Startup, Shutdown, and Malfunction (SSM) Plan

Empire Iron Mining Partnership

July 2019

Startup, Shutdown, and Malfunction (SSM) Plan

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1. Purpose

Certain emissions units at Empire Mining Company L.C. facility are subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Taconite Iron Ore Processing [40 Code of Federal Regulations (CFR) Part 63 Subpart RRRRR]. This regulation is commonly referred to as the Taconite MACT and requires development and implementation of a Startup, Shutdown, and Malfunction (SSM) Plan by October 30, 2006.

The SSM Plan is applicable to air pollution control equipment that is used to demonstrate compliance with the Taconite MACT. This includes pollution control equipment used to control particulate emissions from the following sources:

- Ore Crushing and Handling Emission Units;
- Ore Drying;
- Indurating Furnaces; and
- Finished Pellet Handling Emission Units.

The primary purpose of the SSM Plan is:

- To ensure that the equipment is operated in a manner consistent with safety and good air pollution control practices for minimizing emissions at all times, including periods of startup, shutdown, and malfunction; and
- To correct malfunctions which could result in particulate emissions exceedances as soon as practicable after their occurrence, consistent with safety and good air pollution control practices.

The sections of this document addressing roles and responsibilities, recordkeeping, reporting, and revisions are not required by the Taconite MACT and therefore deviations from these requirements are not necessarily deviations from the Taconite MACT or Title V permit

2. Responsibilities

The following is a summary of the responsibilities for each position involved in the implementation of the SSM Plans.

2.1 Operators

2.1.1 Operating the scrubbers, dry ESPs, and other applicable air pollution control equipment according to the Standard Operating Procedures (SOPs) and the SSM Plan;

2.1.2 Assisting in the development and updating of SSM procedures and the SSM Plan; and

2.1.3 Notifying the shift supervisor of problems with the monitoring systems for the scrubbers and the dry ESPs.

2.2 Shift Supervisors

2.2.1 Ensuring that the operators are completing their responsibilities;

2.2.2 Following the SSM Plan, as required;

2.2.3 Assisting with the root cause analyses and identification of the steps to prevent a reoccurrence; and

2.2.4 Following the SSM Plan procedures and assisting the Section Managers in the completion of the malfunction forms, as required.

2.3 Section Managers

2.3.1 Ensuring that the operators and shift supervisors are completing their responsibilities;

2.3.2 Following the SSM Plan procedures and completing the malfunction forms, as required; and

2.3.3 Submitting the completed startup, shutdown, and malfunction forms to the Environmental Department.

2.3.4 If actions to prevent a reoccurrence are identified during the review process described herein, ensure they are completed in a timely manner;

2.3.5 Assisting in the development and updating of the SSM procedures and the SSM Plan; and

2.3.6 Coordinating initial training and refresher training of all affected operators and coordinators.

2.4 Maintenance Coordinators

2.4.1 Coordinating preventative maintenance activities, per the O&M Plan;

2.4.2 Coordinating maintenance activities, per the O&M Plan;

2.4.3 Coordinating critical spare parts specifications and management, per the O&M Plan; and

2.4.4 Maintaining equipment repair histories through the Ellipse maintenance tracking system.

2.5 Training Department

2.5.1 Maintaining records for all training

2.5.2 Identifying individuals requiring training; and

2.5.3 Ensuring all training is completed

2.6 Environmental Engineers

2.6.1 Developing and updating the SSM procedures and SSM Plan;

2.6.2 Creating reports to satisfy reporting obligations. obtaining responsible official approval (sign-off) and submitting reports as required by the regulation; and

2.6.3 Facilitating resolution of inquiries and clarification of Taconite MACT rule as requested to assist personnel described herein in the completion of their responsibilities.

3. Definitions

Administrator means the regulatory agency that is responsible for the administration of the Taconite MACT regulation; this could be EPA, or State of MI EGLE (MDEQ).

Bypass means to route gas around a control device.

CPMS means continuous parametric monitoring system.

CFR means Code of Federal Regulations.

Dynamic Wet Scrubber means an air emissions control device which utilizes a mechanically powered fan to cause contact between the process exhaust gas stream and the scrubbing liquid which are introduced concurrently into the fan inlet.

