizing the total duration of excess emissions, as defined in paragraphs (n)(7)(x)(A) through (B) of this section, for the reporting period broken down by the cause of those excess emissions (startup/shutdown, control equipment problems, process problems, other known causes, unknown causes), and the total percent of excess emissions (for all causes) for the reporting period calculated as described in paragraphs (n)(7)(x)(C) of this section.

(A) For purposes of section, an excess emission is defined as any 30-day or 720-hour rolling average period, including periods of startup, shutdown and malfunction, during which the 30-day or 720-hour (as appropriate) rolling average emissions of either regulated pollutant (SO_2 and NO_X), as measured by a CEMS, exceeds the applicable emission standards in this section.

(B)(1) For purposes of this section, if a facility calculates a 30-day rolling average emission rate in accordance with this section which exceeds the applicable emission standards of this section then it will be considered 30 days of excess emissions. If the following 30-day rolling average emission rate is calculated and found to exceed the applicable emission standards of this section as well, then it will add one more day to the total days of excess emissions (i.e. 31 days). Similarly, if an excess emission is calculated for a 30-day rolling average period and no additional excess emissions are calculated until 15 days after the first, then that new excess emission will add 15 days to the total days of excess emissions (i.e. 30 + 15 = 45). For purposes of this section, if an excess emission is calculated for any period of time within a reporting period, there will be no fewer than 30 days of excess emissions but there should be no more than 121 days of excess emissions for a reporting period.

(2) For purposes of this section, if a facility calculates a 720-hour rolling average emission rate in accordance with this section which exceeds the applicable emission standards of this section, then it will be considered 30 days of excess emissions. If the 24^{th} following 720-hour rolling average emission rate is calculated and found to exceed the applicable emission standards of the rule as well, then it will add one more day to the total

days of excess emissions (i.e. 31 days). Similarly, if an excess emission is calculated for a 720-hour rolling average period and no additional excess emissions are calculated until 360 hours after the first, then that new excess emission will add 15 days to the total days of excess emissions (i.e. 30+15 = 45). For purposes of this section, if an excess emission is calculated for any period of time with a reporting period, there will be no fewer than 30 days of excess emissions but there should be no more than 121 days of excess emissions for a reporting period.

(C) For purposes of this section, the total percent of excess emissions will be determined by summing all periods of excess emissions (in days) for the reporting period, dividing that number by the total BART affected unit operating days for the reporting period, and then multiplying by 100 to get the total percent of excess emissions for the reporting period. An operating day, as defined previously, is any day during which fuel is fired in the BART affected unit for any period of time. Because of the possible overlap of 30-day rolling average excess emissions across quarters, there are some situations where the total percent of excess emissions could exceed 100 percent. This extreme situation would only result from serious excess emissions problems where excess emissions occur for nearly every day during a reporting period.

(xi) A table summarizing the total duration of monitor downtime, as defined at (n)(7)(xi)(A) of this section, for the reporting period broken down by the cause of the monitor downtime (monitor equipment malfunctions, non-monitor equipment malfunctions, quality assurance calibration, other known causes, unknown causes), and the total percent of monitor downtime (for all causes) for the reporting period calculated as described in paragraph (n)(7)(xi)(B) of this section.

(A) For purposes of this section, monitor downtime is defined as any period of time (in hours) during which the required monitoring system was not measuring emissions from the BART affected unit. This includes any period of CEMS QA/QC, daily zero and span checks, and similar activities.

(B) For purposes of this section, the total percent of monitor downtime will be determined by summing all periods of monitor downtime (in hours) for the reporting period, dividing that number by the total number of BART affected unit operating hours for the reporting period, and then multiplying by 100 to get the total percent of excess emissions for the reporting period.

(xii) A table which identifies each period of excess emissions for the reporting period and includes, at a minimum, the information in paragraphs (n)(7)(xii)(A) through (F) of this section.

(A) The date of each excess emission.

(B) The beginning and end time of each excess emission.

(C) The pollutant for which an excess emission occurred.

(D) The magnitude of the excess emission.

(E) The cause of the excess emission.

(F) The corrective action taken or preventative measures adopted to minimize or eliminate the excess emissions and prevent such excess emission from occurring again.

(xiii) A table which identifies each period of monitor downtime for the reporting period and includes, at a minimum, the information in paragraph (n)(7)(xiii)(A) through (D) of this section.

(A) The date of each period of monitor downtime.

(B) The beginning and end time of each period of monitor downtime.

(C) The cause of the period of monitor downtime.

(D) The corrective action taken or preventative measures adopted for system repairs or adjustments to minimize or eliminate monitor downtime and prevent such downtime from occurring again.

(xiv) If there were no periods of excess emissions during the reporting period, then the excess emission report must include a statement which says there were no periods of excess emissions during this reporting period.

(xv) If there were no periods of monitor downtime, except for daily zero and span checks, during the reporting period, then

the excess emission report must include a statement which says there were no periods of monitor downtime during this reporting period except for the daily zero and span checks.

(8) The owner or operator of each CEMS required by this section must develop and submit for review and approval by the Regional Administrator a site specific monitoring plan. The purpose of this monitoring plan is to establish procedures and practices which will be implemented by the owner or operator in its effort to comply with the monitoring, recordkeeping and reporting requirements of this section. The monitoring plan must include, at a minimum, the information in paragraphs (n)(8)(i)-(x) of this section.

(i) Site specific information including the company name, address, and contact information.

(ii) The objectives of the monitoring program implemented and information describing how those objectives will be met.

(iii) Information on any emission factors used in conjunction with the CEMS required by this section to calculate emission rates and a description of how those emission factors were determined.

(iv) A description of methods to be used to calculate emission rates when CEMS data is not available due to downtime associated with QA/QC events.

(v) A description of the QA/QC program to be implemented by the owner or operator of CEMS required by this section. This can be the QA/QC program developed in accordance with 40 CFR part 60, appendix F, Procedure 1, Section 3.

(vi) A list of spare parts for CEMS maintained on site for system maintenance and repairs.

(vii) A description of the procedures to be used to calculate 30-day rolling averages and 720-hour rolling averages and example calculations which shows the algorithms used by the CEMS to calculate 30-day rolling averages and 720-hour rolling averages.

(viii) A sample of the document to be used for the quarterly excess emission reports required by this section.

(ix) A description of the procedures to be implemented to investigate root causes of excess emissions and monitor downtime and the proposed corrective actions to address potential root causes of excess emissions and monitor downtime.

(x) A description of the sampling and calculation methodology for determining the percent sulfur by weight as a monthly block average for coal used during that month.

(o) Equations for Establishing the Upper Predictive Limit

(1) Equation for Normal Distribution and Statistically Independent Data

$$UPL = \bar{x} + t_{[(n-1),(0.95)]}\sqrt{s^2\left(\frac{1}{n} + \frac{1}{m}\right)}$$

Where:

$\bar{x} =$ average or mean of test run data;

$t_{[(n-1),(0.95)]} =$ t score, the one-tailed t value of the Student's t distribution for a specific degree of freedom (n-1) and a confidence level (0.95; 0.99 for Tilden SO_2)

$s^2 =$ variance of the dataset;

$n =$ number of values

$m =$ number of values used to calculate the test average (m = 720 as per averaging time)

(2) (i) To determine if statistically independent, use the Rank von Neumann Test on p. 137 of data Quality Assessment: Statistical Methods for Practitioners EPA QA/G-9S.

(ii) Alternative to Rank von Neumann test to determine if data are dependent, data are dependent if t test value is greater than t critical value, where:

$$t\ test = \frac{\rho}{\sqrt{\frac{1-\rho^2}{n-2}}}$$

ρ = correlation between data points

$t\ critical = t_{[(n-2),(0.95)]} =$ t score, the two-tailed t value of the Student's t distribution for a specific degree of freedom (n-2) and a confidence level (0.95)

(3)If data are dependent then use the following equation.

<u>Equation for Normal Distribution and Data not Statistically Independent</u>

$$UPL = \bar{x} + t_{[(n-1),(0.95)]}\sqrt{s^2[1+(n-1)\rho](\frac{1}{n}+\frac{1}{m})}$$

Where:

ρ = correlation between data points

(4) Non-parametric Equations for Data Not Normally Distributed

$m = (n + 1) * \alpha$

$m =$ the rank of the ordered data point, when data is sorted smallest to largest

$n =$ number of data points

$\alpha =$ 0.95, to reflect the 95^{th} percentile

If *m* is a whole number, then the limit, UPL, shall be computed as:

$UPL = X_m$

Where:

$X_m =$ value of the m^{th} data point in terms of lbs SO_2/hr or lbs NOX/MMBtu, when the data is sorted smallest to largest.

If *m* is not a whole number, the limit shall be computed by linear interpolation according to the following equation.

