

EXECUTIVE SUMMARY

Langan Engineering & Environmental Services, Inc.
NRC Inspection Report No. 03020730/2009001

The licensee is a large engineering consulting company and maintains an NRC license (No. 29-15786-02) that authorizes possession and use of portable moisture/density gauges. The gauges are authorized for use at the licensee's temporary job sites. The licensee has approximately 25 active authorized users (AU).

Region I initiated the inspection to follow up on an event that occurred on June 29, 2009, at a temporary job site in Newark, Delaware. The licensee reported the event to the NRC Operations Center (Event No. 45175) on June 30, 2009. An AU had been using a portable gauge at the site and after completing a set of measurements, left the gauge unattended to inspect another area approximately 50 feet away. While the AU was away from the gauge, the tire of a smooth drum roller ran over the gauge damaging its plastic housing and snapping its index rod. However, the source rod remained intact. Both sources were in shielded position when the incident occurred. The AU estimated that the gauge may have remained unattended for approximately 30 seconds and that, during this time, the gauge was not in his direct line of sight.

The AU immediately cordoned off the area around the damaged gauge, and alerted personnel working in the area of the incident. Although the source rod was in the shielded position, it could not be locked because the index rod was snapped. The AU and his supervisor at the job site, after consultation with the project manager carefully transferred the damaged gauge to its transport container, making sure that the sources remained in shielded positions during the transfer process. The licensee performed radiological surveys of the location, and tested the gauge for any leakage of licensed material. The results did not indicate any contamination or leakage of radioactive material. The licensee subsequently transferred the gauge to an authorized recipient for disposal.

The inspector verified that the AU had received adequate radiation safety and on the job training prior to being assigned to the site. His supervisor at the site was also an experienced gauge user.

During the inspection, one apparent violation of NRC requirements was identified. Specifically, a failure to control and maintain constant surveillance of licensed material that was in an unrestricted area and was not in storage, as required by 10 CFR 20.1802.

REPORT DETAILS

I. Organization and Scope of the Program

a. Inspection Scope

The inspector reviewed the scope and organization of licensed activities.

b. Observations and Findings

The licensee is a large engineering consulting company and maintains an NRC license No. 29-15786-02 that authorizes possession and use of portable moisture/density gauges. The gauges are authorized for use at the licensee's temporary job sites. On September 10, 2009, the licensee possessed 13 portable gauges, 12 of which were in storage at the licensee's facility and one was in use at its temporary job site in Delaware. The type and number of gauges were consistent with those authorized on the license. The licensee has more than 80 authorized users (AUs) but only 25 of these actively used the gauges.

c. Conclusions

No violations or safety concerns were identified.

II. Management Oversight of the Program

a. Inspection Scope

The inspector reviewed the oversight of licensed activities by the licensee's senior management.

b. Observations and Findings

The licensee has appointed a Radiation Safety Officer (RSO) to implement its radiation safety program. The RSO is a senior associate in the Organization, and had sufficient authority in matters related to licensed activities. The RSO has designated another individual as Assistant RSO (ARSO) to assist him in the day-to-day operations of licensed activities, and maintenance of records related to licensed activities. The inspector verified that the ARSO had the necessary training and experience to fulfill the duties of an RSO. The ARSO reports directly to the RSO. The AUs report to the ARSO.

The ARSO audits the content and implementation of the radiation safety program periodically and appraises the RSO of the results of his audit. The inspector noted that the audit results were not formalized and suggested that the licensee could review the Audit Checklist in Appendix F to NUREG 1556, Vol 1, Rev. 1 for guidance to formalize the audit. The ARSO agreed to follow the guidance for future audits.

c. Conclusions

No violations were identified.

III. Notification of the Event and Follow up by NRC

a. Inspection Scope

The inspector reviewed circumstances of the June 29, 2009, event and the licensee's corrective actions.

b. Observations and Findings

On June 30, 2009, the licensee reported an event to the NRC Operations Center (Event No. 45175). The report stated in part that the rubber-tire wheels of a piece of construction equipment (a smooth drum roller) ran over a Troxler gauge. Licensee personnel, with assistance from the site contractor, immediately cordoned off the area so that the appropriate steps could be taken to assess the situation. Only the outer plastic casing of the gauge was cracked and the index rod was snapped. The inner protective housing (i.e. shield) protecting the Cs-137 source and the protective cover of the Am-241 source appeared intact. The licensee concluded that the two sources were not affected by the event and remained intact. The source rod was not bent and the sliding block at the bottom of the gauge was fully closed.

The gauge was a Troxler Model 3440, serial number 28929, and Langan Gauge No. 22. It contained an Am-241/Be sealed source, serial number 47-25121, and a Cs-137 sealed source, serial number 750-3218.

Condition 20 of the license requires that the licensee possess or have access to a survey instrument in the event of an accident. The licensee possessed a survey meter (Model Trox Alert, serial number 3105B). The instrument was last calibrated on February 25, 2008. The instrument is maintained at the licensee's home facility in Elmwood Park, New Jersey. The licensee sent the radiation meter to field personnel via FedEx overnight. The radiation meter indicated that the radiation level immediately next to the gauge was 4 mrem/hr, and approximately 0.12 mrem/hr several feet away from the gauge. The dose rate outside the steel container was indistinguishable from the background.

