



October 14, 2015

Mr. John B. Giessner, Director
Division of Nuclear Materials Safety
U.S. Nuclear Regulatory Commission-Region III
2443 Warrenville Road, Suite 210
Lisle, IL 60532-4352

**RE: Response to the Apparent Violation
Inspection Report No.: 03012040/2015001 (DNMS); EA-15-157
CTI and Associates, Inc.
License No.: 21-17007-01**

Dear Mr. Giessner:

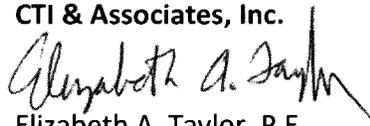
As requested, CTI and Associates, Inc. (CTI) is providing a written response to the above referenced apparent violation before the Nuclear Regulatory Commission (NRC) makes an enforcement decision. The contents of this letter for your review include:

- (1) The reason for the apparent violation
- (2) The corrective steps that have been taken and results achieved
- (3) The corrective steps that have been taken to avoid further violations
- (4) The date when full compliance was or will be achieved.

Thank you for the opportunity to submit this response. If you have any questions, or if you require additional information, please do not hesitate to contact our office at (248) 486-5100.

Respectfully Submitted,

CTI & Associates, Inc.


Elizabeth A. Taylor, P.E.
Senior Project Manager

cc: Mr. Aaron T. McCraw; Chief-Materials Inspection Branch Division of Nuclear Materials Safety
Mr. Ryan Craffey; Health Physicist-Materials Inspection Branch

Attachments: Written Response to Inspection Report No.: 03012040/2015001 (DNMS)
Nuclear Density Gauge Safety Employee Handout
Safety Meeting Employee Sign-in Sheet



1.0 Reason for the Apparent Violation

The apparent violation was discovered on July 23, 2015 during an inspection of CTI and Associates, Inc. (CTI) by a Nuclear Regulatory Commission (NRC) representative. The inspection took place at one of CTI's jobsites at the Detroit Metropolitan Wayne County Airport in Romulus, MI, a publicly accessible location. The inspector reported an apparent violation of CTI's NRC Materials License No. 21-17007-01 which grants permission to CTI to use and store portable moisture density gauges. The cited apparent violation of Title 10 CFR Part 30.34(i) by CTI was reported as failure to use a minimum of two independent physical controls that form tangible barriers to secure portable gauges from unauthorized removal, whenever portable gauges are not under the control and constant surveillance of the licensee.

At the time of the inspection, CTI was temporarily storing as many as four (4) portable moisture-density gauges onsite at the Detroit Metro Airport in the contractor's portable shipping container. All gauges were stored in approved locked cases acting as the first tangible barrier. However, the contractor preferred the shipping container remain unlocked meaning the container could not act as a physical control to form the second tangible barrier. In order to comply with Title 10 CFR Part 30.34(i), CTI used chains and locks to secure the gauges' locked containers to mounting points inside the shipping container, thus forming a second tangible barrier to public access. On the day of the inspection three of the four gauges were in use by certified operators. The fourth portable moisture density gauge was being stored inside the shipping container inside an approved, locked container, but was not locked and chained to the inside of the shipping container. Chains used onsite were shared among CTI employees and routinely transported with in-use gauges in case two tangible barriers were warranted while in the field. The chain needed to secure the stored gauge inside the shipping container was not put back in its designated location at the time of the inspection and was not available to act as the second physical control. During the inspection, the apparent violation was corrected and approved by the NRC inspector by locating the missing chain and appropriately locking the stored gauge inside the shipping container.

2.0 Corrective Actions to Apparent Violation

Two corrective actions have been taken by CTI to directly resolve the apparent violation explained in the previous section: providing extra chains and steel cables at the jobsite to ensure at least four chains or cables remain with the stored gauges regardless of the number of gauges in use; and the requisition and use of two construction trailers solely for use by CTI that remain locked when gauges are being stored inside. CTI's Radiation Safety Officer (RSO) also participated in an inspection exit meeting on August 25, 2015 at which time the RSO acknowledged the apparent violation and discussed the reason for the apparent violation and possible corrective actions was discussed with the NRC.