$UPL = x_m = x_{m_i.m_d} = x_{m_i} + 0.m_d\,(x_{m_i+1} - x_{m_i})$

where

$m_i =$ the integer portion of *m*, i.e., *m* truncated at zero decimal places, and

$m_d =$ the decimal portion of *m*

3. Section 52.1235 is proposed to be amended by revising paragraphs (b)(1)(ii), (b)(1)(iv), (b)(1)(v),(b)(2)(iv), (c), (d), and (e) and by adding paragraph (f) to read as follows:

§52.1235 Regional haze.

(a) [Reserved]

(b)(1) NO_X emission limits.

(i) * * *

(ii) Hibbing Taconite Company.

(A) Hibbing Line 1.

(*1*) An emission limit of 1.2 lbs NO_x/MMBtu, based on a 30-day rolling average, shall apply to Hibbing Line 1 when burning natural gas. This emission limit will become enforceable 37 months after [EFFECTIVE DATE OF FINAL RULE] and only after EPA's confirmation or modification of the emission limit in accordance with the procedures set forth below.

(*2*) Compliance with this emission limit will be demonstrated with data collected by a continuous emissions monitoring system (CEMS) for NO_x. The owner or operator of Hibbing Line 1 must install a CEMS for NOx and SO_2 within six months from the effective date of the rule. The owner or operator must start collecting CEMS data and submit the data to EPA no later than 30 days from the end of each calendar quarter after that installation deadline. Any remaining data through the end of the 34th month from [EFFECTIVE DATE OF FINAL RULE], that doesn't fall within a calendar quarter, must be submitted to EPA no later than seven days from the end of the 34th month. Although CEMS data must continue to be collected, it does not need to be submitted to EPA starting 34 months after the effective date of the rule.

(*3*) No later than 24 months after [EFFECTIVE DATE OF FINAL RULE] the owner or operator must submit to EPA a report, including any final report(s) completed by the selected NOx reduction technology supplier and furnace retrofit engineer, containing a detailed engineering analysis and modeling of the NO_x reduction control technology being installed on Hibbing Line 1. The NO_x reduction control technology must be designed to meet an emission limit of 1.2 lbs NO_x/MMBtu. This report must include a list of all process and control technology variables that can reasonably be expected to have an impact on NO_x emissions control technology performance, as well as a description of how these variables can be adjusted to reduce NO_x emissions to meet the NOx design emission limit.

(*4*) The NOx reduction control technology shall be installed on Hibbing Line 1 furnace no later than 26 months after [EFFECTIVE DATE OF FINAL RULE].

(*5*) Commencing on the earlier of:

(i) Six months from the installation of the NOx reduction control technology; or

(ii) 26 months from [EFFECTIVE DATE OF FINAL RULE], the owner or operator must provide to EPA the results from pellet quality analyses. The owner or operator shall provide the results from pellet quality analyses no later than 30 days from the end of each calendar quarter up until 34 months after

[EFFECTIVE DATE OF FINAL RULE]. Any remaining results through the end of the 34th month from [EFFECTIVE DATE OF FINAL RULE], that do not fall within a calendar quarter, must be submitted to EPA no later than seven days from the end of the 34th month. The pellet quality analyses shall include results for the following factors: compression, reducibility, before tumble, after tumble, low temperature disintegration, and swelling. For each of the pellet quality analysis factors, the owner or operator must explain the pellet quality analysis factor, as well as the defined acceptable range for each factor using the applicable product quality standards based upon customers' pellet specifications that are contained in Hibbing's ISO 9001 quality management system. The owner or operator shall provide pellet quality analysis testing results that state the date and time of the analysis and, in order to define the time period when pellets were produced outside of the defined acceptable range for the pellet quality factors listed, provide copies of the production logs that document the starting and ending times for such periods. The owner or operator shall provide an explanation of causes for pellet samples that fail to meet the acceptable range for any pellet quality analysis factor. Pellet quality information and data may be submitted to EPA as Confidential Business Information.

(*6*) No later than 34 months after [EFFECTIVE DATE OF FINAL RULE], the owner or operator may submit to EPA a report to either confirm or modify the NOx limits for Hibbing Line 1 furnace within the upper and lower bounds described below. EPA will review the report and either confirm or modify the NOx limits. If the CEMS data collected during operating periods between months 26 and 34 that both meet pellet quality specifications and proper furnace/burner operation is normally distributed, the limit adjustment determination shall be based on the appropriate (depending upon whether data are statistically independent or dependent) 95% upper predictive limit (UPL) equations in paragraph (f) of this section. If the CEMS data collected during operating periods between months 26 and 34 that both meet pellet quality specifications and proper furnace/burner operation are not normally distributed, the limit adjustment determination shall be based on the non-parametric equation provided in paragraph (f) of this section. The data set for the determination shall exclude periods when pellet quality did not fall within the defined acceptable ranges of the pellet quality factors identified pursuant to paragraph (b)(1)(ii)(E) of this section and for any subsequent period when production has been reduced in response to pellet quality concerns consistent with Hibbing's ISO 9001 operating standards. Any excluded period will commence at the time documented on the

production log demonstrating that pellet quality did not fall within the defined acceptable range and shall end when pellet quality within the defined acceptable range has been re-established at planned production levels, which will be presumed to be the level that existed immediately prior to the reduction in production due to pellet quality concerns. EPA may also exclude data where operations are inconsistent with the reported design parameters of the NOx reduction control technology installed.

(7) EPA will take final agency action by publishing its final confirmation or modification of the NOx limit in the *Federal Register* no later than 37 months after [EFFECTIVE DATE OF FINAL RULE]. The confirmed or modified NO_x limit for Hibbing Line 1 when burning only natural gas may be no lower than 1.2 lbs NO_x/MMBtu, based on a 30-day rolling average, and may not exceed 1.8 lbs NO_x/MMBtu, based on a 30-day rolling average.

(B) Hibbing Line 2.

(*1*) An emission limit of 1.2 lbs NO_x/MMBtu, based on a 30-day rolling average, shall apply to Hibbing Line 2 when burning natural gas. This emission limit will become enforceable 55 months after [EFFECTIVE DATE OF FINAL RULE] and only after EPA's confirmation or modification of the emission limit in accordance with the procedures set forth below.

(*2*) Compliance with this emission limit will be demonstrated with data collected by a continuous emissions monitoring system (CEMS) for NO_x. The owner or operator of Hibbing Line 2 must install a CEMS for NOx and SO_2 within six months from [EFFECTIVE DATE OF FINAL RULE]. The owner or operator must start collecting CEMS data and submit the data to EPA no later than 30 days from the end of each calendar quarter after that installation deadline. Any remaining data through the end of the 52nd month from [EFFECTIVE DATE OF FINAL RULE], that doesn't fall within a calendar quarter, must be submitted to EPA no later than seven days from the end of the 52nd month. Although CEMS data must continue to be collected, it does not need to be submitted to EPA starting 52 months after [EFFECTIVE DATE OF FINAL RULE].

(*3*) No later than 42 months after [EFFECTIVE DATE OF FINAL RULE] the owner or operator must submit to EPA a report, including any final report(s) completed by the selected NOx reduction technology supplier and furnace retrofit engineer, containing a detailed engineering analysis and modeling of the NO_x reduction control technology being installed on Hibbing Line 2. The NO_x reduction control technology must be designed to meet an emission limit of 1.2 lbs NO_x/MMBtu. This report must include a list of all process and control technology variables that can reasonably be expected to have an impact on NO_x emissions control

technology performance, as well as a description of how these variables can be adjusted to reduce NO_x emissions to meet the NOx design emission limit.

(*4*) The NOx reduction control technology shall be installed on Hibbing Line 2 furnace no later than 44 months after [EFFECTIVE DATE OF FINAL RULE]

(*5*) Commencing on the earlier of:

(i) Six months from the installation of the NOx reduction control technology; or

(ii) 44 months from [EFFECTIVE DATE OF FINAL RULE], the owner or operator must provide to EPA the results from pellet quality analyses. The owner or operator shall provide the results from pellet quality analyses no later than 30 days from the end of each calendar quarter up until 52 months after [EFFECTIVE DATE OF FINAL RULE]. Any remaining results through the end of the 52nd month from [EFFECTIVE DATE OF FINAL RULE], that do not fall within a calendar quarter, must be submitted to EPA no later than seven days from the end of the 52nd month. The pellet quality analyses shall include results for the following factors: compression, reducibility, before tumble, after tumble, low temperature disintegration, and swelling. For each of the pellet quality analysis factors, the owner or operator must explain the pellet quality analysis factor, as well as the defined acceptable range for each factor using the

applicable product quality standards based upon customers' pellet specifications that are contained in Hibbing's ISO 9001 quality management system. The owner or operator shall provide pellet quality analysis testing results that state the date and time of the analysis and, in order to define the time period when pellets were produced outside of the defined acceptable range for the pellet quality factors listed, provide copies of the production logs that document the starting and ending times for such periods. The owner or operator shall provide an explanation of causes for pellet samples that fail to meet the acceptable range for any pellet quality analysis factor. Pellet quality information and data may be submitted to EPA as Confidential Business Information.

