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November 4, 2020

Mr. Michael Kunowski Chief of the Materials Inspection Branch U.S. Nuclear Regulatory Commission, Region III 2443 Warrenville Road, Suite 210 Lisle, Illinois 60532-4352

RE: Response to the Apparent Violations in Inspection Report No. 03033903/2020001(DNMS); EA-20-110

Dear Mr. Kunowski:

TTL Associates, Inc. (TTL) has received the above referenced inspection report in reference to the TTL's portable nuclear gauge incident on July 7, 2020. TTL is in concurrence with the two identified violations identified in your letter. But we would like to reaffirm our commitment to the safety of our associates, the public and the radioactive sources that we possess.

The following is the description of immediate corrective actions taken by TTL to prevent a reoccurrence of this incident.

The first action was to require all gauge users to obtain refresher gauge use and transportation training via Troxler Electronics online training website. While TTL provides in-house training, it was felt that a easily accessible online training provided us with quicker response time for our gauge users to complete this requirement.

The second action was to discuss the incident personally with all gauge users to reiterate TTL's expectations for portable gauge users. This step was done immediately and consisted of describing the incident that occurred and the deviations from company protocol that caused the incident.

The third action was performed in August and consisted of a formal memorandum detailing gauge use and emergency response. This memorandum was sent to all gauge users and a formal reply back was required that the document had been read and understood. A copy of this memo is attached to this letter.

The fourth action was to revise the emergency procedures printed on the back of the Bill of Lading for each portable nuclear gauge. This revision was done to clear up ambiguous language so as to make emergency response procedures very clear for a gauge user to understand when dealing with a very stressful situation. A copy of this revision is attached to this letter.

The final action taken was to upload TTL's Portable Nuclear Density Gauge Operating Procedures, Portable Nuclear Device Emergency Procedures, nuclear gauge operation manuals, and the Troxler Transportation Guide to each of the gauge user field iPads. This action puts all of the available resources pertaining to the used of portable nuclear gauges at the fingertips of every gauge user. Copies of TTL's Operating and Emergency Procedures documents are attached to this letter.

While the action taken occurred over the course of a fairly short time, TTL is committed to continual training moving forward for all portable gauge users to minimize the opportunity of incurring additional incidents.

We appreciate the thoroughness of the inspection that the NRC conducted and we are thankful for the guidance provided along the way to help us strengthen our portable nuclear gauge program. If you need any additional information from us, please feel to contact me at (734) 751-4931.

Respectfully submitted,

TTL Associates, Inc.

Jeffrey S. Elliott, PE, F. NSPE, F. MSPE Vice President/Radiation Safety Officer

Attachments

- Gauge User Memorandum
- Bill of Lading Emergency Procedures
- Portable Nuclear Density Gauge Operating Procedures
- Portable Nuclear Device Emergency Procedures



Jeff Elliott

From:	Jeff Elliott
Sent:	Wednesday, August 26, 2020 5:00 PM
То:	Donzell Austin; Rodney Barnes; Toby Downer; Tyler Elliott; John Ellis; Michael Finley (mfinley@ttlassoc.com); Loren Gause; Loren Gause; Stephen Manuel (smanuel@ttlassoc.com); Gordon Melbourne; Ron Olenick; Ahmd Shakir; Brandon Smith;
	Jessica Steele; Tre'Quan Tucker
Cc:	Krista Socie (ksocie@ttlassoc.com)
Subject:	Gauge Use Reminder

Folks: As you are all aware, TTL experienced a gauge incident in July. This email is another reminder of the day-to-day block and tackling we should be doing to maintain safety as it relates to using nuclear gauges. The following is a refresher of the actions we should be doing to properly maintain and operate our nuclear gauges.

- 1. When removing a nuclear gauge from our storage room, the gauge must be signed out on the utilization log. This ensures we know at all times who is in possession of the gauge.
- 2. The Bill of Lading for the corresponding gauge must be obtained from the storage rack and placed on the dash of your vehicle. This Bill of Lading must be able to be reached while you are sitting in the drivers seat with your seat belt on.
- 3. The gauge must be locked in the back of your vehicle using 2 independent locking devices. This means you must use 2 separate chains and 2 separate locks. One should be attached to each of the two locking hasps.
- 4. When the gauge is removed from the case for testing, it MUST be in your sight at all times. NEVER TURN YOUR BACK ON YOUR GAUGE. Maintaining continuous eye contact is required at all times when using a gauge. Additionally, when a test is running, maintaining a distance from your gauge of no more than 5 feet is adequate to protect you from radiation but also provides a close enough distance for you to relocate the gauge quickly should a vehicle come too close.
- 5. When the test you are running is done, the source rod should be retracted into the safe position.
- 6. Once you are done actively taking tests, your gauge must be returned to is shipping case and be properly locked to your vehicle. This could be for a lull in the need for another test, lunch break, etc...
- 7. When you are done testing for the day, your gauge should be returned to TTL's storage room, the Bill of Lading replaced in the appropriate storage slot and the utilization log completed indicating the gauge has been returned.