Four (4) additional steel chains or cables and four (4) additional locks have been delivered to the Detroit Metro Airport jobsite. These chains/cables and locks only reside inside CTI's construction trailer. The four chain and lock sets already in use at the site at the time of inspection can be transported with the portable moisture density gauges when in use to ensure there are at least two tangible barriers to CTI's gauges, regardless of the number being stored or in use.

CTI has placed and is using two of their own construction trailers for storage of their portable moisture density gauges being used onsite instead of the contractor's portable shipping container. These trailers were placed on-site on September 17, 2015 and October 1, 2015. The construction trailers are locked whenever gauges are stored inside and only certified gauge operators have the keys to the trailers. While being stored, the gauges also reside in their approved locked cases and are physically locked to mounting points inside the construction trailer. **The use of three (3) physical controls to act as tangible barriers was implemented for redundancy to ensure the apparent violation is not repeated.**

3.0 Corrective Action to Avoid Further Violations

CTI determined that the root cause for the apparent violation described above was a misunderstanding of the NRC regulatory requirements for portable moisture density gauges by CTI's certified operators. CTI acknowledges that all of CTI's certified gauge operators must comply with Title 10 CFR Part 30.34(i). To avoid further violations, CTI held a special meeting on August 6, 2015 to discuss the apparent violation and gauge safety measures were reviewed to ensure employee safety and compliance with CTI's NRC Materials License No. 21-17007-01 by all certified gauge operators. A "Nuclear Density Gauge Safety" handout was also provided to all employees as a reference to what was discussed at the meeting. This handout along with the sign-in sheet for the August safety meeting can be found as attachments to this letter.

4.0 Date of Full Compliance

Full compliance with Title 10 CFR Part 30.34(i) was achieved on August 6, 2015 by CTI at which time portable moisture density gauge safety was reviewed with all of CTI's employed, certified gauge operators and four (4) extra locks and steel chains or cables were put into use in the contractor's shipping container at the Detroit Metro Airport jobsite. CTI's additional corrective action to use and lock their own construction trailers for stored gauge security became effective on September 17, 2015 with an additional trailer added on October 1, 2015.



5.0 Summary

On July 23, 2015, CTI was cited, during an inspection by the NRC, an apparent violation for failure to comply with Title 10 CFR Part 30.34(i) and use a minimum of two independent physical controls that form tangible barriers to secure portable gauges from unauthorized removal, whenever portable gauges are not under the control and constant surveillance of the licensee.

CTI had a strategy in place to use two (2) independent physical controls to form tangible barriers from removal by unauthorized portable moisture density gauge users by storing gauges at their Detroit Metro Airport jobsite in locked containers chained and locked to the inside of a portable shipping container. Upon inspection, it was found that the plan is not always effective because the chains required for this plan to work are not always available to adequately store gauges. Review of this apparent violation has spurred CTI to provide corrective action for this and any possible future violations.

In order to correct the apparent violation, CTI has provided four extra chain or cables and locks, and two personal, lockable construction trailers to the Detroit Metro Airport jobsite. This allows CTI to store gauges in the construction trailers which can be locked with keys only given to CTI's certified gauge operators. The extra chains and locks ensures that each of the four gauges at the jobsite can be secured to the inside of the construction trailer even if all four of the original chains are being used in the field. Including each gauges' locked case, CTI has provided three (3) independent controls to act as tangible barriers for redundancy to ensure adherence to Title 10 CFR Part 30.34(i).

CTI also reviewed portable moisture density gauge safety and the apparent violation at its monthly safety meeting with its licensed gauge operators to ensure compliance in the future. A gauge safety handout was provided as a reference to employees. This handout and the safety meeting sign-in sheet are attached to this letter for use by the NRC to ensure.

The date of full compliance after corrective action of the apparent violation was August 6, 2015. The first construction trailer was put into use on September 17, 2015.

CTI acknowledges the apparent violation and is submitting this letter for NRC review before an enforcement decision is made.

Nuclear Density Gauge Safety Employee Handout

NUCLEAR DENSITY GAUGE SAFETY

This emergency meeting has been called as a corrective action to address deficiencies in gauge security identified during an inspection by the Nuclear Regulatory Commission (NRC).

When using or transporting a portable nuclear density gauge, you **MUST** follow proper procedures.