(*6*) No later than 52 months after [EFFECTIVE DATE OF FINAL RULE], the owner or operator may submit to EPA a report to either confirm or modify the NOx limits for Hibbing Line 2 furnace within the upper and lower bounds described below. EPA will review the report and either confirm or modify the NOx limits. If the CEMS data collected during operating periods between months 44 and 52 that both meet pellet quality specifications and proper furnace/burner operation is normally distributed, the limit adjustment determination shall be based on the appropriate (depending upon whether data are statistically independent or dependent) 95% upper predictive

limit (UPL) equations in paragraph (f) of this section. If the CEMS data collected during operating periods between months 44 and 52 that both meet pellet quality specifications and proper furnace/burner operation are not normally distributed, the limit adjustment determination shall be based on the non-parametric equation provided in paragraph (f) of this section. The data set for the determination shall exclude periods when pellet quality did not fall within the defined acceptable ranges of the pellet quality factors identified pursuant to paragraph (b)(1)(ii)(E) of this section and for any subsequent period when production has been reduced in response to pellet quality concerns consistent with Hibbing's ISO 9001 operating standards. Any excluded period will commence at the time documented on the production log demonstrating that pellet quality did not fall within the defined acceptable range and shall end when pellet quality within the defined acceptable range has been re-established at planned production levels, which will be presumed to be the level that existed immediately prior to the reduction in production due to pellet quality concerns. EPA may also exclude data where operations are inconsistent with the reported design parameters of the NOx reduction control technology installed.

(7) EPA will take final agency action by publishing its final confirmation or modification of the NOx limit in the

Federal Register no later than 55 months after [EFFECTIVE DATE OF FINAL RULE]. The confirmed or modified NO_x limit for Hibbing Line 2 when burning only natural gas may be no lower than 1.2 lbs NO_x/MMBtu, based on a 30-day rolling average, and may not exceed 1.8 lbs NO_x/MMBtu, based on a 30-day rolling average.

(C) Hibbing Line 3.

(*1*) An emission limit of 1.2 lbs NO_x/MMBtu, based on a 30-day rolling average, shall apply to Hibbing Line 3 when burning natural gas. This emission limit will become enforceable 60 months after [EFFECTIVE DATE OF FINAL RULE] and only after EPA's confirmation or modification of the emission limit in accordance with the procedures set forth below.

(*2*) Compliance with this emission limit will be demonstrated with data collected by a continuous emissions monitoring system (CEMS) for NO_x. The owner or operator of Hibbing Line 3 must install a CEMS for NOx and SO_2 within six months from [EFFECTIVE DATE OF FINAL RULE]. The owner or operator must start collecting CEMS data and submit the data to EPA no later than 30 days from the end of each calendar quarter after that installation deadline. Any remaining data through the end of the 57th month from [EFFECTIVE DATE OF FINAL RULE], that doesn't fall within a calendar quarter, must be submitted to EPA no later than seven days from the end of the 57th month. Although CEMS data must continue to be collected, it does not

need to be submitted to EPA starting 57 months after the effective date of the rule.

(*3*) No later than 48 months after [EFFECTIVE DATE OF FINAL RULE] the owner or operator must submit to EPA a report, including any final report(s) completed by the selected NOx reduction technology supplier and furnace retrofit engineer, containing a detailed engineering analysis and modeling of the NO_x reduction control technology being installed on Hibbing Line 3. The NO_x reduction control technology must be designed to meet an emission limit of 1.2 lbs NO_x/MMBtu. This report must include a list of all process and control technology variables that can reasonably be expected to have an impact on NO_x emissions control technology performance, as well as a description of how these variables can be adjusted to reduce NO_x emissions to meet the NOx design emission limit.

(*4*) The NOx reduction control technology shall be installed on Hibbing Line 3 furnace no later than 50 months after [EFFECTIVE DATE OF FINAL RULE].

(*5*) Commencing on the earlier of:

(i) Six months from the installation of the NOx reduction control technology; or

(ii) 50 months from [EFFECTIVE DATE OF FINAL RULE], the owner or operator must provide to EPA the results from pellet quality analyses. The owner or operator shall provide the results from

pellet quality analyses no later than 30 days from the end of each calendar quarter up until 57 months after [EFFECTIVE DATE OF FINAL RULE]. Any remaining results through the end of the 57th month from [EFFECTIVE DATE OF FINAL RULE], that do not fall within a calendar quarter, must be submitted to EPA no later than seven days from the end of the 57th month. The pellet quality analyses shall include results for the following factors: compression, reducibility, before tumble, after tumble, low temperature disintegration, and swelling. For each of the pellet quality analysis factors, the owner or operator must explain the pellet quality analysis factor, as well as the defined acceptable range for each factor using the applicable product quality standards based upon customers' pellet specifications that are contained in Hibbing's ISO 9001 quality management system. The owner or operator shall provide pellet quality analysis testing results that state the date and time of the analysis and, in order to define the time period when pellets were produced outside of the defined acceptable range for the pellet quality factors listed, provide copies of the production logs that document the starting and ending times for such periods. The owner or operator shall provide an explanation of causes for pellet samples that fail to meet the acceptable range for any pellet quality analysis factor. Pellet

quality information and data may be submitted to EPA as Confidential Business Information.

(*6*) No later than 57 months after [EFFECTIVE DATE OF FINAL RULE], the owner or operator may submit to EPA a report to either confirm or modify the NOx limits for Hibbing Line 3 furnace within the upper and lower bounds described below. EPA will review the report and either confirm or modify the NOx limits. If the CEMS data collected during operating periods between months 50 and 57 that both meet pellet quality specifications and proper furnace/burner operation is normally distributed, the limit adjustment determination shall be based on the appropriate (depending upon whether data are statistically independent or dependent) 95% upper predictive limit (UPL) equations in paragraph (f) of this section. If the CEMS data collected during operating periods between months 50 and 57 that both meet pellet quality specifications and proper furnace/burner operation are not normally distributed, the limit adjustment determination shall be based on the non-parametric equation provided in paragraph (f) of this section. The data set for the determination shall exclude periods when pellet quality did not fall within the defined acceptable ranges of the pellet quality factors identified pursuant to paragraph (b)(1)(ii)(E) of this section and for any subsequent period when production has been reduced in response to pellet quality

concerns consistent with Hibbing's ISO 9001 operating standards. Any excluded period will commence at the time documented on the production log demonstrating that pellet quality did not fall within the defined acceptable range and shall end when pellet quality within the defined acceptable range has been re-established at planned production levels, which will be presumed to be the level that existed immediately prior to the reduction in production due to pellet quality concerns. EPA may also exclude data where operations are inconsistent with the reported design parameters of the NOx reduction control technology installed.

(7) EPA will take final agency action by publishing its final confirmation or modification of the NOx limit in the *Federal Register* no later than 60 months after [EFFECTIVE DATE OF FINAL RULE]. The confirmed or modified NO_x limit for Hibbing Line 3 when burning only natural gas may be no lower than 1.2 lbs NO_x/MMBtu, based on a 30-day rolling average, and may not exceed 1.8 lbs NO_x/MMBtu, based on a 30-day rolling average.

* * * * *

(iv) United Taconite.

(A) United Taconite Line 1.

(*1*) An emission limit of 2.8 lbs NO_x/MMBtu, based on a 720-hour rolling average, shall apply to United Taconite Grate Kiln Line 1 when burning natural gas, and an emission limit of 1.5

lbs NO_x/MMBtu, based on a 720-hour rolling average, shall apply to United Taconite Grate Kiln Line 1 when burning coal or a mixture of coal and natural gas. These emission limits will become enforceable 37 months after [EFFECTIVE DATE OF FINAL RULE] and only after EPA's confirmation or modification of the emission limit in accordance with the procedures set forth below.

(*2*) Compliance with these emission limits shall be demonstrated with data collected by a continuous emissions monitoring system (CEMS) for NO_x. The owner or operator must start collecting CEMS data for NO_x upon [EFFECTIVE DATE OF FINAL RULE] and submit the data to EPA no later than 30 days from the end of each calendar quarter. Any remaining data through the end of the 34^{th} month from [EFFECTIVE DATE OF FINAL RULE], that doesn't fall within a calendar quarter, must be submitted to EPA no later than 7 days from the end of the 34^{th} month. Although CEMS data must continue to be collected, it does not need to be submitted to EPA starting 34 months after [EFFECTIVE DATE OF FINAL RULE].

