NRC FORM 699
(11-2017)

U.S. NUCLEAR REGULATORY COMMISSION

CONVERSATION RECORD

NAME OF PERSON(S)/TITLE CONTACTED OR IN CONTACT WITH YOU	DATE OF CONTACT	TYPE OF CONVERSATION
Craig Metzger	11/09/2018	☐ E-MAIL ☑ TELEPHONE ☑ INCOMING ☐ OUTGOING
E-MAIL ADDRESS	**TELEPHONE NUMBER**	
craig.metzger@gerdau.com	734-384-6544	
ORGANIZATION	**DOCKET NUMBER(S)**	
Gerdau Special Steel - MI and IN Operations	030-14021	
LICENSE NAME AND NUMBER(S)	**MAIL CONTROL NUMBER(S)**	
Gerdau - Monroe Mill 21-18673-01	610027	

SUBJECT

Conversation Regarding Response to Request for Information dated Nov. 2, 2018

SUMMARY AND ACTION REQUIRED (IF ANY)

The is in reference to the request for additional information response submitted by Gerdau - Monroe Mill dated Nov. 2, 2018, and the conversation that occurred between Laura Cender, Craig Metzger, and Patricia Pelke on Nov. 9, 2018.

Per our discussion today, please provide your response to the following items by no later than Nov. 30, 2018. Please ensure that you contact me ahead of time if you will need the deadline extended.

1. In your response to Item 1.b. you provide a number of leak test and maintenance records for your current Berthold Systems, Inc. Model LB-300-ML and MLT Series devices. The intention of this request was for you to submit leak test records for the sealed sources you disposed of in 2013. Please provide the last leak tests for the Berthold Systems, Inc. Model LB-300-IRL Type 1 devices that were disposed of in 2013. Only leak test records are requested, additional records relating to maintenance do not need to be submitted.

NAME OF PERSON DOCUMENTING CONVERSATION

Laura B. Cender

SIGNATURE	DATE OF SIGNATURE
Laura B. Cender	11/09/2018

CONVERSATION RECORD (continued)

LICENSE NAME AND NUMBER(S)	MAIL CONTROL NUMBER(S)
Gerdau - Monroe Mill 21-18673-01	610027

SUMMARY AND ACTION REQUIRED (IF ANY) (Continued)

3. In your response to Item 1.c. you indicate that your organization has possessed "the allotted number of sources on the current license (6)," but only five disposal records were provided for the Berthold Systems, Inc. Model LB-300-IRL Type 1 devices that were disposed of in 2013. Please clarify if these five devices were the only Model LB-300-IRL Type 1 devices that were possessed under the license. Note that the information requested in this section was intended to be in reference to the source holders that you are requesting to remove from the license, not the source holders that are currently in use.

4. In your response to Item 2.b., regarding individuals who will have key access to the Caster Mold Room, please clarify what you mean by "Caster Radiation Safety Officer." Craig Metzger is the RSO listed on the license and the only licensed RSO for Gerdau - Monroe Mill. Per our conversation today my understanding is that two other individuals, Les Hartford and Rob Edgar have been designated radiation safety roles. In your response please clarify the individual(s) by name who will have key access to the area where source rods will be stored. If a mold needs to be replaced and the individual with the key is unavailable, how will the RSO or other designates access the storage area?

5. Per our conversation today my understanding is that Les Hartford and Rob Edgar have been designated certain responsibilities for radiation safety. Please provide records of their radiation safety training and an overview of the tasks and responsibilities that they have been assigned. Additionally please confirm that you, Craig Metzger, understand that as the licensed Radiation Safety Officer that you are person ultimately responsible for maintaining and implementing the radiation safety program.

6. In your response to Item 3.a. you repeatedly refer to the source holder as a sealed source. Please revise your response in this section and throughout your application using accurate terminology. This is especially important as inaccurate terminology was one of the main contributors that lead to the initial confusion surrounding this issue when the license was renewed in 2012.