EGLE means State of Michigan Department of Environment, Great Lakes, & Energy.

EPA means United States Environmental Protection Agency.

ESP means dry electrostatic precipitator.

Finished Pellet Handling means the transfer of fired taconite pellets from the indurating furnace to the finished pellet stockpiles at the plant. Finished pellet handling includes, but is not limited to:

- Furnace discharge or grate discharge;
- Finished pellet screening;
- Finished pellet transfer; and
- Finished pellet storage.

The atmospheric pellet cooler vent stack and gravity conveyor gallery vents designed to remove heat and water vapor from the structure are not included as part of the finished pellet handling affected source.

HAPS means Hazardous Air Pollutants.

Indurating means the process whereby unfired taconite pellets, called green balls, are hardened at high temperature in an indurating furnace.

MACT means Maximum Achievable Control Technology.

Malfunction means any sudden, infrequent, and not reasonably preventable failure of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or usual manner which causes, or has the potential to cause, the emission limitations in an applicable standard to be exceeded. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.

MDEQ means the Michigan Department of Environmental Quality.

Ore Crushing and Handling Emission Units means the process whereby dry taconite ore is crushed and screened. Ore crushing and handling includes, but is not limited to:

- Dry crushing operations (e.g. primary, secondary, and tertiary crushing);
- Dry ore conveyance and transfer points;
- Dry ore classification and screening;
- Dry ore storage and stockpiling;
- Dry milling;
- Dry cobbing (i.e. dry magnetic separation);and
- Grate feed.

Ore crushing and handling specifically excludes any operations where the dry crushed ore is saturated with water, such as wet milling and wet magnetic separation.

O&M Plan means Operation and Maintenance Plan.

Shutdown means the cessation of operation of an affected source or portion of an affected source for any purpose. Specifically for the kilns, shutdown initiates when the grate is stopped and the stack cap is raised per the conditions defined later in this document.

SOP means standard operating procedure.

SSM Event means a startup or shutdown event or malfunction that causes the source to exceed any applicable emission limitation

SSM Plan means Startup, Shutdown, and Malfunction Plan.

Startup means the setting in operation of an affected source or portion of an affected source for any purpose.

4. Equipment Covered by this Plan

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4.1 Wet Scrubbers

The following is a list of wet scrubbers as particulate matter control equipment covered by this plan.

Table 4.1 – Wet Scrubbers

Air Permit ID Number	Control Equipment Description	Process Description
SV-CRUSHER1	EU-CRUSHER1	Ore Crusher #1
SV-CONVEYOR1	EU-CONVEYOR1	Ore Conveyor
SV- CRUSHER1B	EU-CRUSHER1B	1B Ore Crusher
SV-ABTRANSFER	EU-CONVEYOR1B	1B Ore Conveyor
SV-LINES5&6FEED	EU-OREFEED-LN5	Line 5 & 6 Ore Feeders
SV-LINES9&10FEED	EU-OREFEED-LN9	Line 9 & 10 Ore Feeders
SV-LINES17&18FEED	EU-OREFEED-LN17	Line 17 & 18 Ore Feeders
SV-LINES19&20FEED	EU-OREFEED-LN19	Line 19 & 20 Ore Feeders
SV-LINE21FEED	EU-OREFEED-LN21	Line 21 Ore Feeder
SV-LINE22FEED	EU-OREFEED-LN22	Line 22 Ore Feeder
SV-LINE23FEED	EU-OREFEED-LN23	Line 23 Ore Feeder
SV-LINE24FEED	EU-OREFEED-LN24	Line 24 Ore Feeder
SV-UNIT2GRATESTR	EU-UNIT2-GRATE	Pellet stripping of the grate
SV-31-4CONVDISCH	EU-UNIT3-31-4DIS	Conveyor 31-4 discharge end
SV-UNIT2COOLER	EU-UNIT2-DIS#6	Unit1 Conveyor 32 Feed; Unit 2 Pellet Cooler Discharge & Conveyor 31-2 discharge
SV-UNIT3COOLER	EU-UNIT3-COOLER	Pellet cooler discharge
SV-31-4CONVFEED	EU-UNIT3-31-4CON	Conveyor 31-4 feed end
SV-31-5CONVFEED	EU-UNIT4-31-5FD	Conveyor 31-5 feed end
SV-31-5CONVDISCH	EU-UNIT4-31-5DIS	Conveyor 31-5 discharge end
SV-32-1CONVDISCH	EU-UNIT4-32-1DIS	Conveyor 32-1 discharge end
SV-UNIT3GRATESTR	EU-UNIT3-GRATE	Pellet stripping of the grate
SV-UNIT4PANCONV	EU-UNIT4-PAN-CON	Pan Conveyor
SV-UNIT4GRATEFD	EU-UNIT4-GRATE-G	Grate feed end
SV-UNIT4GRATESTR	EU-UNIT4-GRATEST	Grate stripping
SV-UNIT4COOLER	EUUNIT4-COOLER	Pellet cooler discharge