(*3*) No later than 24 months from [EFFECTIVE DATE OF FINAL RULE], the owner or operator must submit to EPA a report, including any final report(s) completed by the selected NO_x reduction technology supplier and furnace retrofit engineer, containing a detailed engineering analysis and modeling of the

NO_x reduction control technology being installed on United Taconite Grate Kiln Line 1. This report must include a list of all variables that can reasonably be expected to have an impact on NO_x emission control technology performance, as well as a description of how these variables can be adjusted to reduce NO_x emissions to meet the NO_x design emission limit. This NOx reduction control technology must be designed to meet emission limits of 2.8 lbs NO_x/MMBtu when burning natural gas and 1.5 lbs NO_x/MMBtu when burning coal or a mixture of coal and natural gas.

(*4*) The NO_x reduction control technology shall be installed on United Taconite Grate Kiln Line 1 furnace no later than 26 months from [EFFECTIVE DATE OF FINAL RULE].

(*5*) Commencing on the earlier of

(i) Six months from the installation of the NO_x reduction control technology; or

(ii) 26 months from the effective date of the rule, the owner or operator must provide to EPA the results from pellet quality analyses. The owner or operator shall provide the results from pellet quality analyses no later than 30 days from the end of each calendar quarter up until 34 months after [EFFECTIVE DATE OF FINAL RULE]. Any remaining results through the end of the 34^{th} month, that do not fall within a calendar quarter, must be submitted to EPA no later than seven days from the end of the 34^{th} month. The pellet quality analyses shall

include results for the following factors: compression, reducibility, before tumble, after tumble, and low temperature disintegration. For each of the pellet quality analysis factors, the owner or operator must explain the pellet quality analysis factor, as well as the defined acceptable range for each factor using the applicable product quality standards based upon customers' pellet specifications that are contained in Tilden's ISO 9001 quality management system. The owner or operator shall provide pellet quality analysis testing results that state the date and time of the analysis and, in order to define the time period when pellets were produced outside of the defined acceptable range for the pellet quality factors listed, provide copies of the production logs that document the starting and ending times for such periods. The owner or operator shall provide an explanation of causes for pellet samples that fail to meet the acceptable range for any pellet quality analysis factor. Pellet quality information and data may be submitted to EPA as Confidential Business Information.

(*6*) No later than 34 months after [EFFECTIVE DATE OF FINAL RULE], the owner or operator may submit to EPA a report to either confirm or modify the NO_x limits for United Taconite Grate Kiln Line 1 within the upper and lower bounds described below. EPA will review the report and either confirm or modify the NO_x limits. If the CEMS data collected during operating periods

between months 26 and 34 that both meet pellet quality specifications and proper furnace/burner operation is normally distributed, the limit adjustment determination shall be based on the appropriate (depending upon whether data are statistically independent or dependent) 95% upper predictive limit (UPL) equations in paragraph (f) of this section. If the CEMS data collected during operating periods between months 26 and 34 that both meet pellet quality specifications and proper furnace/burner operation are not normally distributed, the limit adjustment determination shall be based on the non-parametric equation provided in paragraph (f) of this section. The data set for the determination shall exclude periods when pellet quality did not fall within the defined acceptable ranges of the pellet quality factors identified pursuant to paragraph (b)(1)(iv)(A)(*5*) of this section and for any subsequent period when production had been reduced in response to pellet quality concerns consistent with United Taconite's ISO 9001 operating standards. Any excluded period will commence at the time documented on the production log demonstrating pellet quality did not fall within the defined acceptable range, and shall end when pellet quality within the defined acceptable range has been re-established at planned production levels, which will presumed to be the level that existed immediately prior to the reduction in production due to pellet quality concerns. EPA may also

exclude data where operations are inconsistent with the reported design parameters of the NO_x reduction control technology that were installed.

(7) EPA will take final agency action by publishing its final confirmation or modification of the NO_x limits in the *Federal Register* no later than 37 months after [EFFECTIVE DATE OF FINAL RULE]. The confirmed or modified NO_x limit for United Taconite Grate Kiln Line 1 when burning only natural gas may be no lower than 2.8 lbs NO_x/MMBtu, based on a 720-hour rolling average, and may not exceed 3.0 lbs NO_x/MMBtu, based on a 720-hour rolling average. The confirmed or modified NO_x limit for United Taconite Grate Kiln Line 1 when burning coal or a mixture of coal and natural gas may be no lower than 1.5 lbs NO_x/MMBtu, based on a 720-hour rolling average, and may not exceed 2.5 lbs NO_x/MMBtu, based on a 720-hour rolling average.

(8) If the owner or operator submits a report proposing a single NO_x limit for all fuels, EPA may approve the proposed NO_x limit for all fuels based on a 30-day rolling average. The confirmed or modified limit will be established and enforceable within 37 months from [EFFECTIVE DATE OF FINAL RULE].

(B) United Taconite Line 2

(*1*) An emission limit of 2.8 lbs NO_x/MMBtu, based on a 720-hour rolling average, shall apply to United Taconite Grate Kiln Line 2 when burning natural gas, and an emission limit of 1.5

lbs NO_x/MMBtu, based on a 720-hour rolling average, shall apply to United Taconite Grate Kiln Line 2 when burning coal or a mixture of coal and natural gas. These emission limits will become enforceable 55 months after [EFFECTIVE DATE OF FINAL RULE] and only after EPA's confirmation or modification of the emission limit in accordance with the procedures set forth below.

(*2*) Compliance with these emission limits shall be demonstrated with data collected by a continuous emissions monitoring system (CEMS) for NO_x. The owner or operator must start collecting CEMS data for NO_x upon [EFFECTIVE DATE OF FINAL RULE] and submit the data to EPA no later than 30 days from the end of each calendar quarter. Any remaining data through the end of the 52nd month from [EFFECTIVE DATE OF FINAL RULE], that doesn't fall within a calendar quarter, must be submitted to EPA no later than 7 days from the end of the 52nd month. Although CEMS data must continue to be collected, it does not need to be submitted to EPA starting 52 months after [EFFECTIVE DATE OF FINAL RULE].

(*3*) No later than 42 months from [EFFECTIVE DATE OF FINAL RULE], the owner or operator must submit to EPA a report, including any final report(s) completed by the selected NO_x reduction technology supplier and furnace retrofit engineer, containing a detailed engineering analysis and modeling of the

NO_x reduction control technology being installed on United Taconite Grate Kiln Line 2. This report must include a list of all variables that can reasonably be expected to have an impact on NO_x emission control technology performance, as well as a description of how these variables can be adjusted to reduce NO_x emissions to meet the NO_x design emission limit. This NOx reduction control technology must be designed to meet emission limits of 2.8 lbs NO_x/MMBtu when burning natural gas and 1.5 lbs NO_x/MMBtu when burning coal or a mixture of coal and natural gas.

(*4*) The NO_x reduction control technology shall be installed on United Taconite Grate Kiln Line 2 furnace no later than 44 months from the effective date of the rule.

(*5*) Commencing on the earlier of:

(i) Six months from the installation of the NO_x reduction control technology; or

(ii) 44 months from [EFFECTIVE DATE OF FINAL RULE], the owner or operator must provide to EPA the results from pellet quality analyses. The owner or operator shall provide the results from pellet quality analyses no later than 30 days from the end of each calendar quarter up until 52 months after [EFFECTIVE DATE OF FINAL RULE]. Any remaining results through the end of the 52nd month, that do not fall within a calendar quarter, must be submitted to EPA no later than seven days from the end of the 52nd month. The pellet quality analyses shall

include results for the following factors: compression, reducibility, before tumble, after tumble, and low temperature disintegration. For each of the pellet quality analysis factors, the owner or operator must explain the pellet quality analysis factor, as well as the defined acceptable range for each factor using the applicable product quality standards based upon customers' pellet specifications that are contained in Tilden's ISO 9001 quality management system. The owner or operator shall provide pellet quality analysis testing results that state the date and time of the analysis and, in order to define the time period when pellets were produced outside of the defined acceptable range for the pellet quality factors listed, provide copies of the production logs that document the starting and ending times for such periods. The owner or operator shall provide an explanation of causes for pellet samples that fail to meet the acceptable range for any pellet quality analysis factor. Pellet quality information and data may be submitted to EPA as Confidential Business Information.

