

September 14, 2010

NMED No. 100395

Mr. Madhu Ranade
Vice President and General Manager
ArcelorMittal Burns Harbor, LLC
250 West US Highway 12
Burns Harbor, IN 46304

SUBJECT: NRC REACTIVE INSPECTION REPORT NO. 030-37546/10-02(DNMS) AND
NOTICE OF VIOLATION – ARCELORMITTAL BURNS HARBOR, LLC

Dear Mr. Ranade:

On August 2, 2010, the U.S. Nuclear Regulatory Commission (NRC) conducted an inspection at the ArcelorMittal Burns Harbor, LLC, facility in Burns Harbor, Indiana, with an in-office review through August 16, 2010. The purpose of the inspection was to review the events surrounding the dislodging and recovery of a sealed source from a level gauge on July 22, 2010. The enclosed report presents the results of this inspection. The in-office review included review of your written report submitted on August 13, 2010. A final telephonic exit meeting between your staff and Mr. Geoffrey Warren of my staff was held on August 16, 2010.

Based on the results of this inspection, the NRC has determined that three Severity Level IV violations of NRC requirements occurred. These violations were evaluated in accordance with the NRC Enforcement Policy. The current Enforcement Policy is included on the NRC's Web site at http://www.nrc.gov/about_nrc/regulatory/enforcement/enforce_pol.html. The violations involved failure to: (1) use personnel trained to respond to radiation emergencies, and in possession of a dosimeter badge; (2) notify the NRC within 24 hours of an event; and (3) confine the possession of byproduct material to that which is authorized in the license.

The violations are cited in the enclosed Notice of Violation (Notice) and the circumstances surrounding them are described in detail in the subject inspection report. The violations are being cited in the Notice because they were identified by the inspector.

The NRC has concluded that information regarding the reason for the violations, the corrective actions taken and planned to correct the violations and prevent recurrence is already adequately addressed on the docket in the Inspection Report No. 030-37546/10-02(DNMS), enclosed, and in your written report dated August 13, 2010. Therefore, you are not required to respond to this letter unless the description therein does not accurately reflect your corrective actions or your position. In that case, or if you choose to provide additional information, you should follow the instructions specified in the enclosed Notice.

M. Ranade

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In accordance with Title 10 Code of Federal Regulations (CFR) 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosures, and your response, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the public without redaction.

Sincerely,

/RA/

Tamara E. Bloomer, Chief
Materials Inspection Branch

Docket No. 030-37546
License No. 13-32670-01

Enclosures:

1. Notice of Violation
2. Inspection Report No. 030-37546/10-02(DNMS)

cc: Chris Sarvanidis, RSO
Mark Morgan, RSO, Berthold Technologies U.S.A., LLC
State of Indiana

M. Ranade

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State of Indiana

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NOTICE OF VIOLATION

ArcelorMittal Burns Harbor, LLC
Burns Harbor, Indiana

Docket No. 030-37546
License No. 13-32670-01

During an U.S. Nuclear Regulatory Commission (NRC) inspection conducted on August 2, 2010, three violations of the NRC requirements were identified. In accordance with the NRC Enforcement Policy, the violations are listed below:

- A. License Condition No. 26.A. of NRC License No. 13-32670-01 requires, in part, that the licensee conduct its program in accordance with the statements, representations, and procedures contained in the application dated August 27, 2007, including any enclosures.

Item 13.9 of the Policies Governing the Use of Ionizing Radiation, enclosed in the application dated August 27, 2007, requires, in part, that only personnel trained to respond to radiation emergencies, and in possession of a properly operating and calibrated survey meter and radiation dosimeter badges shall be permitted to enter the restricted area surrounding radioactive material involved in an emergency situation.

Contrary to the above, on July 22, 2010, the licensee failed to ensure that only personnel trained to respond to radiation emergencies, and in possession of radiation dosimeter badges enter the restricted area surrounding radioactive material involved in an emergency situation. Specifically, a licensee employee who was neither trained to respond to radiation emergencies nor in possession of radiation dosimeter badges entered the restricted area surrounding a radioactive source which had been dislodged from its shielded position.