4.2 Indurating Furnaces with Dry ESPs

The following table lists the indurating furnace stacks and the associated air pollution control covered by this plan.

Table 4.2 – Indurating Furnaces with Dry ESPs

Air Permit ID Number	Control Equipment Description	Process Description
SVUNIT2FURNACE	Unit 2 Dry ESP	Grate-Kiln Pelletizing Unit 2
SVUNIT3FURNACE	Unit 3 Dry ESP	Grate-Kiln Pelletizing Unit 3
SVUNIT4FURNACE	Unit 4 Dry ESP	Grate-Kiln Pelletizing Unit 4

5. Startup, Shutdown, and Malfunction Procedures

The Taconite MACT regulation defines startups, shutdowns, and malfunctions as follows:

- *Startup* means the setting in operation of an affected source or portion of an affected source for any purpose.

- *Shutdown* means the cessation of operation of an affected source or portion of an affected source for any purpose.

- *Malfunction* means any sudden, infrequent, and not reasonably preventable failure of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or usual manner which causes, or has the potential to cause, the emission limitations in an applicable standard to be exceeded. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.

The general startup, shutdown and malfunction procedure requirements include:

- All startup and shutdown events must follow the procedures for minimizing emissions presented in Sections 5.1 and 5.2.

- If a startup, shutdown or malfunction events results in an exceedance of a Taconite MACT limitation (including emission limits, opacity limits and operating limits), the forms in Appendices A, B or C will be completed as appropriate.

- If actions taken during a startup, shutdown or malfunction event are consistent with this plan, the procedures in section 7 must be followed.

- If actions taken during a startup or shutdown event are not consistent with this plan, the procedures in section 8 must be followed.

- The recordkeeping for all startup, shutdown and malfunction events must be consistent with the requirements of section 9; and

The reporting requirements for all startup and shutdown events must be consistent with the requirements of section 10.

The general malfunction procedures include:

- ✓ Take steps to safely secure the operation of the dust collector system;
- ✓ Initiate steps to identify the cause of the malfunction;
- ✓ Take actions to resolve the malfunction; and
- ✓ If the malfunction cannot be resolved, the Corrective Action Requirements, as presented in section 7, must be followed.

5.1 Wet Scrubbers

The primary purpose of the wet scrubbers is to address housekeeping and industrial hygiene issues. For buildings under negative pressure, if the dust collector fan is not operating, the dust will be contained within the building. The general operating guidelines for the wet scrubbers is to ensure that the scrubber is operating at all times when the fan is operating.

One of the options for resolving a malfunction for a dust collector with a wet scrubber that is located in a building is to shut down the fan to stop the emissions. By shutting down the fan, the emissions will be contained within the building, and the problem can be resolved without causing excess emissions or and emissions exceedance. During this time, visual inspections or other process modifications may be implemented to ensure compliance.

The startup and shutdown definitions for the dust collectors with wet scrubbers are:

- Startup Definition:
    - Beginning of Startup: Startup begins when water is flowing through the scrubber and the fan is started.
    - End of Startup: Startup is complete when both of the following conditions occur for 60 consecutive minutes (1) the pressure drop is equal to or greater than the minimum operating requirement and (2) the scrubber water flow rate is equal to or greater than the minimum operating requirement.
- Shutdown Definition:

- Beginning of Shutdown: Shutdown begins when the fan is shut down.
- End of Shutdown: Shutdown is complete when the fan is shut down for ten minutes.

