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GREAT LAKES CASTINGS LLC

GFE AMINE SCRUBBER

(EUCOLDBOXCORE)
(GLC #03625)

MALFUNCTION ABATEMENT PLAN

APRIL 2007

Last Update 2020

TABLE OF CONTENTS

Section	Description	Page
1	Introduction	3
2	Responsible Supervisory Personnel	4
3	Preventive Maintenance Program	4
	3.1 Inspection Activities	4
	3.2 Major Replacement Parts	6
4	Malfunction Detection	7
5	Corrective Action Procedure	8

Attachments

Attachment A	List of Responsible Supervisory Personnel	9
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Section 1 Introduction

The purpose of this plan is to prevent, detect, and correct malfunctions or equipment failures resulting in emissions exceeding permitted emission limitations applicable to the operation of the amine wet scrubber air pollution control equipment for the Cold Box Coremaking operations.

This MAP, has been prepared to comply with the requirements of MI-ROP-A3934-2015, as well as Michigan Air Pollution Control Rules 910 and 911. Michigan Rule 910 requires the proper installation, maintenance, and operation of air pollution control systems. The Rule reads: An air-cleaning device shall be installed, maintained, and operated in a satisfactory manner and in accordance with these rules and existing law. Michigan Rule 911 specifies that, upon request of the MDEQ, a facility must prepare a MAP to prevent, detect, and correct malfunctions or equipment failures resulting in emissions exceeding any applicable emission limitation.

Rule 113(a) defines a malfunction as: Malfunction means any sudden, infrequent and not reasonably preventable failure of a source, process, process equipment, or air pollution control equipment to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operation are not malfunctions. A true malfunction must have a reasonable potential to cause:

- An operating parameter to stray from an acceptable range or value that has been established to indicate compliance with an emission limit or
- An exceedance in emissions or operating parameter

Most malfunctions of the control equipment will not result in emissions exceedances.

However, the systems must be returned to service as soon as possible to maintain maximum emission control. If a malfunction or failure occurs that cannot be corrected by an operator, then a Work Order will be issued to repair the system.

Following is a list of malfunction events covered by this Plan.

- Failure of emission control system components.
- Power failure
- Sudden and unavoidable failure of control or process equipment, not due to poor operation or maintenance procedures.

Section 2 Responsible Supervisory Personnel

Great Lakes Castings LLC (GLC) will maintain a current list of responsible supervisory personnel. This list will include individuals responsible for overseeing the inspection, maintenance and repair of amine wet scrubber air pollution control equipment. The current list of responsible supervisory personnel appears as Attachment A.

Section 3 Preventive Maintenance Program

This preventive maintenance program includes a description of the air pollution control and monitoring equipment that will be inspected, the frequency of inspections, and an identification of the major replacement parts that are maintained in inventory for replacement. Appropriate training on the procedures described in this section will be provided to equipment operators responsible for conducting the respective activities.

Section 3.1 Inspection Activities

GLC will complete the following inspection, repair or replacement activities.

Daily Activity (This activity applies only to days on which the device is operated).

- 1. Observe emissions from the amine wet scrubber exhaust stack.**
- 2. Observe whether the monitoring equipment is functioning properly.**
- 3. Observe and record the differential pressure across the amine wet scrubber.**
- 4. Observe and record the pH of the sulfuric acid scrubber solution measured at the scrubber.**
- 5. Measure and record the laboratory pH of the sulfuric acid scrubber solution after a laboratory pH measurement of 3.0 standard units or greater is observed.**
- 6. Schedule a changeout of the sulfuric acid scrubber solution when a laboratory pH measurement of 3.8 standard units or greater is observed. The changeout shall occur at the end of the shift in which this pH was measured. The cold box coremaking equipment will not resume operations until the amine wet scrubber sulfuric acid solution has been changed out.**

Weekly Activity**

1. Measure the pH of the sulfuric acid scrubber solution with laboratory equipment. Compare this result with the pH observed at the amine wet scrubber. If the results differ by more than 1.0 standard units, the laboratory pH measuring equipment will be recalibrated and another sample comparison will be performed. If the two results again differ by more than 1.0 standard units, the amine wet scrubber pH monitoring equipment will be adjusted to read the actual pH as determined by the laboratory equipment, and another sample comparison will be performed. If the two results again differ by more than 1.0 standard units, GLC will conduct troubleshooting procedures and take appropriate corrective action.

**** - This activity applies only to weeks during which the device is operated for at least 4 days. During slow work periods (less than 4 days per week) this activity will be completed every other week or once per month if less than 10 days are worked per month.**

Monthly Activity

1. Inspection of blower, motor and recirculating pump.
2. Check condition of blower drive belt and sheaves.
3. Inspect blower blades.
4. Inspect recirculating pump and associated piping.

Annual Activity

1. Inspect solids drop out chamber.
2. Remove the tower cap and inspect the mist eliminator for accumulation of crystals and other debris.
3. Inspect wet packing media.
4. Inspect the showerhead nozzle for alignment, internal obstructions and excessive corrosion.

Section 3.2 Major Replacement Parts

GLC will take reasonable steps to maintain an inventory of major replacement parts on site. This inventory may include the blower motor, acid pump and pH probe.

In some instances, only one replacement part may be in inventory for a particular item.

Once this single item is removed from inventory, it will be replaced as soon as practical.

Section 4 Malfunction Detection

GLC will monitor air-cleaning device operating variables to detect a malfunction by identifying the normal operating range of these variables, and monitoring deviation from the normal operating range. The plan will include a description of the method of monitoring or surveillance procedures. Appropriate training on the procedures described in this section will be provided to equipment operators responsible for conducting the respective activities.

