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October 18, 2017

Mr. Paul Widmeyer
Manager, Hamilton District Office
Ministry of the Environment and Climate Change
119 King Street West, 9th Floor
Hamilton, Ontario
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Mr. Widmeyer:

Thank you to you and Adrienne Clark for meeting with Roger Tang-Poy, John Lundrigan, Mike Brown and me on October 13th to discuss the confining emission event that occurred on October 8th, 2017 at ArcelorMittal Dofasco.

As requested, this letter summarizes the event, as well as previous and new emission management initiatives within our Excess Hot Metal Management process.

It is important to note that excess hot metal management is a necessity at every integrated steel mill in the world. There must be an outlet for hot metal if it is not consumable in the steelmaking process due to either unplanned or planned down time. The practice is minimized as much as possible to avoid both environmental and business impact.

Timeline of events:

At approximately 5:00 a.m. on Sunday October 8th, there was a major failure of the power and control wiring for the major crane in the KOBM steelmaking facility. As a result, we had an immediate and temporary imbalance between hot metal production at the Blast Furnaces (BF) and steelmaking's ability to consume it (short-term because the BF production rate cannot be slowed instantaneously). At that time, Ironmaking had approximately ten torpedo cars loaded with hot metal in the queue to deliver to the KOBM, and all three Blast Furnaces were operating at maximum output. Therefore, the Excess Hot Metal Management process was implemented immediately.

At approximately 9:00 a.m., after necessary preparations to drain and make safe, No. 4 BF was shut down, reducing hot metal production by approximately half. A BF rotation sequence (No. 2 and No. 3 BFs go down, No. 4 BF comes up) was implemented to reduce hot metal production while protecting asset integrity and workplace safety. Note that maintaining some level of hot metal production is necessary as our Coke Plants utilize BF Gas to operate, and must receive a sufficient amount. If they don't, we must underfire the coke ovens with Coke Oven Gas instead of BF Gas which creates immediate cokemaking environmental issues (increased stack opacity due to the loss of depositional carbon).

One aspect of the Excess Hot Metal Management process is to divert as much hot metal to the Electric Arc Furnace (EAF) steelmaking facility, as it can consume approximately 50 tonnes per hour. This was done immediately. Aside from coffining, there are no other outlets for the remaining excess hot metal and as a result, hot metal was poured to coffins beginning at approximately 5:30 a.m.

In the immediate preceding few days, there had been significant rains which made the moisture in the coffin beds difficult to manage. Dry slag was added and regular moisture checks were made. Despite the good bed preparation and what was believed to be acceptable moisture levels, a hot metal eruption occurred at 9:53 a.m. The emission from this eruption fully dispersed in approximately one minute and did not leave ArcelorMittal Dofasco's property.

Coffining continued throughout Sunday and Monday. On Tuesday morning (October 10th), the crane repairs were completed and KOBM returned to operation.

Ongoing emission management measures for Excess Hot Metal:

ArcelorMittal Dofasco does not want to see these kinds of emissions from our operations. We do everything in our power to avoid them and are committed to improving. Since 2006 we have reduced the absolute volume of excess hot metal by half. Teams have analyzed and reviewed many technical options to reduce or eliminate the impacts of Excess Hot Metal Management. Information about the practice and options was presented to our Community Liaison Committee in April 2016. Those include:

- Implementing a “running reline” strategy at BFs to reduce hot metal production during planned KOBM relines, therefore reducing the need for Excess Hot Metal Management;
- Implementing a BF rotation sequence practice (as quickly as safe and practicable) to reduce hot metal production during unplanned KOBM outages;
- Increasing the amount of hot metal the EAF can consume;
- Managing the coffin bed condition:
 - Deploying highly sensitive industrial moisture meters to more accurately monitor moisture levels in the coffin beds;
 - Managing the pour rate of the hot metal from the torpedo car;
 - Trialing specialized refractories to reduce the impact of hot metal on the bedding material;
 - Storing steelmaking slag indoors so that it is dry and ready for use in the coffin beds.
- Embedding best practices in Standard Operating Procedures (SOPs).

New emission management measures:

Since the events of October 8th, ArcelorMittal Dofasco has established a team of experts with a mandate to fast track trials, deploy additional technologies and make process reconfigurations to eliminate eruptions and emissions. That team has:

- Immediately implemented a practice of using hot metal to pre-heat the coffin beds during periods when the weather forecast calls for rain, allowing the beds to be hot, dry and sealed if we should need to coffin because of a production imbalance. This procedure holds the beds in a usable condition for 2-3 days, and is repeated if the wet weather continues;
- Initiated investigations into additional practice changes, including:
 - Using “pour pads” which are moulds constructed of refractory materials that fit into the coffin bed to provide a more stable surface upon which to pour the excess hot metal; and
 - Re-engineering how the hot metal is poured into the beds, including the possible use of an incline refractory board upon which the hot metal would be poured, improving the control of the flow of hot metal as it would bring the pour closer to the ground (rather than from the height of the torpedo car).

I trust this letter provides you the information and context you require in this matter. I further acknowledge your requirement that we submit a quarterly summary of excess hot metal to your office.

ArcelorMittal Dofasco is committed to continuous improvement in every aspect of its operations. Our company has and will continue to demonstrate our commitment to ensuring we both plan and react appropriately and responsibly where there may be environmental or community impact from operations.

Sincerely,



Jim Stirling
General Manager - Environment

cc: MOECC: Stephen Burt, Adrienne Clark
AMD: Roger Tang-Poy, John Lundrigan, Mike Brown