The Corrective Action forms for wet scrubbers experiencing an emission exceedances during startup, shutdown and malfunction events are presented in Appendices A and B.

5.2 Indurating Furnaces with Dry ESPs

The primary purpose of the dry ESPs for the indurating furnace stacks is to remove particulate from the flue gas prior to being discharged into the atmosphere. The general operating guidelines for the dry ESPs for the indurating furnaces is to ensure that the particulate control equipment is operating at all times when the furnace is operating under normal conditions.

Steps for minimizing emissions during a startup may include but are not limited to raising/lowering the stack cap, sole use of natural gas as fuel, adjusting primary burner firing rate, dampering fans, adjusting feed of greenballs to the grate, and continuing use of dust collection system on portion of total airstream.

Steps for minimizing emissions during a shutdown event may include but are not limited to raising the stack cap, switching fuel from solid fuel firing to natural gas, reducing primary burner firing rate, dampering fans back, halting feed of greenballs to the grate, running pellet load out of the kiln, reducing kiln and pellet cooler speed and continuing use of dust collection system on portion of total airstream.

The startup and shutdown definitions for indurating furnaces with dry ESPs are:

- Startup Definition:
  - Beginning of Startup: Startup begins when a flame is established.
  - End of Startup: Startup is complete when the run condition is fulfilled; green ball bed depth $\geq$ 3”, grate speed $\geq$30”/min, the stack cap is closed and the secondary air temperature reaches $\geq$ 1850 °F.
- Shutdown Definition:
  - Beginning of Shutdown: Shutdown begins when the grate stops.

- End of Shutdown: Shutdown is complete when the ESPs are shutdown and the kiln process fans are shut down.

Process start-ups are conducted following Grate Kiln Startup standard operating procedures. Similarly, process shutdowns are conducted following Grate Kiln Shutdown standard operating procedures and are dependent on the expected duration of the shutdown. In the standard operating procedures cited above, stack cap operation is an integral part of the safe start up or shutdown of the furnaces.

The stack cap is an integral part of the grate kiln furnace design, and operates as part of normal safe operation practices. The stack cap opens when necessary to release excess heat that would otherwise build up in the furnace when the grate stops and cause severe equipment damage and unsafe working conditions. The stack cap may also be utilized during cold startups to manage the incremental increase in temperature necessary to protect equipment. Stack cap openings are necessary responses to the shutdown of the furnace grate but they are managed so that only the minimum amount of heat necessary to retain safe operations is released from the furnace. This limits the amount of fuel that must be combusted to bring the furnace back to temperature when the furnace begins accepting new feed.

Federal regulations define “startup” as “the setting in operation of an affected source or portion of an affected source for any purpose” and “shutdown” as “the cessation of operation of an affected source or portion of an affected source for any purpose.” 40 C.F.R § 63.2. Stack cap events can typically be classified as one of three events: (1) cold start up; (2) shutdown after cold startup; and (3) shutdown after normal operations. In each of these scenarios, the stack cap is opened because the first step of the “setting in operation” or “cessation of operation” of the furnace has commenced. At cold startup, natural gas is fired to bring the furnace up to temperature. The stack cap is opened during this process when necessary to regulate the temperature increase and prevent rapid heating of the furnace that could damage the equipment and control device. The shutdown sequence begins when the grate stops, preventing more feed from entering the furnace. The stack cap must be opened when the grate stops to prevent a buildup of heat that would melt the grate and create dangerous pressure changes in the furnace.

The Corrective Action forms for indurating furnaces with dry ESPs experiencing an emission exceedance during startup, shutdown and malfunction events are presented in Appendices A and B.