This is a Severity Level IV violation (Supplement VI)

- B. Title 10 Code of Federal Regulations (CFR) 30.50(b)(2) requires, in part, that each licensee notify the NRC within 24 hours after the discovery of an event involving licensed material in which equipment is disabled or fails to function as designed.

Contrary to the above, between July 23 and August 5, 2010, the licensee failed to notify the NRC within 24 hours after the discovery of an event involving a cobalt-60 sealed source which occurred on July 22, 2010, in which equipment was disabled and failed to function as designed. Specifically, the cobalt-60 source was dislodged from its shielded position so that the source shielding was disabled and failed to function, and the licensee did not notify the NRC until August 5, 2010.

This is a Severity Level IV violation (Supplement VI)

- C. 10 CFR 30.34(c) requires, in part, that each licensee confine his possession and use of byproduct material to the locations and purposes authorized in the license.

Contrary to the above, from approximately June through August 12, 2010, the licensee failed to confine its possession of byproduct material to the materials

authorized by the license. Specifically, the licensee possessed eight Berthold Technologies Model LB 300 IRL ML Type II Series level gauges containing byproduct material, and the licensee was not authorized to possess the devices.

This is a Severity Level IV violation (Supplement VI).

The NRC has concluded that information regarding the reason for the violations, the corrective actions taken and planned to be taken to correct the violations and prevent recurrence, and the date when full compliance will be achieved, is already adequately addressed on the docket in Inspection Report No. 030-37546/10-02(DNMS). However, you are required to submit a written statement or explanation pursuant to 10 CFR 2.201 if the description therein does not accurately reflect your corrective actions or your position. In that case, or if you choose to respond, clearly mark your response as a "Reply to a Notice of Violation, Inspection Report No. 030-37546/10-02(DNMS)," and send it to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001 with a copy to the Regional Administrator, Region III, within 30 days of the date of the letter transmitting this Notice of Violation (Notice).

If you choose to respond, your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the public without redaction.

In accordance with 10 CFR 19.11, you may be required to post this Notice within two working days.

Dated this 14th day of September 2010.

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No. 030-37546

License No. 13-32670-01

Report: 030-37546/10-02(DNMS)

Licensee: ArcelorMittal Burns Harbor, LLC

Location Inspected: 250 West US Highway 12
Burns Harbor, Indiana

Inspection Date: August 2, 2010

Exit Meeting: August 16, 2010

Inspector: Geoffrey M. Warren, Health Physicist

Approved by: Tamara E. Bloomer, Chief
Materials Inspection Branch
Division of Nuclear Materials Safety

Enclosure

EXECUTIVE SUMMARY

**ArcelorMittal Burns Harbor, LLC
Burns Harbor, Indiana
NRC Inspection Report 030-37546/10-02(DNMS)**

This was a reactive inspection conducted on August 2, 2010, with in-office review through August 16, 2010, to review the events surrounding the dislodging and recovery of a nominal 3.97 millicurie cobalt-60 sealed source from a fixed level gauge. The gauge was dislodged from its position when a maintenance technologist attempted to remove dirt from the top of the source with compressed air before removing the source into a shielded cylinder for storage. The compressed air forced the source out of its shielded location and into the air, where it fell into the slab mold. Two licensee personnel, after contacting the Radiation Safety Officer (RSO), recovered the source and placed it into the shielded cylinder.

The inspector identified three violations of the U.S. Nuclear Regulatory Commission (NRC) requirements. The first violation concerned the licensee's emergency response procedure, which was tied down to the license by License Condition No. 26.A. of NRC License No. 13-32670-01. That procedure stated that personnel entering the restricted area surrounding radioactive material in case of a radiation emergency were required to be trained radiation workers and wear radiation dosimetry badges. The failure to ensure that one individual who assisted in the response had received radiation safety training and possessed radiation dosimetry badges is a violation of NRC requirements.

The root cause of the training portion of this violation was that the RSO incorrectly believed that the foreman had received radiation safety training. As corrective action for the violation, the RSO stated that he has directed the caster area management to review which area personnel had received radiation safety training and to provide such training to those who had not yet received it. He stated that all area personnel would be trained in the near future.

The root cause of the dosimetry portion of the violation was that the RSO viewed the situation as an emergency situation, and asked the foreman to assist the maintenance technologist in retrieving the source even though he had not been issued a dosimetry badge, with the expectation that any exposure he received would be minimal. As corrective action, the RSO has provided spare dosimeters to the caster area and will add spare dosimeters to the regular issue to the area so that they are available for use if needed.