(*6*) No later than 52 months after [EFFECTIVE DATE OF FINAL RULE], the owner or operator may submit to EPA a report to either confirm or modify the NO_x limits for United Taconite Grate Kiln Line 2 within the upper and lower bounds described below. EPA will review the report and either confirm or modify the NO_x limits. If the CEMS data collected during operating periods

between months 44 and 52 that both meet pellet quality specifications and proper furnace/burner operation is normally distributed, the limit adjustment determination shall be based on the appropriate (depending upon whether data are statistically independent or dependent) 95% upper predictive limit (UPL) equations in paragraph (f) of this section. If the CEMS data collected during operating periods between months 44 and 52 that both meet pellet quality specifications and proper furnace/burner operation are not normally distributed, the limit adjustment determination shall be based on the non-parametric equation provided in paragraph (f) of this section. The data set for the determination shall exclude periods when pellet quality did not fall within the defined acceptable ranges of the pellet quality factors identified pursuant to paragraph (b)(1)(iv)(B)(*5*) of this section and for any subsequent period when production had been reduced in response to pellet quality concerns consistent with United Taconite's ISO 9001 operating standards. Any excluded period will commence at the time documented on the production log demonstrating pellet quality did not fall within the defined acceptable range, and shall end when pellet quality within the defined acceptable range has been re-established at planned production levels, which will presumed to be the level that existed immediately prior to the reduction in production due to pellet quality concerns. EPA may also

exclude data where operations are inconsistent with the reported design parameters of the NO_x reduction control technology that were installed.

(7) EPA will take final agency action by publishing its final confirmation or modification of the NO_x limits in the *Federal Register* no later than 55 months after [EFFECTIVE DATE OF FINAL RULE]. The confirmed or modified NO_x limit for United Taconite Grate Kiln Line 2 when burning only natural gas may be no lower than 2.8 lbs NO_x/MMBtu, based on a 720-hour rolling average, and may not exceed 3.0 lbs NO_x/MMBtu, based on a 720-hour rolling average. The confirmed or modified NO_x limit for United Taconite Grate Kiln Line 2 when burning coal or a mixture of coal and natural gas may be no lower than 1.5 lbs NO_x/MMBtu, based on a 720-hour rolling average, and may not exceed 2.5 lbs NO_x/MMBtu, based on a 720-hour rolling average.

(8) If the owner or operator submits a report proposing a single NO_x limit for all fuels, EPA may approve the proposed NO_x limit for all fuels based on a 30-day rolling average. The confirmed or modified limit will be established and enforceable within 55 months from [EFFECTIVE DATE OF FINAL RULE].

(v) ArcelorMittal Minorca Mine

(A) An emission limit of 1.2 lbs NO_x/MMBtu, based on a 30-day rolling average, shall apply to the ArcelorMittal Minorca Mine indurating furnace when burning natural gas. This emission

limit will become enforceable 55 months after [EFFECTIVE DATE OF FINAL RULE] and only after EPA's confirmation or modification of the emission limit in accordance with the procedures set forth below.

(B) Compliance with this emission limit will be demonstrated with data collected by a continuous emissions monitoring system (CEMS) for NO_x. The owner or operator of the ArcelorMittal Minorca Mine indurating furnace must install a CEMS for NOx and SO_2 within six months from [EFFECTIVE DATE OF FINAL RULE]. The owner or operator must start collecting CEMS data and submit the data to EPA no later than 30 days from the end of each calendar quarter after that installation deadline. Any remaining data through the end of the 52nd month from [EFFECTIVE DATE OF FINAL RULE], that doesn't fall within a calendar quarter, must be submitted to EPA no later than seven days from the end of the 52nd month. Although CEMS data must continue to be collected, it does not need to be submitted to EPA starting 52 months after [EFFECTIVE DATE OF FINAL RULE].

(C) No later than 42 months after [EFFECTIVE DATE OF FINAL RULE] the owner or operator must submit to EPA a report, including any final report(s) completed by the selected NOx reduction technology supplier and furnace retrofit engineer, containing a detailed engineering analysis and modeling of the NO_x reduction control technology being installed on the

ArcelorMittal Minorca Mine indurating furnace. The NO_x reduction control technology must be designed to meet an emission limit of 1.2 lbs NO_x/MMBtu. This report must include a list of all process and control technology variables that can reasonably be expected to have an impact on NO_x emissions control technology performance, as well as a description of how these variables can be adjusted to reduce NO_x emissions to meet the NOx design emission limit.

(D) The NOx reduction control technology shall be installed on the ArcelorMittal Minorca Mine indurating furnace no later than 44 months after the effective date of the rule.

(E) Commencing on the earlier of:

(1) Six months from the installation of the NOx reduction control technology; or

(2) 44 months from [EFFECTIVE DATE OF FINAL RULE], the owner or operator must provide to EPA the results from pellet quality analyses. The owner or operator shall provide the results from pellet quality analyses no later than 30 days from the end of each calendar quarter up until 52 months after [EFFECTIVE DATE OF FINAL RULE]. Any remaining results through the end of the 52nd month from [EFFECTIVE DATE OF FINAL RULE], that do not fall within a calendar quarter, must be submitted to EPA no later than seven days from the end of the 52nd month. The pellet quality analyses shall include results for the following

factors: compression, reducibility, before tumble, after tumble, low temperature disintegration, and contraction. For each of the pellet quality analysis factors, the owner or operator must explain the pellet quality analysis factor, as well as the defined acceptable range for each factor using the applicable product quality standards based upon customers' pellet specifications that are contained in the ArcelorMittal Minorca Mine's Standard Product Parameters. The owner or operator shall provide pellet quality analysis testing results that state the date and time of the analysis and, in order to define the time period when pellets were produced outside of the defined acceptable range for the pellet quality factors listed, provide copies of production or scale data that document the starting and ending times for such periods. The owner or operator shall provide an explanation of causes for pellet samples that fail to meet the acceptable range for any pellet quality analysis factor. Pellet quality information and data may be submitted to EPA as Confidential Business Information.

(F) No later than 52 months after [EFFECTIVE DATE OF FINAL RULE], the owner or operator may submit to EPA a report to either confirm or modify the NOx limits for the ArcelorMittal Minorca Mine indurating furnace within the upper and lower bounds described below. EPA will review the report and either confirm or modify the NOx limits. If the CEMS data collected

during operating periods between months 44 and 52 that both meet pellet quality specifications and proper furnace/burner operation is normally distributed, the limit adjustment determination shall be based on the appropriate (depending upon whether data are statistically independent or dependent) 95% upper predictive limit (UPL) equations in paragraph (f) of this section. If the CEMS data collected during operating periods between months 44 and 52 that both meet pellet quality specifications and proper furnace/burner operation are not normally distributed, the limit adjustment determination shall be based on the non-parametric equation provided in paragraph (f) of this section. The data set for the determination shall exclude periods when pellet quality did not fall within the defined acceptable ranges of the pellet quality factors identified pursuant to paragraph (b)(1)(v)(*5*) of this section and for any subsequent period when production has been reduced in response to pellet quality concerns consistent with the ArcelorMittal Minorca Mine's Standard Product Parameters. Any excluded period will commence at the time documented in related quality reports demonstrating that pellet quality did not fall within the defined acceptable range and shall end when pellet quality within the defined acceptable range has been re-established at planned production levels, which will be presumed to be the level that existed immediately prior to the reduction

in production due to pellet quality concerns. EPA may also exclude data where operations are inconsistent with the reported design parameters of the NOx reduction control technology installed.

(*G*) EPA will take final agency action by publishing its final confirmation or modification of the NOx limit in the *Federal Register* no later than 55 months [EFFECTIVE DATE OF FINAL RULE]. The confirmed or modified NO_x limit for the ArcelorMittal Minorca Mine indurating furnace when burning only natural gas may be no lower than 1.2 lbs NO_x/MMBtu, based on a 30-day rolling average, and may not exceed 1.8 lbs NO_x/MMBtu, based on a 30-day rolling average.

* * * * *

(2) SO_2 emission limits

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(iv) United Taconite

An aggregate emission limit of 529.0 lbs SO_2/hr, based on a 30-day rolling average, shall apply to the Line 1 pellet furnace (EU040) and Line 2 pellet furnace (EU042) beginning six months after [EFFECTIVE DATE OF FINAL RULE]the effective date of the rule. Compliance with this aggregate emission limit shall be demonstrated with data collected by a continuous emissions monitoring system (CEMS) for SO_2. The owner or operator must start collecting CEMS data for SO_2 beginning six months after

[EFFECTIVE DATE OF FINAL RULE] and submit the data to EPA no later than 30 days from the end of each calendar quarter. Beginning 6 months after the effective date of the rule, any coal burned on UTAC Grate Kiln Line 1 or Line 2 shall have no more than 1.5 percent sulfur by weight based on a monthly block average. The sampling and calculation methodology for determining the sulfur content of coal must be described in the monitoring plan required for this furnace.