6. Corrective Action Requirements

If the daily average operating parameter value for an emission unit or group of similar emission units does not meet the corresponding established operating limit, the permittee must follow the procedures in paragraphs (a) through (d) of this section.

a. You must initiate and complete initial corrective action within 10 calendar days and demonstrate that the initial corrective action was successful. During any period of corrective action, you must continue to monitor and record all required operating parameters for equipment that remains in operation. After 10 calendar days, measure and record the daily average operating parameter value for the emission unit or group of similar emission units on which corrective action was taken. After the initial corrective action, if the daily average operating parameter value for the emission unit or group of similar emission units meets the operating limit established for the corresponding unit or group, then the corrective action was successful and the emission unit or group of similar emission units is in compliance with the established operating limits. (40 CFR 63.9634(j)(1))

b. If the initial corrective action required in paragraph (a) of this section was not successful, then you must complete additional corrective action within 10 calendar days and demonstrate that the subsequent corrective action was successful. During any period of corrective action, you must continue to monitor and record all required operating parameters for equipment that remains in operation. After the second set of 10 calendar days allowed to implement corrective action, you must again measure and record the daily average operating parameter value for the emission unit or group of similar emission units. If the daily average operating parameter value for the emission unit or group of similar emission units meets the operating limit established for the corresponding unit or group, then the corrective action was successful and the emission unit or group of similar emission units is in compliance with the established operating limits. (40 CFR 63.9634(j)(2))

c. (3) If the second attempt at corrective action required in paragraph (b) of this section was not successful, then you must repeat the procedures of paragraph (j)(2) of this section until the corrective action is successful. If the third attempt at corrective action is unsuccessful, you must conduct another performance test in accordance with the procedures in 40 CFR 63.9622(f) and report to the Administrator as a deviation the third unsuccessful attempt at corrective action. (40 CFR 63.9634(j)(3))

d. (4) After the third unsuccessful attempt at corrective action, you must submit to the Administrator the written report required in paragraph (c) of this section within 5 calendar days after the third unsuccessful attempt at corrective action. This report must notify the Administrator that a deviation has occurred and document the types of corrective measures taken to address the problem that resulted in the deviation of established operating parameters and the resulting operating limits. (40 CFR 63.9634(j)(4))

The malfunction forms provided in Appendices A and B will be utilized when the daily average operating parameter value for an emission unit or group of similar emission units does not meet the corresponding established operating limit for a 10 day consecutive period. A separate form will be completed for each 10 day consecutive period.

7. Requirements when Actions Are Consistent with the Plan

If an action taken during an SSM event is consistent with this plan, the facility must do the following in compliance with 40 CFR 63.6(e)(3)(iii) and 63.10(d)(5)(i):

- The actions will be documented on the appropriate Corrective Action Form, as presented in Appendices A and B.
- The completed forms must be maintained per the recordkeeping requirements (see section 10).
- The semi-annual report will list any times that actions taken during the SSM event were inconsistent with the plan. (see section 11.1).

8. Requirements when Actions Are Not Consistent with the Plan

If an action taken during an SSM event is not consistent with this plan, and the source exceeds any applicable emission limit, then facility must do the following in compliance with 40 CFR 63.6(e)(3)(iv) and 63.10(d)(5)(ii):

- Record the actions taken for that event
- Report such actions via phone call or facsimile to the Administrator within 2 working days; and
- Submit a letter to the Administrator within 7 working days

The letter shall include the following information:

- Name, title, and signature of the responsible official who is certifying its accuracy;
- Explanation of the circumstances of the event
- Description of the reason(s) for not following the SSM Plan; and
- Description of all excess emissions and/or monitoring exceedances which are believed to have occurred.

In order to meet this requirement, the following procedure will be followed and is documented on the startup, shutdown, and malfunction forms:

- Operating Department Notification:
    - Section Managers will be advised of all exceedances through the site's daily operating and process review structure and are responsible to document compliance or noncompliance with the SSM plan;
- Notification of Environmental Department:
    - Section Managers shall notify the Environmental Department as soon as practicable with enough time to ensure that the incident is reported to the state within 2 working days;
- Notification of the Administrator:

- The Environmental Department shall notify the Administrator via phone or facsimile within 2 working days and a written notification within 7 working days.

9. Recordkeeping Requirements

The following is a summary of the recordkeeping required for the SSM Plan. All recordkeeping is the responsibility of the Environmental Department.