The second violation involved the licensee's failure to report the event within 24 hours as required by Title 10 Code of Federal Regulations (CFR) 30.50(b)(2). The root cause of the violation was the RSO's misunderstanding of the reporting requirements. As corrective action, the RSO reported the event to the Headquarters Operations Center on August 5, 2010, and stated to the inspector that he now understood that the event was reportable and would report any such events that occurred in the future.

The third violation involved the licensee's failure to limit possession of materials to those authorized by the license as required by 10 CFR 30.34(c). Specifically, the licensee possessed eight Berthold Model LB 300 IRL ML Type II devices which were not authorized on the license.

The root cause of this violation was that the licensee was informed by another company that the license authorized possession of the devices, and the manufacturer supplied the devices to the licensee after requesting a copy of their license. Based on this information, the licensee had believed that the sources were authorized. As corrective action, the licensee submitted an expedited amendment request to the NRC to add the devices to their license, and the amendment was issued on August 12, 2010.

Report Details

1 Program Scope and Inspection History

ArcelorMittal Burns Harbor, LLC, (licensee) used fixed gauges in the production of steel at plants in Burns Harbor, Indiana, as authorized by U.S. Nuclear Regulatory Commission (NRC) License No. 13-32670-01. Among the gauges that the licensee used were eight Berthold Model LB 300 IRL ML Type II Series level gauges, each source containing approximately 4 millicuries of cobalt-60.

The two previous inspections of the licensee's activities, conducted in December 2008, and February 2010, identified one and four Severity Level IV violations, respectively. Because this was a reactive inspection unrelated to the previous violations, the inspector did not review these previous violations.

2 Sequence of Events

2.1 Inspection Scope

The inspector reviewed the sequence of events associated with the dislodging and recovery of a cobalt-60 sealed source by interviewing the licensee's Radiation Safety Officer (RSO) and other personnel involved in the event, observing selected licensed activities, and reviewing selected licensee records.

2.2 Observations and Findings

The licensee used level gauges to control the level of molten steel in molds for steel slabs. In one of the slab molds, the licensee used four Berthold Model LB 300 IRL ML Type II Series gauges each containing a cobalt-60 sealed source. The devices were installed in early July 2010. These devices were not designed with shutters allowing the sources to be shielded if personnel were to enter the mold. Instead, these devices were designed so that each source could be removed into a shielded cylinder using a threaded rod. The shielded cylinders could then be secured elsewhere while personnel entered the mold. The source housing extended approximately 1.75 inches beyond the source at one end of the source ("cold end"), but did not extend beyond the source at the other end ("hot end")

On July 22, 2010, at approximately 1:30 am, a maintenance technologist was removing the four sources to allow entry into the mold for cleaning and preparation for the next run. He had removed three of the four sources and began to remove the fourth. Observing that some dirt had gotten past the plug which protected the source, the technologist used compressed air to clean out the dirt as he had done for the other three sources without incident. However, the air went under the source and forced the source out of its hole, and the source then fell into the slab mold.

The technologist called over the caster shift foreman, the only other person working in the area at the time. The foreman had received no radiation safety training, and had not been issued a dosimetry badge. They attempted to call the RSO and the alternate RSO by telephone, but neither answered the calls, so they left messages with both.

The technologist climbed down into the mold with a calibrated survey instrument to see if he could find the source. Approximately 12 to 15 feet below the floor level, he noted that the radiation level increased slightly, but stayed below 0.2 milliroentgens per hour (mR/hr). He could not see the source, but determined it was nearby. Upon exiting the mold, he and the foreman were able to observe the source from above at that depth. They controlled the area and waited.

At approximately 5:30 a.m., the RSO called the plant, having received the message from earlier in the morning. He spoke with the technologist and the foreman, and asked whether the source appeared to be stable at its location. They replied that it did not seem to be stable, so the RSO, believing that both were trained radiation workers, asked the technologist to recover the source and the foreman to assist in the recovery before it could fall further.