The following air-cleaning device operating variable(s) have been identified:

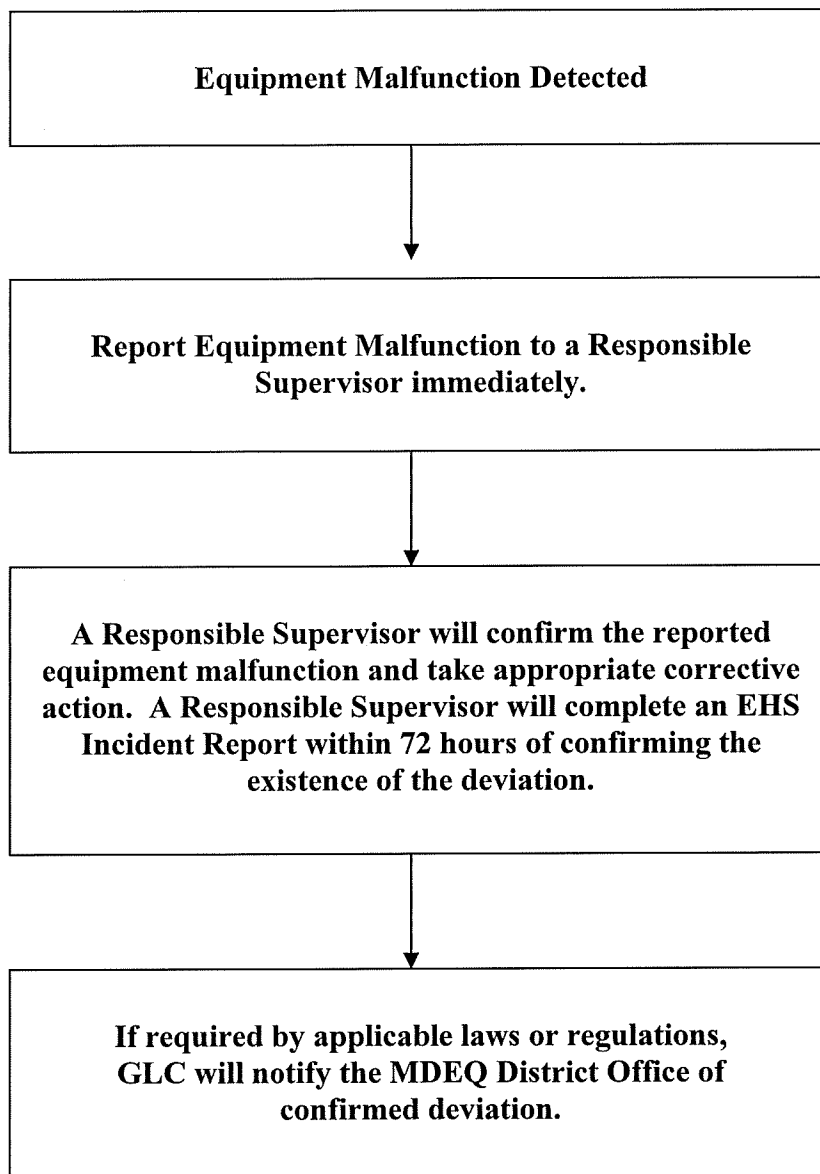
- The amine wet scrubber exhaust stack will be observed daily, as described in Section 3, to determine whether visible emissions exceed normal levels.**
- The amine wet scrubber will be equipped with a differential pressure gauge. The differential pressure across the amine wet scrubber will be monitored daily, as described in Section 3, to determine whether it is within its normal operating range. The normal operating range for this wet scrubber is 0.1 to 6.0 inches of water.**
- The scrubber operators shall be trained to inspect, disassemble, clean and reassemble the differential pressure measurement system components of the scrubber to ensure accurate differential pressure measurements are being observed and recorded.**
- If the observed differential pressure is outside of the normal operating range the operator will determine if the monitoring equipment is operating properly. If the operator is able to find and correct a problem then a new and accurate differential pressure reading shall be recorded along with a note describing the incident and the corrective actions taken. If the operator is unable to find and**

correct a problem then the observed differential pressure would still be considered to be outside the normal operating range and the operator would continue to follow the Corrective Action Procedure in Section 5.

- **The amine wet scrubber will be equipped with a pH probe and meter. The pH of the sulfuric acid scrubber solution will be monitored daily, as described in Section 3, to determine whether it is within its normal operating range. The Air Quality Permit (ROP) operating range for this scrubber is 0.0 to 4.5 standard units.**
- **As stated in Section 3.1 the sulfuric acid scrubber solution will be changed out at the end of the shift in which a laboratory pH measurement of 3.8 standard units or greater is observed.**

Section 5 Corrective Action Procedure

This section describes the corrective action activities that GLC will complete in response to an equipment malfunction.



Attachments

Attachment A – List of Responsible Supervisory Positions*

GLC Main Phone Number (231) 843-2501

Department Supervisor 1st Shift – Dave Beadle	Ext 291
Department Supervisor 2nd Shift – Scott Hodges	Ext 279
Department Supervisor 3rd Shift – Charlie Anible	Ext 522
EHS Supervisor – Gordon Anderson	Ext 205
Maintenance Supervisor 1st Shift – Mike Holmes	Ext 256
Maintenance Supervisor 2nd Shift – Dave Scott	Ext 270
Environmental Manager –Bob Ellis	Ext 238
Engineering Manager – Mike Cicholski	Ext 209
Plant Superintendent – Dave Beadle	Ext 291

*** - GLC may assign supervisory responsibilities to other positions as necessary to meet plan requirements.**