The final topic and the most important topic is gauge damage. If we follow the above procedures religiously, the likelihood of gauge damage is very remote. However, should you have an incident with a gauge, the first thing you should do is isolate the area by setting up a 15-foot radius and prevent ALL access to the area (including yourself). Immediately call me at (734) 751-4931. As the Radiation Safety Officer I will be the one directing all activities as it relates to the gauge. **DO NOT UNDER ANY CIRCUMSTANCES ATTEMPT TO REPAIR A DAMAGED GAUGE**. When I get to the site I will handle all remedial repairs. Regardless of the condition of the gauge, you as a gauge user are not authorized to perform any repairs. Should the gauge be in a position that the source rod is exposed or the source becomes dislodged from the source rod, **DO NOT TOUCH IT! THIS CANNOT BE REITERATED ENOUGH. YOU SHOULD NEVER TOUCH THE SOURCE ROD TIP OR DISLODGED SOURCE.** Maintain your safe distance and wait for me to arrive on site to handle the gauge.

While I am sure you all understand these procedures, I ask that you take a moment to reflect on them again. The clearer these points are in your head now, the better chance of you have of recalling them in the case of an incident.

Once you have had a moment to read this email a couple of times, especially the part about **never touching the source rod or dislodged source**, I ask that you respond back to me (just me, not the whole group) that you understand. If you are unclear about any of our procedures, that is ok. Call me and we can discuss them prior to you using a gauge. Thanks in advance for your attention!

Jeffrey S. Elliott, PE, F.NSPE Vice President

TTL Associates, Inc.

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TROXLER NUCLEAR GAUGE EMERGENCY RESPONSE INFORMATION REQUIRED FOR TRANSPORTATION

(References DOT P5800.5, ERG93, and 49CFR)

1) PROPER SHIPPING NAME:

• RQ, UN3332, RADIOACTIVE MATERIALS, TYPE A PACKAGE, SPECIAL FORM, 7

POTENTIAL HAZARDS

2) HEALTH HAZARDS

- Radiation presents minimal risk to lives of persons during transportation incidents
- Undamaged packages are safe; damaged packages or materials released from packages can cause external radiation hazards. Contamination is not suspected.
- Packages identified as "Type A" by marking on packages or shipping papers contain non-life endangering amounts. Radioactive sources may be released if packages are damaged in moderately severe incidents.
- Commonly available instruments can detect most of these materials.
- Water from fire control is not expected to cause pollution.
- Positive pressure self-contained breathing apparatus (SCBA) and structural firefighter's protective clothing will provide adequate protection against internal radiation exposure, but not external radiation exposure.
- 3) FIRE OR EXPLOSION
 - Packaging can be consumed without content loss from sealed source capsules.
 - Radioactive source capsules are designed to withstand temperatures of 1475°F or 800°C.

EMERGENCY ACTION

4) IMMEDIATE PRECAUTIONS

- Priority response actions may be performed for life saving, control of fire and other hazards, and first aid before taking radiation measurements.
- Isolate hazard area (minimum 15-foot radius around potential contamination) and deny all entry including yourself.
- Detain any individuals or heavy equipment that were involved in the incident, as well as, anyone that may be potentially contaminated.
- Notify TTL's Radiation Safety Officer (RSO) immediately.
- TTL's RSO will notify the appropriate authorities and direct all field operations.
- However, if the situation requires immediate emergency services, dial 911.
- Do not move or attempt any repair to a damaged gauge.
- UNDER NO CIRCUMSTANCES SHOULD AN UNSHIELD SOURCE ROD OR SOURCE TIP BE TOUCHED.
- EMERGENCY ASSISTANCE IS AVAILABLE BY CALLING TTL ASSOCIATES AT (734) 455-8600; JEFF ELLIOTT (TTL'S RSO) AT (734) 751-4931, TROXLER AT (919) 549-9539 OR THE NRC OPERATIONS CENTER AT (301) 816-5100.
- 5) FIRE
 - Do not move damaged packages; move undamaged packages out of fire zone.
 - Small Fires: Dry chemical, CO₂, water spray, or regular foam
 - Large Fires: Water spray, fog (flooding amounts)

6) SPILL OR LEAKS

- Do not touch damaged packages or spilled materials.
- Slightly damaged packages seldom indicate failure of inner container.
- If source is identified as being out of package, isolate the hazard area (minimum of 15-foot radius), deny all entry to the area including yourself and await direction from TTL'S RSO.
- 7) FIRST AID
 - Use first aid treatment according to the nature of the injury.
 - Persons exposed to special form sources are not likely to be contaminated with radioactive material.