The two individuals approached the source from below since they could not get to it from above. The technologist was larger than the foreman and could not access the source, so the foreman climbed in close to the source, gripped the cold end of the source between the index finger and middle finger of his right hand, and quickly passed it back to the technologist.

The technologist took the hot end of the source in his right hand, and then quickly switched the source to his left hand, holding it by the cold end. He held it in this way for a short time until he reached an area where he felt secure on his feet, then switched the source to a pair of long-handled pliers, which he held in his left hand with his arm outstretched until he reached the area where the shield was located. He then set down the source, set up the cylindrical shield to allow replacement of the source into the shield, and, using the threaded rod, drew the source into the shield. He then placed the shielded source into the storage area.

License Condition No. 26.A. of NRC License No. 13-32670-01 requires, in part, that the licensee conduct its program in accordance with the statements, representations, and procedures contained in the application dated August 27, 2007, including any enclosures. Item 13.9 of the Policies Governing the Use of Ionizing Radiation, enclosed in the application dated August 27, 2007, states in part that only personnel trained to respond to radiation emergencies and in possession of a properly operating and calibrated survey meter and radiation dosimeter badges shall be permitted to enter the restricted area around radioactive material if an emergency occurs. The foreman's entry into the restricted area having received no radiation safety training and without wearing a radiation dosimeter badge is a violation of License Condition No. 26.A. of NRC License No. 13-32670-01.

The root cause of the training portion of this violation was that the RSO incorrectly believed that the foreman had received radiation safety training. As corrective action for the violation, the RSO stated that he has directed the caster area management to review which area personnel had received radiation safety training and to provide such training to those who had not yet received it. He stated that all area personnel would be trained in the near future.

The root cause of the dosimetry portion of the violation was that the RSO viewed the situation as an emergency situation, and asked the foreman to assist the maintenance technologist in retrieving the source even though he had not been issued a dosimetry

badge, with the expectation that any exposure he received would be minimal. As corrective action, the RSO has provided spare dosimeters to the caster area, and will add spare dosimeters to the regular issue to the area so that they are available for use if needed.

The root cause of the event was licensee personnel's lack of understanding that compressed air could force the source out of its hole. As corrective action for the event, the RSO stated that he has revised the procedure for removing the sources to state that compressed air will not be used on the sources, and has trained all personnel who work with these sources on the revised procedure. In addition, the licensee has started using different plugs which are more effective at keeping dirt out of the source holes.

Concerning the caster personnel's difficulty contacting the RSO, the RSO stated that the caster personnel had attempted to call him on his cell phone, which he did not hear because it was not near where he was sleeping. After this event, he gave them his home phone number, which he would hear and respond to quickly.

2.3 Conclusions

The inspector identified a violation of License Condition No. 26.A. of NRC License No. 13-32670-01 involving an individual who had neither received appropriate training nor possessed a radiation dosimetry badge entering the restricted area around an unshielded source. The licensee committed to implementing corrective actions to prevent similar violations, and implemented corrective actions to prevent recurrence of the event.

3 **Reporting of Event to NRC**

3.1 Inspection Scope

The inspector reviewed the licensee's reporting of the event to NRC by interviewing the licensee's RSO and reviewing selected licensee and NRC records.

3.2 Observations and Findings

The RSO stated that, after the source was recovered and placed into storage on July 22, 2010, he reviewed the reporting requirements and determined that the event was not reportable. Specifically, he believed that the reporting requirement in Title 10 Code of Federal Regulations (CFR) 30.50(b)(2), which requires that an event in which equipment is disabled or fails to function as designed be reported within 24 hours after the discovery of the event, did not apply because 10 CFR 30.50(b)(2)(iii) specified that the event is reportable when no redundant equipment is available and operable to perform the required safety function, and he knew that spare shields and threaded rods were available. As a result, the RSO did not report the event to the NRC Operations Center at that time.

The inspector determined that the event was reportable because there were no shielding materials available and operable to provide shielding of the source while the source was in the mold and personnel were acting to recover the source.

10 CFR 30.50(b)(2) requires, in part, that an event in which equipment is disabled or fails to function as designed be reported within 24 hours after the discovery of the event. The licensee's failure to report the event described above to the NRC Operations Center within 24 hours of the discovery of the event is a violation of 10 CFR 30.50(b)(2).