* * * * *

(c) Testing and monitoring. (1) The owner or operator of the respective facility shall install, certify, calibrate, maintain and operate Continuous Emissions Monitoring Systems (CEMS) for NO_X on United States Steel Corporation, Keetac unit EU030; Hibbing Taconite Company units EU020, EU021, and EU022; United States Steel Corporation, Minntac units EU225, EU261, EU282, EU315, and EU334; United Taconite units EU040 and EU042; ArcelorMittal Minorca Mine unit EU026; and Northshore Mining Company-Silver Bay units Furnace 11(EU100/EU104) and Furnace 12(EU110/EU114). Compliance with the emission limits for NO_X shall be determined using data from the CEMS.

(2) The owner or operator shall install, certify, calibrate, maintain and operate CEMS for SO_2 on United States Steel Corporation, Keetac unit EU030; Hibbing Taconite Company units EU020, EU021, and EU022; United States Steel Corporation,

Minntac units EU225, EU261, EU282, EU315, and EU334; United Taconite units EU040 and EU042; ArcelorMittal Minorca Mine unit EU026; and Northshore Mining Company - Silver Bay units Furnace 11 (EU100/EU104) and Furnace 12 (EU110/EU114).

(3) The owner or operator shall install, certify, calibrate, maintain and operate one or more continuous diluent monitor(s) (O_2 or CO_2) and continuous flow rate monitor(s) on the BART affected units to allow conversion of the NO_X and SO_2 concentrations to units of the standard (lbs/MMBtu and lbs/hr, respectively) unless a demonstration is made that a diluent monitor and continuous flow rate monitor are not needed for the owner or operator to demonstrate compliance with applicable emission limits in units of the standards.

(4) For purposes of this section, all CEMS required by this section must meet the requirements of paragraphs (c)(4)(i)-(xiv) of this section.

(i) All CEMS must be installed, certified, calibrated, maintained, and operated in accordance with 40 CFR part 60, appendix B, Performance Specification 2 (PS-2) and appendix F, Procedure 1.

(ii) CEMS must be installed and operational as follows:

(A) All CEMS associated with monitoring NO_X (including the NO_X monitor and necessary diluent and flow rate monitors) at the following facilities: U.S. Steel Keetac, U.S. Steel Minntac, and

Northshore Mining Company-Silver Bay, must be installed and operational no later than the unit specific compliance dates for the emission limits identified at paragraphs (b)(1)(i), (iii) and (vi) of this section, respectively.

(B) All CEMS associated with monitoring NO_X (including the NO_X monitor and necessary diluent and flow rate monitors) at the following facilities: Hibbing Taconite Company, United Taconite, and ArcelorMittal Minorca Mine, must be installed and operational no later than the unit specific installation dates for the installation and operation of CEMS identified at paragraphs (b)(1)(ii), (iv) and (v) of this section, respectively.

(C) All CEMS associated with monitoring SO_2 at the following facilities: U.S. Steel Keetac, U.S. Steel Minntac, and Northshore Mining Company-Silver Bay, must be installed and operational no later than six months after March 8, 2013.

(D) All CEMS associated with monitoring SO_2 at the following facilities: Hibbing Taconite Company, United Taconite, and ArcelorMittal Minorca Mine, must be installed and operational no later than six months after [EFFECTIVE DATE OF FINAL RULE].

(E) The operational status of the CEMS identified in paragraphs (c)(1)and (2) of this section shall be verified by, as a minimum, completion of the manufacturer’s written requirements or recommendations for installation, operation, and calibration

of the devices.

(iii) The owner or operator must conduct a performance evaluation of each CEMS in accordance with 40 CFR Part 60, appendix B, PS-2. The performance evaluations must be completed no later than 60 days after the respective CEMS installation.

(iv) The owner or operator of each CEMS must conduct periodic Quality Assurance, Quality Control (QA/QC) checks of each CEMS in accordance with 40 CFR part 60, appendix F, Procedure 1. The first CEMS accuracy test will be a relative accuracy test audit (RATA) and must be completed no later than 60 days after the respective CEMS installation.

(v) The owner or operator of each CEMS must furnish the Regional Administrator two, or upon request, more copies of a written report of the results of each performance evaluation and QA/QC check within 60 days of completion,.

(vi) The owner or operator of each CEMS must check, record, and quantify the zero and span calibration drifts at least once daily (every 24 hours) in accordance with 40 CFR Part 60, appendix F, Procedure 1, Section 4.

(vii) Except for CEMS breakdowns, repairs, calibration checks, and zero and span adjustments, all CEMS required by this section shall be in continuous operation during all periods of BART affected process unit operation, including periods of process unit startup, shutdown, and malfunction.

(viii) All CEMS required by this section must meet the minimum data requirements at paragraphs (c)(4)(viii)(A)through(C) of this section.

(A) Complete a minimum of one cycle of operation (sampling, analyzing, and data recording) for each successive 15-minute quadrant of an hour.

(B) Sample, analyze and record emissions data for all periods of process operation except as described in paragraph (c)(4)(viii)(C) of this section.

(C) When emission data from CEMS are not available due to continuous monitoring system breakdowns, repairs, calibration checks, or zero and span adjustments, emission data must be obtained using other monitoring systems or emission estimation methods approved by the EPA. The other monitoring systems or emission estimation methods to be used must be incorporated into the monitoring plan required by this section and provide information such that emissions data are available for a minimum of 18 hours in each 24 hour period and at least 22 out of 30 successive unit operating days.

(ix) Owners or operators of each CEMS required by this section must reduce all data to 1-hour averages. Hourly averages shall be computed using all valid data obtained within the hour but no less than one data point in each fifteen-minute quadrant of an hour. Notwithstanding this requirement, an hourly average may

be computed from at least two data points separated by a minimum of 15 minutes (where the unit operates for more than one quadrant in an hour) if data are unavailable as a result of performance of calibration, quality assurance, preventive maintenance activities, or backups of data from data acquisition and handling systems, and recertification events.

(x) The 30-day rolling average emission rate determined from data derived from the CEMS required by this section (in lbs/MMBtu or lbs/hr depending on the emission standard selected) must be calculated in accordance with paragraphs (c)(4)(x)(A)-(F) of this section.

(A) Sum the total pounds of the pollutant in question emitted from the Unit during an operating day and the previous 29 operating days.

(B) Sum the total heat input to the unit (in MMBtu) or the total actual hours of operation (in hours) during an operating day and the previous 29 operating days.

(C) Divide the total number of pounds of the pollutant in question emitted during the 30 operating days by the total heat input (or actual hours of operation depending on the emission limit selected) during the 30 operating days.

(D) For purposes of this calculation, an operating day is any day during which fuel is combusted in the BART affected Unit regardless of whether pellets are produced. Actual hours of

operation are the total hours a unit is firing fuel regardless of whether a complete 24-hour operational cycle occurs (i.e. if the furnace is firing fuel for only 5 hours during a 24-hour period, then the actual operating hours for that day are 5. Similarly, total number of pounds of the pollutant in question for that day is determined only from the CEMS data for the five hours during which fuel is combusted.)

(E) If the owner or operator of the CEMS required by this section uses an alternative method to determine 30-day rolling averages, that method must be described in detail in the monitoring plan required by this section. The alternative method will only be applicable if the final monitoring plan and the alternative method are approved by EPA.

(F) A new 30-day rolling average emission rate must be calculated for each new operating day.

(xi) The 720-hour rolling average emission rate determined from data derived from the CEMS required by this section (in lbs/MMBtu) must be calculated in accordance with (c)(4)(xi)(A)-(C) of this section.

(A) Sum the total pounds of NOx emitted from the unit every hour and the previous (not necessarily consecutive) 719 hours for which that type of fuel (either natural gas or mixed coal and natural gas) was used.

(B) Sum the total heat input to the unit (in MMBtu) every hour

and the previous (not necessarily consecutive) 719 hours for which that type of fuel (either natural gas or mixed coal and natural gas) was used.

(C) Divide the total number of pounds of NOx emitted during the 720 hours, as defined above, by the total heat input during the same 720 hour period. This calculation must be done separately for each fuel type (either for natural gas or mixed coal and natural gas).

(xii) Data substitution must not be used for purposes of determining compliance under this section.

(xiii) All CEMS data shall be reduced and reported in units of the applicable standard.

(xiv) A Quality Control Program must be developed and implemented for all CEMS required by this section in accordance with 40 CFR part 60, appendix F, Procedure 1, Section 3. The program will include, at a minimum, written procedures and operations for calibration checks, calibration drift adjustments, preventative maintenance, data collection, recording and reporting, accuracy audits/procedures, periodic performance evaluations, and a corrective action program for malfunctioning CEMS.

(d) Recordkeeping requirements. (1)(i) Records required by this section must be kept in a form suitable and readily available for expeditious review.

(ii) Records required by this section must be kept for a minimum of 5 years following the date of creation.