- A. Be sure gauge is in working order before you load it into your vehicle. **This includes verify the gauge standard counts fall within the allowable tolerances.** Be sure you complete the daily utilization log before loading the gauge. Make sure the log is updated. Even if you were not the last one using the gauge.
- B. Be sure you have the correct papers for transporting and operating the gauge. **Travel papers should be on the seat next to you, in plain view for anyone to see.**
- C. Be sure you have **ALL** locks, chains, etc., and the gauge is properly secured in accordance with Title 10 of the CFR Section 30.34 (i) "*Security requirements for portable gauges*" which states, "*Each portable gauge licensee shall use a minimum of two independent physical controls that form tangible barriers to secure portable gauges from unauthorized removal, whenever portable gauges are not under the control and constant surveillance of the licensee.*"
- D. We must adhere to the **two independent physical controls** or "Double Barrier" rule.
 - D.1 When gauge is stored at the CTI office it is to be locked in the case in the storage room, this serves as one barrier. The gauge storage room is to be locked back up again once the individual has retrieved his/her gauge, this serves as the second barrier. ***If charging the gauge, be sure red steel box is locked and the gauge is in the box.*** We have two separate door locks on the storage room as a back-up because often the red tool box is not locked. ***The source handle on the gauge must be locked as well.***
 - D.2 When transporting the gauge in an open bed pick-up, the case **MUST** be locked. The case **MUST** be chained on each side (requires two chains and two locks, and a chain **MUST** be wrapped around the case, through a top handle so it cannot be slid off and the case lid cannot be opened. This chain **MUST** be locked as well. Therefore two or three chains and a minimum four to five locks are required. If you are using a truck with lockable topper or a vehicle with a trunk, the topper or trunk **MUST** be locked at all times when the gauge is in the case. The locked case **MUST** be locked to the vehicle with one chain or cable passing through the handles on the case. This would serve as the second barrier. This requires two chains and four locks.
 - D.3 When the gauge is being temporarily stored on the jobsite. The gauge needs to be locked and chained to the container or trailer to both prevent the case from being removed from the temporary structure as well as preventing the case from being opened and the gauge removed. Using the chain or cable to correctly wrap around the gauge is essential; this is similar to transporting the gauge in an open bed of a truck (see D.2). We **MUST** have that double barrier. If not then the container/trailer during day and night must always remain locked and the only people allowed access are certified CTI gauge operators.
- E. When you are on-site, the gauge is to remain locked in the vehicle, as described above, in its case with the source rod locked unless you are performing tests, or standing next to it. The gauge should **NEVER** be out of **YOUR REACH**. If you are running a compaction test, you may step back a few feet from the gauge while it is in use. Once it has stopped taking counts, you should approach the gauge and immediately raise the source rod to the safe locked position. Then determine the test results. While testing, **ALWAYS** use the 60 second (1 minute) count and keep other non-authorized gauge users at least 15 feet away.

Safety Meeting Employee Sign-in Sheet



SIGN-IN ATTENDANCE SHEET
Nuclear Density Gauge Security Training
August 6, 2015

Print Name and Signature	Print Name and Signature
1. Austin DeLla <i>Austin DeLla</i>	21. RAMYA RAJAN <i>Ramya Rajan</i>
2. NICK Dambicki <i>Nick Dambicki</i>	22.
3. Austin Johnson <i>Austin Johnson</i>	23.
4. Cochy Longuski <i>Cochy Longuski</i>	24.
5. Cole Bateman <i>Cole Bateman</i>	25.
6. Janna Pulmona <i>Janna Pulmona</i>	26.
7. Mahvi Kulkarni <i>Mahvi Kulkarni</i>	27.
8. Christa Walsh <i>Christa Walsh</i>	28.
9. Kyle Maxwell <i>Kyle Maxwell</i>	29.
10. Peng Lou <i>Peng Lou</i>	30.
11. Mohammad Kabalan <i>Mohammad Kabalan</i>	31.
12. David Coon <i>David Coon</i>	32.
13. Todd Bowdler <i>Todd Bowdler</i>	33.
14. KYLE EBENSTEIN <i>Kyle M. Epstein</i>	34.
15. Vance <i>Vance</i>	35.
16. Cris Houli <i>Cris Houli</i>	36.
17. Rachel Thompson	37.
18. Janna Wainan <i>Janna Wainan</i>	38.
19. Sheila Bowers <i>Sheila Bowers</i>	39.
20. Marnie Walsh <i>Marnie Walsh</i>	40.