The root cause of the violation was the RSO's misunderstanding of the reporting requirements. As corrective action, the RSO reported the event to the Headquarters Operations Center on August 5, 2010, and stated to the inspector that he now understood that the event was reportable and would report any such events that occurred in the future.

On August 13, 2010, the licensee submitted the written follow-up report as required by 10 CFR 30.50(c)(2). The report included all information required by the regulation and was submitted within thirty days after the initial telephonic report as required.

3.3 Conclusions

The inspector identified a violation of 10 CFR 30.50(b)(2), involving the licensee's failure to report an event involving the loss of shielding for a nominal 3.97 mCi cobalt-60 source. The licensee has implemented corrective actions to prevent recurrence of the violation.

4 Exposure Assessment

4.1 Inspection Scope

The inspector reviewed the licensee's assessment of exposures to personnel involved with the loss and recovery of the source by interviewing the licensee's RSO and reviewing selected licensee records, and performed confirmatory calculations based on dose modeling software and reported exposure times.

4.2 Observations and Findings

After the event, the RSO conducted an ambient exposure rate survey of an unshielded source with a calibrated survey instrument. Based on the radiation levels and the times reported by the technologist and the foreman, the RSO calculated estimated exposures to the extremities of the two individuals to be significantly less than the annual exposure limits for members of the general public. The inspector's confirmatory calculations indicated radiation exposures to the two individuals that were consistent with the RSO's calculations.

4.3 Conclusions

No violations of NRC requirements were identified.

5 Possession Authorizations

5.1 Inspection Scope

The inspector reviewed the licensee's possession authorizations by interviewing the licensee's RSO and reviewing selected licensee records.

5.2 Observations and Findings

The inspector observed that the licensee's NRC license did not authorize Berthold Model LB 300 IRL ML Type II Series gauges, though it did authorize Berthold Model LB300 and other similar source holders for level measurements. Based on discussions with Berthold Technologies personnel, this authorization did not cover the Model LB 300 IRL ML Type II devices.

Title 10 CFR 30.34(c) requires that each person licensed by the Commission pursuant to the regulations in this part and parts 31 through 36 and 39 shall confine his possession and use of the byproduct material to the locations and purposes authorized in the license. The licensee's possession of eight Model LB 300 IRL ML Type II series source holders is a violation of 10 CFR 30.34(c).

The root cause of this violation was that the licensee was informed by another company that the license authorized possession of the devices, and the manufacturer supplied the devices to the licensee after requesting a copy of their license. Based on this information, the licensee believed that the sources were authorized. As corrective action, the licensee submitted an expedited amendment request to NRC to add the devices to their license; this amendment was issued on August 12, 2010.

5.3 Conclusions

The inspector identified a violation of 10 CFR 30.34(c), involving the licensee's possession of byproduct materials contrary to the terms of their license. The licensee has implemented corrective actions to prevent recurrence of the violation.

6 **Exit Meeting Summary**

The inspector discussed the preliminary conclusions, as described in this report, with the licensee's RSO during the initial exit meeting conducted at the licensee's facility on August 2, 2010, and a follow-up telephone conversation on August 16, 2010. The inspector discussed the activities reviewed, the inspection findings, and the apparent violations. The licensee did not identify any information reviewed during the inspection and proposed for inclusion in the inspection report as proprietary in nature.

LIST OF PERSONNEL CONTACTED

Ron Brown, Maintenance Technologist – Electrical, ArcelorMittal Burns Harbor, LLC
Thomas Byrnes, Maintenance Technologist – Electrical, ArcelorMittal Burns Harbor, LLC
Philip Hampton, Caster Shift Foreman, ArcelorMittal Burns Harbor, LLC
Ryan Hoagland, Electrical Engineer, ArcelorMittal Burns Harbor, LLC
* Kevin Lackman, Assistant RSO, ArcelorMittal Burns Harbor, LLC
Mark Morgan, RSO, Berthold Technologies U.S.A., LLC
#* Chris Sarvanidis, Health & Safety Representative, RSO, ArcelorMittal Burns Harbor, LLC
Doug Utpatel, Maintenance Technologist – Electrical, ArcelorMittal Burns Harbor, LLC

attended the initial exit meeting on August 2, 2010
* attended the telephonic exit meeting on August 16, 2010