(iii) Records must be kept on site for at least 2 years following the date of creation and may be kept offsite, but readily accessible, for the remaining 3 years.

(2) The owner or operator of the BART affected units must maintain the records at paragraphs (d)(2)(i)-(xi) of this section.

(i) A copy of each notification and report developed for and submitted to comply with this section including all documentation supporting any initial notification or notification of compliance status submitted according to the requirements of this section.

(ii) Records of the occurrence and duration of startup, shutdown, and malfunction of the BART affected units, air pollution control equipment, and CEMS required by this section.

(iii) Records of activities taken during each startup, shutdown, and malfunction of the BART affected unit, air pollution control equipment, and CEMS required by this section.

(iv) Records of the occurrence and duration of all major maintenance conducted on the BART affected units, air pollution control equipment, and CEMS required by this section.

(v) Records of each excess emission report, including all documentation supporting the reports, dates and times when

excess emissions occurred, investigations into the causes of excess emissions, actions taken to minimize or eliminate the excess emissions, and preventative measures to avoid the cause of excess emissions from occurring again.

(vi) Records of all CEMS data including, as a minimum, the date, location, and time of sampling or measurement, parameters sampled or measured, and results.

(vii) All records associated with quality assurance and quality control activities on each CEMS as well as other records required by 40 CFR part 60, appendix F, Procedure 1 including, but not limited to, the quality control program, audit results, and reports submitted as required by this section.

(viii) Records of the NO_X emissions during all periods of BART affected unit operation, including startup, shutdown and malfunction in the units of the standard. The owner or operator shall convert the monitored data into the appropriate unit of the emission limitation using appropriate conversion factors and F-factors. F-factors used for purposes of this section shall be documented in the monitoring plan and developed in accordance with 40 CFR part 60, appendix A, Method 19. The owner or operator may use an alternate method to calculate the NO_X emissions upon written approval from EPA.

(ix) Records of the SO_2 emissions in lbs/MMBTUs or lbs/hr(based on CEMS data), depending on the emission standard selected,

during all periods of operation, including periods of startup, shutdown and malfunction, in the units of the standard.

(x) Records associated with the CEMS unit including type of CEMS, CEMS model number, CEMS serial number, and initial certification of each CEMS conducted in accordance with 40 CFR part 60, appendix B, Performance Specification 2 must be kept for the life of the CEMS unit.

(xi) Records of all periods of fuel oil usage as required at paragraph (b)(2)(vii) of this section.

(e) Reporting requirements. (1) All requests, reports, submittals, notifications, and other communications to the Regional Administrator required by this section shall be submitted, unless instructed otherwise, to the Air and Radiation Division, U.S. Environmental Protection Agency, Region 5 (A-18J), at 77 West Jackson Boulevard, Chicago, Illinois 60604.

(2) The owner or operator of each BART affected unit identified in this section and CEMS required by this section must provide to the Regional Administrator the written notifications, reports and plans identified at paragraphs (e)(2)(i)-(viii) of this section. If acceptable to both the Regional Administrator and the owner or operator of each BART affected unit identified in this section and CEMS required by this section the owner or operator may provide electronic notifications, reports and plans.

(i) A notification of the date construction of control devices and installation of burners required by this section commences postmarked no later than 30 days after the commencement date.

(ii) A notification of the date the installation of each CEMS required by this section commences postmarked no later than 30 days after the commencement date.

(iii) A notification of the date the construction of control devices and installation of burners required by this section is complete postmarked no later than 30 days after the completion date.

(iv) A notification of the date the installation of each CEMS required by this section is complete postmarked no later than 30 days after the completion date.

(v) A notification of the date control devices and burners installed by this section startup postmarked no later than 30 days after the startup date.

(vi) A notification of the date CEMS required by this section startup postmarked no later than 30 days after the startup date.

(vii) A notification of the date upon which the initial CEMS performance evaluations are planned. This notification must be submitted at least 60 days before the performance evaluation is scheduled to begin.

(viii) A notification of initial compliance, signed by the responsible official who shall certify its accuracy, attesting

to whether the source has complied with the requirements of this section, including, but not limited to, applicable emission standards, control device and burner installations, CEMS installation and certification. This notification must be submitted before the close of business on the 60^{th} calendar day following the completion of the compliance demonstration and must include, at a minimum, the information at paragraphs (e)(2)(viii)(A)-(F) of this section.

(A) The methods used to determine compliance.

(B) The results of any CEMS performance evaluations, and other monitoring procedures or methods that were conducted.

(C) The methods that will be used for determining continuing compliance, including a description of monitoring and reporting requirements and test methods.

(D) The type and quantity of air pollutants emitted by the source, reported in units of the standard.

(E) A description of the air pollution control equipment and burners installed as required by this section, for each emission point.

(F) A statement by the owner or operator as to whether the source has complied with the relevant standards and other requirements.

(3) The owner or operator must develop and implement a written startup, shutdown, and malfunction plan for NO_X and SO_2. The

plan must include, at a minimum, procedures for operating and maintaining the source during periods of startup, shutdown, and malfunction; and a program of corrective action for a malfunctioning process and air pollution control and monitoring equipment used to comply with the relevant standard. The plan must ensure that, at all times, the owner or operator operates and maintains each affected source, including associated air pollution control and monitoring equipment, in a manner which satisfies the general duty to minimize or eliminate emissions using good air pollution control practices. The plan must ensure that owners or operators are prepared to correct malfunctions as soon as practicable after their occurrence.

(4) The written reports of the results of each performance evaluation and QA/QC check in accordance with and as required by paragraph (c)(4)(v) of this section.

(5) Compliance reports. The owner or operator of each BART affected unit must submit semiannual compliance reports. The semiannual compliance reports must be submitted in accordance with paragraphs (e)(5)(i) through (iv) of this section, unless the Administrator has approved a different schedule.

(i) The first compliance report must cover the period beginning on the compliance date that is specified for the affected source through June 30 or December 31, whichever date comes first after the compliance date that is specified for the affected source.

(ii) The first compliance report must be postmarked no later than 30 calendar days after the reporting period covered by that report (July 30 or January 30), whichever comes first.

(iii) Each subsequent compliance report must cover the semiannual reporting period from January 1 through June 30 or the semiannual reporting period from July 1 through December 31.

(iv) Each subsequent compliance report must be postmarked no later than 30 calendar days after the reporting period covered by that report (July 30 or January 30).

(6) Compliance report contents. Each compliance report must include the information in paragraphs (e)(6)(i) through (vi) of this section.

(i) Company name and address.

(ii) Statement by a responsible official, with the official's name, title, and signature, certifying the truth, accuracy, and completeness of the content of the report.

(iii) Date of report and beginning and ending dates of the reporting period.

(iv) Identification of the process unit, control devices, and CEMS covered by the compliance report.

(v) A record of each period of startup, shutdown, or malfunction during the reporting period and a description of the actions the owner or operator took to minimize or eliminate emissions arising as a result of the startup, shutdown or malfunction and whether

those actions were or were not consistent with the source's startup, shutdown, and malfunction plan.

(vi) A statement identifying whether there were or were not any deviations from the requirements of this section during the reporting period. If there were deviations from the requirements of this section during the reporting period, then the compliance report must describe in detail the deviations which occurred, the causes of the deviations, actions taken to address the deviations, and procedures put in place to avoid such deviations in the future. If there were no deviations from the requirements of this section during the reporting period, then the compliance report must include a statement that there were no deviations. For purposes of this section, deviations include, but are not limited to, emissions in excess of applicable emission standards established by this section, failure to continuously operate an air pollution control device in accordance with operating requirements designed to assure compliance with emission standards, failure to continuously operate CEMS required by this section, and failure to maintain records or submit reports required by this section.

(7) Each owner or operator of a CEMS required by this section must submit quarterly excess emissions and monitoring system performance reports for each pollutant monitored for each BART affected unit monitored. All reports must be postmarked by the

30th day following the end of each three-month period of a calendar year (January-March, April-June, July-September, October-December) and must include, at a minimum, the requirements at paragraphs (e)(7)(i)through (xv) of this section.

(i) Company name and address.

(ii) Identification and description of the process unit being monitored.

(iii) The dates covered by the reporting period.

(iv) Total source operating hours for the reporting period.

(v) Monitor manufacturer, monitor model number and monitor serial number.

(vi) Pollutant monitored.

(vii) Emission limitation for the monitored pollutant.

(viii) Date of latest CEMS certification or audit.

(ix) A description of any changes in continuous monitoring systems, processes, or controls since the last reporting period.

(x) A table summarizing the total duration of excess emissions, as defined at paragraphs (e)(7)(x)(A)to (B) of this section, for the reporting period broken down by the cause of those excess emissions (startup/shutdown, control equipment problems, process problems, other known causes, unknown causes), and the total percent of excess emissions (for all causes) for the reporting

period calculated as described at paragraph (e)(7)(x)(C) of this section.