7. In your response to Item 3.a. you state (Page 3 Line 2) that workers are to perform their operations on the North side of the mold to reduce exposure, but in the following line you state that workers must stay to the South to reduce exposure. Please clarify where workers are required to stand when working and how workers will be able to know North vs. South when inside the building. This required step also needs to be included in the procedure provided in Attachment 5.

8. In the description of work provided in Item 3.a. please also include an estimate of the number of mold replacements that are performed in a week. Please include an estimate of the normal number of times that this activity will occur as well as a worst case scenario.

9. The response provided regarding training in Item 3.b. is inadequate. Please provide a response to the following items:
   a.) Per the original request, please submit a comprehensive description of the training that was provided to workers and management staff. This should be in the form of a course outline.
   b.) In your response you state that caster operators and management staff participated in the training. Please clarify if ALL caster operators received training, or if training was provided to a sub-group of caster operators. If some workers did not receive the training, how you will ensure only qualified individuals will perform non-routine maintenance activities involving the source holder?

CONVERSATION RECORD (continued)

LICENSE NAME AND NUMBER(S)	MAIL CONTROL NUMBER(S)
Gerdau - Monroe Mill 21-18673-01	610027

SUMMARY AND ACTION REQUIRED (IF ANY) (Continued)

c.) Describe how new caster operators will become trained and qualified to perform non-routine maintenance activities.

d.) In your response you state that "The caster operation is supervised by a Gerdau Radiation Safety Officer." Again, similarly to Item 4 of this record, please clarify what is meant by the quoted statement. My understanding is that these mold change operations happen frequently, and at any time of day. Please clarify the individuals who may be responsible for supervising the mold replacement process and how this work will continue if a mold needs to be replaced outside of normal shift hours.

e.) Provide training records for the individuals who participated in the training that took place on Nov. 5-6.

f.) Please confirm the frequency of refresher training, and a provide a comprehensive description of the topics that will be covered.

10. In Item 3.d. of your response you state that when the source is in operation (i.e. shutter open) that readings on the North and South sides of the caster were observed at 100 uR/hr and below at a distance of one foot. It appears from the readings listed in Attachment 6 that radiation levels only were reduced to this level on the North side of the source holder, and only when the source holder was in the closed position. Please correct your statements in the paragraph to reflect the information provided in Attachment 6.

10. In Attachment 6 please indicate if the measurements that were taken on the south side of the mold at 6" and 12" were with the shutter in the open or closed position.

11. The information provided in your response in Item 3.d. and Attachment 6 is not an assessment of your dosimetry needs. 10 CFR 20.1502 requires that workers be monitored by dosimetry if they are likely to exceed 10% of the annual dose limits listed in 10 CFR 20.1201. While taking survey readings near the source holder with the shutter in the open and closed position is a start, an evaluation must also be provided that assesses the likely conditions that workers will experience during these mold replacement evolutions. Your evaluation should at a minimum include reasonable assumptions for the number of mold changes that occur annually, the number of times that a caster operator could be assigned to perform installation and removal of the source holder annually, the average amount of time that a worker will spend near the source holder when performing a mold replacement, and the average amount of distance that will separate the worker from the source holder.

    Please refer to the attached Appendix G from NUREG 1556 Vol. 4 Rev. 1

12. My understanding from our call today is that changes have been made to the plans for where material will be used and stored. Please clarify your responses throughout the application and describe how source holders temporarily removed from service will be stored, how source holders that are in long-term storage will be stored, and how source rods will be stored pending vendor replacement.

13. In addition to the provided photos of the facility area please provide an overview diagram of the facility, indicating at a high level where the storage and use locations are in relation to the rest of the facility. A facility map or image of the facility acquired by using a tool such as Google Maps - Satellite View (or other comparable tool) with the requested locations indicated would be acceptable.

APPENDIX G

DOSIMETRY-RELATED GUIDANCE

DOSIMETRY-RELATED GUIDANCE

Part 1: Guidance for Demonstrating that Unmonitored Workers Are Not Likely To Exceed the Limits in 10 CFR 20.1502(a)

Dosimetry is required for individuals likely to receive, from sources external to the body, a dose in excess of the limits in Title 10 of the *Code of Federal Regulations* [(10 CFR) 20.1502(a)]. Therefore, a licensee should evaluate the doses its workers receive in performing their duties to assess whether dosimetry is required.