The purpose of the recordkeeping program is to maintain records that demonstrate conformance with the SSM Plan. The following general recordkeeping requirements apply as required by 40 CFR 63.6(e)(3)(v):

- All records will be maintained for a minimum of 5 years
- Records will be maintained in a manner that can be readily accessed
- Records can be maintained as a hard copy or a computer-readable form.
- The most recent 2 years of records will be maintained on-site. The remaining 3 years of records may be retained off-site.
- Copies of reports that have been submitted to the applicable EPA Regional office are not required to be maintained.

The following records will be maintained:

- Completed Corrective Action forms;
- Associated monitoring data, as detailed in the site-specific monitoring plan; and
- Superseded revisions of the plan.

10. Reporting Requirements

The following is a summary of the reports required per the Taconite MACT regulations. All report preparation and submittal to outside agencies is the responsibility of the Environmental Department.

10.1 Semiannual Reports

The MACT regulations require submittal of semiannual reports. The reporting requirements are detailed in 40 CFR 63.9641. It is important to note that one semiannual report is submitted for compliance with all of the Taconite MACT requirements.

The reporting due dates are:

Reporting Period	**Dates**	**Report Due Date**
1st Semiannual Period	January 1 – June 30	September 15
2nd Semiannual Period	June 30 – December 31	March 15

The report must include:

1. Company name and address;

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

3. Dates of report and beginning and ending dates of the reporting period.

4. If there was a Startup, Shutdown, or Malfunction during the reporting period and actions were consistent with the SSM Plan, the compliance report will include the number, duration, and description of each SSM Event, as required by 40 CFR 63(10)(d)(5)(i)..

5. If there were no deviations from the continuous compliance requirements in 40 CFR 63.9634 through 63.6936, then a statement will be provided that states that there were no deviations from the emission limitations, work practice standards, or operation and maintenance requirements during the operating period.

6. If there were no periods during which a continuous monitoring system (CPMS or COMS) was out-of-control as specified in 40 CFR 63.8(c)(7), then a statement will be provided that states that there were no periods during which a continuous monitoring system was out-of-control during the reporting period.

7. For each deviation from a MACT emission limitation where you are not using a continuous monitoring system (including CPMS or COMS) to comply with an emission limitation for the Taconite MACT, the compliance report must contain the following information (including for periods of startup, shutdown, and malfunction):

    (i) The total operating time of each affected source during the reporting period; and

    (ii) Information on the number, duration, and cause of deviations (including unknown causes) as applicable, and the corrective action taken.

8. For each deviation from a MACT emission limitation where you are using a continuous monitoring system (including CPMS or COMS) to comply with an emission limitation for the Taconite MACT, the compliance report must contain the following information (including for periods of startup, shutdown, and malfunction):

    (i) The date and time that each malfunction started and stopped;

    (ii) The date and time that each CPMS and/or COMS was inoperative, except for zero (low-level) and high-level checks;

    (iii) The date, time and duration that each CPMS and/or COMS was out-of-control, including the information in 40 CFR 63.8(c)(8);

    (iv) The date and time that each deviation started and stopped, and whether each deviation occurred during a period of startup, shutdown, or malfunction or during another period;

    (v) A summary of the total duration of the deviations during the reporting period and the total duration as a percent of the total source operating time during the reporting period;

(vi) A breakdown of the total duration of the deviations during the reporting period, including those due to startup, shutdown, control equipment problems, process problems, other known causes, and unknown causes;

(vii) A summary of the total duration of continuous monitoring system downtime during the reporting period and the total duration of continuous monitoring system downtime as a percent of the total source operating time during the reporting period;

(viii) A brief description of the process units;

(ix) A brief description of the continuous monitoring system;

(x) The date of the latest continuous monitoring system certification or audit; and

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

Reports required by other regulations, can be submitted in place of or as part of the semiannual report.

This facility will comply with the reporting requirements as follows:

- The Taconite MACT Report will be submitted in combination with the Title V (Renewable Operating Permit) Certification Report.