Portable Nuclear Density Gauge Operating Procedure

(Revision Date 09/01/2020)

- 1. TTL Associates, Inc. (TTL) provides personnel dosimetry to associates to monitor their occupational radiation dose. The following should be followed:
 - a. Always wear your assigned dosimeter when using the gauge;
 - b. Never wear another person's dosimeter, and;
 - c. Never store your dosimeter near the gauge.
 - d. When you are not using a gauge, your dosimeter should be stored in the appropriate dosimeter storage area in the vicinity of the control badge.
- 2. Before removing the gauge from the storage room, ensure that each gauge source is in the fully shielded position and that the source is locked in the shielded position. The transport case should also be locked at each of the two locking hasps.
- 3. Sign out the gauge on the utilization log including your name, date of use and the location the gauge is being transported to. Remove the corresponding Bill of Lading from the organizer.
- 4. Block and brace the gauge to prevent movement during transport and lock the gauge in or to the vehicle. This includes locking the gauge with two independent chains (or cables) to the two separate locking hasps on the transportation case.
- 5. Place the Bill of Lading in your vehicle in a position that allows you to retrieve it while seated in the driver's seat with your seatbelt on.
- 6. When using the gauge, do so in accordance with the manufacturer's instructions and recommendations. Copies of the appropriate equipment manuals are available for your use.
- 7. Do not touch the unshielded source rod with your fingers, hands, or any part of your body.
- 8. Do not place hands, fingers, feet, or other body parts in the radiation field from an unshielded source.

- 9. Unless absolutely necessary, do not look under the gauge when the source rod is being lowered into the ground. If you must look under the gauge to align the source rod with the hole, follow the manufacturer's procedures to minimize radiation exposure.
- 10. After completing each measurement in which the source is unshielded, immediately return the source to the shielded position.
- 11. Always maintain constant surveillance and immediate control of the gauge when it is not in storage.
- 12. While operating the gauge at job sites, maintain constant visual observation of the gauge when it removed from the storage case. Never turn your back to the gauge and maintain an appropriate distance between yourself and the gauge when running a test (no more than approximately 5 feet).
- 13. Take action necessary to protect the gauge and yourself from danger of moving heavy equipment.
- 14. Always keep unauthorized persons away from the gauge.
- 15. While routine cleaning and maintenance can be performed according to the manufacturer's instructions and recommendations, it is TTL's preference to return the gauge to an appropriate repair facility for service. Contact the TTL Radiation Safety Officer before attempting any routine cleaning for approval.
- 16. When the gauge is not in use at a temporary job site, place the gauge in a secured storage location (e.g., locked in the trunk of a car or locked in a storage facility).
- 17. Return the gauge to its proper locked storage location at the end of the work shift, log the gauge as returned on the utilization log and replace the Bill of Lading to the appropriate organizer slot.
- 18. Should any changes be made to the gauge storage area within the office or at a temporary project site, (e.g., changing the location of gauges within the storage area, removing shielding, adding gauges, changing the occupancy of adjacent areas, moving the storage area to a new location), the area should be reevaluated to ensure proper gauge security and compliance with public dose limits.





Portable Nuclear Device Emergency Procedures (Revision 09/01/2020)

If the source fails to return to the shielded position (e.g., as a result of being damaged, source becomes stuck below the surface), or if any other emergency or unusual situation arises (e.g., the gauge is struck by a moving vehicle, is dropped, is in a vehicle involved in an accident):

- 1. Immediately secure the area and keep everyone (including yourself) a minimum of 15 feet away from the gauge until the situation is assessed and radiation levels are known. First aid is permitted in the secured area for any injured individuals until it is medically safe to remove them from the area.
- 2. Notify the following persons of the incident, in accordance with where you are located:
 - a. Michigan Radiation Safety Officer Jeff Elliott, PE, (734) 751-4931
 - b. Ohio Radiation Safety Officer John Rust, (419) 351-4419
- 3. Notifications to the appropriate authorities will be performed by TTL's RSO, however, if the situation requires emergency services, dial 911.
- 4. TTL's RSO will notify the NRC's Emergency Operations Center at (301) 816-5100 when necessary. While it is appropriate to notify the NRC for any incident, it is required that they be notified if:
 - a. A gauge containing licensed material is lost or stolen,
 - b. When gauges are damaged or involved in incidents that result in doses in excess of 10 CFR 20.2203 limits, or
 - c. If attempts to recover a source stuck below the surface is unsuccessful.
- 5. Do not attempt to repair or modify a damaged gauge. NEVER TOUCH THE SOURCE ROD OR BROKEN SOURCE. Exit the secured area and wait direction from TTL's RSO.
- 6. If any heavy equipment is involved, detain the equipment and operator until it is determined there is no contamination present.
- 7. Gauge users and other potentially contaminated individuals should not leave the scene until emergency assistance arrives.
- 8. TTL's RSO (or delegated party) will perform a radiation survey as soon as possible to determine if radioactive material has been released during the incident.
- 9. Reports to NRC will be made by TTL's RSO within the reporting time frames specified by the appropriate regulation (e.g., 10 CFR 20.2201-2203 and 10 CFR 30.50).