Example

Note: The examples in this appendix use conventional units. The conversions to International System of Units are as follows: 1 foot = 0.305 meter; 0.01 mSv = 1 mrem.

A gauge manufacturer has estimated the doses to the extremities and whole body of a person replacing the assay plate on one of its series of gauges. Each gauge in the series is authorized to contain up to 7.4 gigabecquerels [200 millicuries] of cesium-137. The manufacturer based its estimate on observations of individuals performing the recommended procedure according to good radiation safety practices. The manufacturer had the following information:

- time needed to perform the entire procedure (e.g., 15 minutes)
- expected dose rate received by the whole body of the individual, associated with the shielded source and determined using measured or manufacturer-determined data (e.g., 0.02 mSv per hour [2 mrem per hour] at 46 centimeters [18.1 inches] from the shield)
- time the hands were exposed to the shielded source (e.g., 6 minutes)
- expected dose rate received by the extremities of the individual, associated with the shielded source and determined using measured or manufacturer-determined data on contact with the shield [e.g., 0.15 mSv per hour (15 mrem per hour)].

From this information, the manufacturer estimated that the individual performing each routine cleaning and lubrication could receive the following:

- less than 0.005 mSv [0.5 mrem] to the whole body
- 0.015 mSv [1.5 mrem] to the hands

The applicable whole body dose limit for adult workers is 50 mSv [5 rem] per year, with individual monitoring devices required when it is likely that an individual will receive 10 percent of that value [i.e., 5 mSv (500 mrem) per year]. If one of these procedures delivers 0.005 mSv [0.5 mrem], then an adult worker could perform 1,000 of these procedures each year and remain within 10 percent of the applicable limit.

The applicable whole body dose limit for minors is 10 percent of the annual dose limits specified for adult workers [i.e., 5 mSv (0.5 rem) per year], with individual monitoring devices required when it is likely that a minor will receive a deep dose equivalent in excess of 1 mSv [0.1 rem]. If one of these procedures delivers 0.005 mSv [0.5 mrem], then a minor could perform 200 such procedures each year without exceeding the individual monitoring device threshold.

For declared pregnant women, individual monitoring devices are required when these individuals are likely to receive during the entire pregnancy, from radiation sources external to the body, a deep dose equivalent in excess of 1 mSv (0.1 rem). If one of these procedures delivers 0.005 mSv [0.5 mrem], then a declared pregnant women could perform 200 of these procedures during her entire pregnancy without exceeding the individual monitoring device threshold.

The applicable extremity dose limit for adult workers is 500 mSv [50 rem] per year with individual monitoring devices required when it is likely than an individual will receive 10 percent of that value [i.e., 50 mSv (5 rem or 5,000 mrem) per year]. If one of these procedures delivers 0.015 mSv [1.5 mrem], then an adult worker could perform 3,333 of these procedures each year and remain within 10 percent of the applicable limit.

The applicable extremity dose limit for minors is 10 percent of the annual dose limits specified for adult workers [i.e., 50 mSv (5 rem) per year], with individual monitoring devices required when it is likely that a minor will receive a dose to the extremities in excess of 5 mSv [0.5 rem]. If one of these procedures delivers 0.015 mSv [1.5 mrem], then a minor could perform 333 of these procedures each year and remain within 10 percent of the applicable limit.

Declared pregnant women have no requirements concerning dose the extremities or the monitoring thereof.

Based on the specific situation described previously, no dosimetry is required if an adult worker performs fewer than 1,000 routine maintenance procedures per year; a minor performs fewer than 200 routine maintenance procedures per year; or a declared pregnant woman performs fewer than 200 procedures during the entire pregnancy.