10.2 Immediate Corrective Action Reports

As discussed in section 7 and the SSM Plan, after three unsuccessful attempts at applying corrective actions to an emission unit or emission groups, an immediate corrective action report must be submitted as required by 40 CFR 63.6934(j):

- The report must be submitted to the Administrator within 5 calendar days of the third unsuccessful attempt at corrective action;
- This written report must state that a deviation has occurred and must document the types of corrective measures that have been taken to address the problem.

10.3 Reports for Actions Not Consistent with SSM Plan

If an SSM event occurred that was not consistent with the SSM plan, you must submit an immediate notification and a written report, as required by 40 CFR 63.6(e)(3)(iv) and 63.10(d)(5)(ii):

- An immediate notification, which consists of a phone call or a fax, to the Administrator within 2 working days after commencing action that is inconsistent with the SSM Plan.

- A written report to the Administrator within 7 working days after the end of the event. The report shall include:

    - Certification of truth, accuracy, and completeness of report by a responsible official; (including name and title)

    - Explanation of circumstances of the event;

    - Reasons for not following the SSM Plan;

    - Description of all excess emissions and/or CPMS monitoring exceedances which are believed to have occurred.

    - Actions taken to minimize emissions in conformance with§63.6(e)(1)(i).

11. Revisions of the SSM Plan

11.1 Revisions Required by the Administrator

As stated in 40 CFR 63.6(e)(3)(vii), the Administrator may require changes to the SSM plan if the Administrator believes that the SSM Plan:

- Does not address a startup, shutdown, and malfunction event that has occurred;
- Fails to provide for the operation of the source (including associated air pollution control and monitoring equipment) during an SSM event in a manner consistent with the general duty to minimize emissions;
- Does not provide adequate procedures for correcting malfunctioning process and/or air pollution control and monitoring equipment as quickly as practicable; or
- Includes an event that does not meet the definition of startup, shutdown, and malfunction.

11.2 Revisions Initiated by the Empire Mine

As stated in 40 CFR 63.6(e)(3)(viii), the Empire Mine may periodically revise the SSM Plan, as necessary, to satisfy the requirements of this part or to reflect changes in equipment or procedures at the affected source.

Unless the State of Michigan Department of EGLE (MDEQ) provides otherwise, the Empire Mine may make such revisions to the SSM Plan without prior approval by the Administrator.

However, each such revision to a SSM Plan must be reported in the semiannual report as discussed in section 11.

11.3 Revisions to Correct Procedures

As stated in 40 CFR 63.6(e)(3)(viii), if the SSM Plan fails to address or inadequately addresses an event that meets the characteristics of a malfunction but was not included in the SSM Plan, the plans must be revised within 45 days after the event to include detailed procedures for operating and maintaining the source during similar malfunction events and a program for corrective action for similar malfunctions of process or air pollution control and monitoring equipment. The revisions to correct procedures shall meet the requirements described in section 11.2.

11.4 Revisions Which Change Scope of SSM Events

As stated in 40 CFR 63.6(e)(3)(viii), in the event that a revision to the SSM Plan alters the scope of activities which are deemed to be a startup, shutdown, or malfunction, or otherwise modifies the applicability of any emission limit, work practice requirement, or other requirement in a standard established under this part, the revised plan shall not take effect until after the facility provides a written notice describing the revision to the MDEQ. The revisions which change the scope of SSM events shall meet the requirements described in section 11.2.