(A) For purposes of this section, an excess emission is defined as any 30-day or 720-hour rolling average period, including periods of startup, shutdown and malfunction, during which the 30-day or 720-hour (as appropriate) rolling average emissions of either regulated pollutant (SO_2 and NO_X), as measured by a CEMS, exceeds the applicable emission standards in this section.

(B)(1) For purposes of this section, if a facility calculates a 30-day rolling average emission rate in accordance with this section which exceeds the applicable emission standards of this section, then it will be considered 30 days of excess emissions. If the following 30-day rolling average emission rate is calculated and found to exceed the applicable emission standards of this section as well, then it will add one more day to the total days of excess emissions (i.e. 31 days). Similarly, if an excess emission is calculated for a 30-day rolling average period and no additional excess emissions are calculated until 15 days after the first, then that new excess emission will add 15 days to the total days of excess emissions (i.e. 30 + 15 = 45). For purposes of this section, if an excess emission is calculated for any period of time within a reporting period, there will be no fewer than 30 days of excess emissions but

there should be no more than 121 days of excess emissions for a reporting period.

(2) For purposes of this section, if a facility calculates a 720-hour rolling average emission rate in accordance with this section which exceeds the applicable emission standards of this section, then it will be considered 30 days of excess emissions. If the 24th following 720-hour rolling average emission rate is calculated and found to exceed the applicable emission standards of the rule as well, then it will add one more day to the total days of excess emissions (i.e. 31 days). Similarly, if an excess emission is calculated for a 720-hour rolling average period and no additional excess emissions are calculated until 360 hours after the first, then that new excess emission will add 15 days to the total days of excess emissions (i.e. 30+15 = 45). For purposes of this section, if an excess emission is calculated for any period of time with a reporting period, there will be no fewer than 30 days of excess emissions but there should be no more than 121 days of excess emissions for a reporting period.

(C) For purposes of this section, the total percent of excess emissions will be determined by summing all periods of excess emissions (in days) for the reporting period, dividing that number by the total BART affected unit operating days for the reporting period, and then multiplying by 100 to get the total

percent of excess emissions for the reporting period. An operating day, as defined previously, is any day during which fuel is fired in the BART affected unit for any period of time. Because of the possible overlap of 30-day rolling average excess emissions across quarters, there are some situations where the total percent of excess emissions could exceed 100 percent. This extreme situation would only result from serious excess emissions problems where excess emissions occur for nearly every day during a reporting period.

(xi) A table summarizing the total duration of monitor downtime, as defined at paragraph (e)(7)(xi)(A) of this section, for the reporting period broken down by the cause of the monitor downtime (monitor equipment malfunctions, non-monitor equipment malfunctions, quality assurance calibration, other known causes, unknown causes), and the total percent of monitor downtime (for all causes) for the reporting period calculated as described at paragraph (e)(7)(xi)(B) of this section.

(A) For purposes of this section, monitor downtime is defined as any period of time (in hours) during which the required monitoring system was not measuring emissions from the BART affected unit. This includes any period of CEMS QA/QC, daily zero and span checks, and similar activities.

(B) For purposes of this section, the total percent of monitor downtime will be determined by summing all periods of monitor

downtime (in hours) for the reporting period, dividing that number by the total number of BART affected unit operating hours for the reporting period, and then multiplying by 100 to get the total percent of excess emissions for the reporting period.

(xii) A table which identifies each period of excess emissions for the reporting period and includes, at a minimum, the information in paragraphs (e)(7)(xii)(A)through (F) of this section.

(A) The date of each excess emission.

(B) The beginning and end time of each excess emission.

(C) The pollutant for which an excess emission occurred.

(D) The magnitude of the excess emission.

(E) The cause of the excess emission.

(F) The corrective action taken or preventative measures adopted to minimize or eliminate the excess emissions and prevent such excess emission from occurring again.

(xiii) A table which identifies each period of monitor downtime for the reporting period and includes, at a minimum, the information in paragraphs (e)(7)(xiii)(A)through (D) of this section.

(A) The date of each period of monitor downtime.

(B) The beginning and end time of each period of monitor downtime.

(C) The cause of the period of monitor downtime.

(D) The corrective action taken or preventative measures adopted for system repairs or adjustments to minimize or eliminate monitor downtime and prevent such downtime from occurring again.

(xiv) If there were no periods of excess emissions during the reporting period, then the excess emission report must include a statement which says there were no periods of excess emissions during this reporting period.

(xv) If there were no periods of monitor downtime, except for daily zero and span checks, during the reporting period, then the excess emission report must include a statement which says there were no periods of monitor downtime during this reporting period except for the daily zero and span checks.

(8) The owner or operator of each CEMS required by this section must develop and submit for review and approval by the Regional Administrator a site specific monitoring plan. The purpose of this monitoring plan is to establish procedures and practices which will be implemented by the owner or operator in its effort to comply with the monitoring, recordkeeping and reporting requirements of this section. The monitoring plan must include, at a minimum, the information at paragraphs (e)(8)(i)through (x) of this section.

(i) Site specific information including the company name, address, and contact information.

(ii) The objectives of the monitoring program implemented and information describing how those objectives will be met.

(iii) Information on any emission factors used in conjunction with the CEMS required by this section to calculate emission rates and a description of how those emission factors were determined.

(iv) A description of methods to be used to calculate emission rates when CEMS data is not available due to downtime associated with QA/QC events.

(v) A description of the QA/QC program to be implemented by the owner or operator of CEMS required by this section. This can be the QA/QC program developed in accordance with 40 CFR Part 60, Appendix F, Procedure 1, Section 3.

(vi) A list of spare parts for CEMS maintained on site for system maintenance and repairs.

(vii) A description of the procedures to be used to calculate 30-day rolling averages and 720-hour rolling averages and example calculations which shows the algorithms used by the CEMS to calculate 30-day rolling averages and 720-hour rolling averages.

(viii) A sample of the document to be used for the quarterly excess emission reports required by this section.

(ix) A description of the procedures to be implemented to investigate root causes of excess emissions and monitor downtime

and the proposed corrective actions to address potential root causes of excess emissions and monitor downtime.

(x) A description of the sampling and calculation methodology for determining the percent sulfur by weight as a monthly block average for coal used during that month.

(f) Equations for Establishing the Upper Predictive Limit

(1) Equation for Normal Distribution and Statistically Independent Data

$$UPL = \bar{x} + t_{[(n-1),(0.95)]}\sqrt{s^2(\frac{1}{n} + \frac{1}{m})}$$

Where:

$\bar{x}$ = average or mean of test run data;

$t_{[(n-1),(0.95)]}$ = t score, the one-tailed t value of the Student's t distribution for a specific degree of freedom (n-1)and a confidence level (0.95; 0.99 for Tilden SO_2)

s^2 = variance of the dataset;

n = number of values

m = number of values used to calculate the test average (m = 720 as per averaging time)

(2) (i) To determine if statistically independent, use the Rank von Neumann Test on p. 137 of data Quality Assessment: Statistical Methods for Practitioners EPA QA/G-9S.

(ii) Alternative to Rank von Neumann test to determine if data are dependent, data are dependent if t test value is greater than t critical value, where:

$$t\ test = \frac{\rho}{\sqrt{\frac{1-\rho^2}{n-2}}}$$

ρ = correlation between data points

$t\ critical = t_{[(n-2),(0.95)]}$ = t score, the two-tailed t value of the Student's t distribution for a specific degree of freedom (n-2) and a confidence level (0.95)

(3)If data are dependent then use the following equation.

Equation for Normal Distribution and Data not Statistically Independent

$$UPL = \bar{x} + t_{[(n-1),(0.95)]}\sqrt{s^2[1+(n-1)\rho](\frac{1}{n}+\frac{1}{m})}$$

Where:

ρ = correlation between data points

(4)Non-parametric Equations for Data Not Normally Distributed

$$m = (n+1) * \alpha$$

$m =$ the rank of the ordered data point, when data is sorted smallest to largest

$n =$ number of data points

$\alpha =$ 0.95, to reflect the 95th percentile

If *m* is a whole number, then the limit, UPL, shall be computed as:

$$UPL = X_m$$

Where:

$X_m =$ value of the m^{th} data point in terms of lbs SO_2/hr or lbs NOX/MMBtu, when the data is sorted smallest to largest.

If *m* is not a whole number, the limit shall be computed by linear interpolation according to the following equation.

$$UPL = x_m = x_{m_i.m_d} = x_{m_i} + 0.m_d\,(x_{m_i+1} - x_{m_i})$$

where

$m_i =$ the integer portion of *m*, i.e., *m* truncated at zero decimal places, and

$m_d =$ the decimal portion of *m*

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