Guidance to Licensees

Licensees who wish to demonstrate that they are *not* required to provide dosimetry to their workers must prepare a written evaluation similar to that shown in the previous example. The expected dose rates, times, and distances used in the above example may *not* be appropriate to individual licensee situations. In their evaluations, licensees must use information appropriate to the various types of gauges on which they will perform routine cleaning and lubrication. This information is generally available from gauge manufacturers or the SSD registration certificate maintained by the U.S. Nuclear Regulatory Commission (NRC) or Agreement State.

Table G-1 may be helpful in documenting a licensee's evaluation.

Licensees should review evaluations periodically and revise them as needed. They should check assumptions used in their evaluations to ensure that the assumptions are up-to-date and accurate. For example, if workers became lax in following good radiation safety practices in the example used previously, the extremities could be closer to the unshielded source, and the workers would receive more exposure than 0.15 mSv [15 mrem] per hour. Alternatively, workers could perform the task more slowly than the estimated 15 minutes total, and 6 minutes with their hands near the unshielded source. Also, using new gauges containing sources of different activities, different radionuclides, or different cleaning and lubrication procedures requires a new evaluation.

Table G-1. Dosimetry Evaluation

Dosimetry Evaluation for _____ Model _____ Fixed Gauge			
A.	Time needed to perform the entire routine cleaning and lubrication procedure on the gauge	_____ minutes	_____ hour (divide # of minutes by 60)
B.	Expected whole-body dose rate that the individual will encounter, determined using measured or manufacturer-provided data	_____ mrem/hour	
C.	Time the *hands* were exposed to the unshielded source	_____ minutes	_____ hour
D.	Expected extremity dose rate that the individual will encounter, determined using measured or manufacturer-provided data for the unshielded source at the typical distance from the hands to the unshielded source	_____ mrem/hour	
Estimated Whole Body Dose Equivalent* Formula: (_____hours in Row A) x (_____mrem/hour in Row B) = (_____estimated mrem) x (_____# of cleaning and lubrications conducted each year) = _____ Whole Body Dose mrem			
Estimated Extremity Dose Equivalent† Formula: (_____hours in Row C) x (_____mrem/hour in Row D) = (_____estimated mrem) x (_____# of cleaning and lubrications conducted each year) = _____ Extremity Dose mrem			

*An expected whole body dose equivalent for adult workers *less than* 500 mrem requires no dosimetry. The corresponding value for minors is 100 mrem. The corresponding value for declared pregnant women during the entire pregnancy is 100 mrem.

†An expected extremity dose equivalent for adult workers *less than* 5,000 mrem requires no dosimetry. The corresponding value for minors is 500 mrem. There is no corresponding value for declared pregnant women.

Cender, Laura

From: Cender, Laura
Sent: Friday, November 09, 2018 3:02 PM
To: 'Craig Metzger'
Cc: Pelke, Patricia
Subject: NRC Conversation Record and Supporting Information
Attachments: 11.09.2018 Record of Conversation To Gerdau - Monroe Mill.pdf; NUREG 1556 Vol. 4 Rev. 1 - Dosimetry Guidance.pdf

Hello Craig,

Thank you very much for taking time out of your day to discuss your pending license amendment request. As we discussed I have attached a record of our conversation today as well as the dosimetry guidance section of NUREG 1556 Vol 4 Rev. 1.

The full NRC guidance document for fixed gauge users, NUREG 1556 Vol 4. Rev. 1, can be found at the following link: https://www.nrc.gov/docs/ML1618/ML16188A048.pdf

As we discussed today please submit the signed and dated response by November 30, 2018. If you choose to submit a physical copy of your amendment request please send it to address the below. Please reference the enclosed document to my attention and reference Control No. 610027 in the subject line for ease of handling in our office.

U.S. Nuclear Regulatory Commission
Materials Licensing Branch
2443 Warrenville Road
Lisle, IL 60532

I will check in with you prior to the Nov. 30 deadline to see how things are going and answer any questions you may have. You are also free to contact me at 630-829-9712 with any questions that arise as you are working on your response.

Thank you,
Laura

Laura Cender
U.S. Nuclear Regulatory Commission
Materials Licensing Branch
E-mail: Laura.Cender@nrc.gov
Phone: (630) 829-9712