Original Plan October 2006
Minor Revisions March 2016
Minor Revisions July 2019

Appendix A

Corrective Action Form

Wet Scrubbers

Corrective Action Form
Equipment with Wet Scrubbers

1	**Identification of Equipment**			**Equipment Name**
1.1	**On which equipment did the Excursion Occur:**			
2	**Reason for Completing Form**			
2.1	☐ Startup ☐ Shutdown ☐ Excursion			☐ 10-day Exceedance
3	**Beginning and End of Excursion**			**Date and Time**
3.1	**Beginning:**			
3.2	**End:**			
4	**Operations Personnel**			**Name**
4.1	**Operator:**			
5	**Type (select all that apply)**			
5.1	☐ ***Low Pressure Drop*** occurs when the daily average scrubber pressure drop is below the minimum operating requirement.			
	☐ ***Low Scrubber Water Flow*** occurs when the daily average scrubber water flow rate is below the minimum operating requirement.			
	☐ ***Other Issue***			
6	**Description of Excursion (select all that apply)**			
6.1	☐ Fan failure ☐ Pump failure ☐ Power outage ☐ Plugged dP transmitter lines	☐ Instrument failure ☐ Plugged screen or strainer ☐ Plugged nozzles ☐ Other		
6.2	Detailed description of excursion:			
7	**Response to Issue**		**Yes**	**No** / **NA**
7.1	Did the immediate response resolve the excursion?			
7.2	Were all actions consistent with "steps for minimizing emissions" as set forth in the SSM Plan?			
7.3	If the answer to 7.2 is "No":			
	Explain why the "steps for minimizing emissions" were not followed:			
	Describe all excess emissions and/or CPMS monitoring issues which are believed to have occurred:			
7.6	Corrective Action Taken:		**Date Corrective Action Taken:**	
	Note: Steps for minimizing emissions may include but are not limited to safely secure the operation of the dust collector system including shutdown of the unit, initiating steps to identify the cause of the malfunction and taking actions to resolve the malfunction			

Appendix B

Corrective Action Form

Indurating Furnaces with Dry ESPs

Corrective Action Form
Indurating Furnaces with Dry ESPs

1	Identification of Indurating Furnace	Indurating Furnace Name
1.1	**On which Unit (Indurating Furnace) did the Excursion occur:**	
2	**Reason for Completing Form**	
2.1	☐ Startup ☐ Shutdown ☐ Excursion	☐ 10-day Exceedance
3	**Operations Personnel**	**Name**
3.1	**Operator:**	
4	**Beginning and End of Excursion**	**Date and Time**
4.1	**Beginning :**	
4.2	**End :**	

5	Type (select all that apply)	
5.1	☐ Opacity ☐ Startup ☐ Shutdown ☐ Other Issue	
6	**Description of Excursion** **(select all that apply)**	
6.1	☐ Hopper ☐ Electrical	☐ Mechanical ☐ Other
6.2	Detailed description of issue:	

7	Response to Excursion			
7.1	**Process Start-up**	**Yes**	**No**	**NA**
	Were all actions consistent with "steps for minimizing emissions" as set forth in the SSM Plan? Note: Steps for minimizing emissions during a startup may include but are not limited to raising/lowering the stack cap, sole use of natural gas as fuel, adjusting primary burner firing rate, dampering fans, adjusting feed of greenballs to the grate, and continuing use of dust collection system on portion of total airstream. NOTE: In order to minimize emissions during startup procedures, the answer to section 7.1 should be "Yes."			
	Before the ESP was started as the kiln off gas temperature above 1000 ^{o}F			
	If the answer to 7.1 is "No":			
	Explain why the "steps for minimizing emissions" were not followed:			
	Describe all excess emissions and/or COMs monitoring exceedances which are believed to have occurred:			
7.2	**Process Shutdown**	**Yes**	**No**	**NA**

	Were all actions consistent with "steps for minimizing emissions" as set forth in the SSM Plan? Note: Steps for minimizing emissions during a shutdown may include but are not limited to raising the stack cap, switching fuel from solid fuel firing to natural gas, reducing primary burner firing rate, dampering fans back, halting feed of greenballs to the grate, running pellet load out of the kiln, reducing kiln and pellet cooler speed and continuing use of dust collection system on portion of total airstream. NOTE: In order to minimize emissions during shutdown procedures, the answer to section 7.2 should be "Yes."			
	Before the ESP was shutdown, were the ESP fans shutdown?			
	If the answer to 7.2 is "No," Explain (continue on back, if necessary):			
	Explain why the "steps for minimizing emissions" were not followed:			
	Describe all excess emissions and/or COMs monitoring exceedances which are believed to have occurred:			
7.3	**Opacity/Other Excursion (10-day)**	**Yes**	**No**	**NA**
	Were all actions consistent with "steps for minimizing emissions" as set forth in the SSM Plan?			
	If the answer to 7.3 is "No," Explain (continue on back, if necessary):			
	Corrective Actions Taken	**Date Corrective Action Taken**		