Follow-up by NRC

On June 30, 2009, upon receiving the report, Region I contacted the licensee by telephone to obtain updated information and scheduled an inspection at the job site. On July 1, 2009, the inspector went to the job site where the event had occurred. The inspector noted that the damaged gauge was still stored at the job site. The gauge was stored in its transport container, and the container was stored in a locked steel box located within a locked storage shed at the site. The inspector noted that the licensee had secured the source rod in its shielded position and the sliding block at the bottom of the gauge was in the closed position. Radiological surveys by the inspector using NRC's survey meter (a Thermo Electron Corporation Model Micro Rem, serial number 1888) did not indicate any abnormal radiation levels around the transport container and the radiation levels outside the steel container were between 50 and 80 microrem/hr. The inspector also surveyed the location where the gauge was damaged and noted that the radiation levels in the area were not distinguishable from background.

The AU stated that just before the incident, he had finished taking measurements in an area and had retracted the source rod to its shielded position. He then left the gauge in that area and went to inspect a second area approximately 50 feet away from the gauge. While the AU was inspecting the second area, a smooth drum roller that had been parked near the gauge was placed in operation, and its tire ran over the gauge. The AU estimated that the gauge remained unattended for approximately 30 seconds and, during this time, the gauge was not in his direct line of sight.

10 CFR 20.1802 requires that a licensee control and maintain constant surveillance of licensed material that is in a controlled or unrestricted area and that is not in storage. Failure to maintain constant surveillance of licensed material that is in a controlled or unrestricted area is an apparent violation of 10 CFR 20.1802.

The AU and his supervisor at the job site described the actions that were taken immediately after the incident to protect other personnel at the site from exposure to radiation. These included: cordoning off the area around the damaged gauge; alerting other workers at the site of the incident; restraining the source rod in its shielded position; and removing the gauge from the area to a secure location at the site. The licensee also counseled the AU and provided additional training in the security of gauges before authorizing him to use the gauges again.

The licensee stated that it had retained a qualified contractor to transport the damaged gauge to its facility for possible repairs. On July 2, 2009, the contractor removed the gauge from the job site. The contractor tested the gauge for any leakage of radioactive material prior to transporting the gauge to its facility. These tests did not indicate any leakage of radioactive material. The licensee subsequently decided to dispose of the gauge, and on July 27, 2009, the contractor transferred the damaged gauge for disposal to an authorized recipient holding NRC License No. 11-27610-01.

The AU stated that he has been with the licensee for 18 months and had received his initial gauge user training on June 9, 2009. He also stated that he had been provided on-the-job training by the licensee before receiving authorization to use gauges. The licensee stated that it had a lead field engineer on the job site, in addition to the AU. This lead field engineer was an experienced authorized gauge user and was present at the site to provide supervision to the AU.

On July 30, 2009, the licensee informed Region I that the damaged gauge was in the process of being disposed of and it was waiting for final documentation from the contractor (confirming the transfer of the gauge for disposal) before submitting the required 30-day written report. Region I approved the licensee's request for an extension to submit the 30-day written report. On August 27, 2009, the licensee submitted the required written report (Nuclear Materials Events Database (NMED) Item No. 090569).

The licensee's report included the information required in 10 CFR 30.50(c)(2), and also included documentation of the training and exposure records for the AU and the lead field engineer, and the documentation of transfer of the damaged gauge for disposal. The inspector noted that the licensee's report confirmed the information that was

discussed during the on site inspections. During the inspector's discussions with the licensee on September 10, 2009, the licensee stated that a revised training program is being developed that will include emphasis on the security of portable gauges at job sites, and that each AU will be required to complete this training at least annually.

c. Conclusions

The licensee implemented appropriate actions to prevent exposure of members of the public to radioactive material. One apparent violation of 10 CFR 20.1802 was identified during the inspection.

IV. Facilities and Equipment

a. Inspection Scope

The inspector reviewed the licensee's facilities, including the storage location for the gauges.

b. Observations and Findings

On September 10, 2009, the inspector reviewed the licensee's facilities in Elmwood Park, New Jersey. The licensee stored its gauges at this facility in a locked storage location. The inspector noted that there were 12 portable gauges stored at the facility. The licensee stated that one gauge was being used at its job site in Delaware. Each gauge was stored in its transport container. The source rod of each gauge was locked in the shielded position and the storage containers were also locked. The transport containers were secured to the floor of the storage facility by locked chains. The inspector determined that the licensee had secured and stored the gauges in accordance with 10 CFR 30.34(i). The storage location was appropriately posted and the transport containers were labeled as required.

The ARSO stated that, during long-term projects, gauge(s) may remain stored at the job site provided adequate facilities are available at the job site where the gauge(s) will remain secured and under the licensee's control. He stated that he sometimes visits the facility at the job site to review the security of gauge(s) before authorizing storage at the facility.

c. Conclusions

No violations or safety concerns were identified.

V. Training of Workers

a. Inspection Scope

The inspector reviewed the licensee's training program.

b. Observations and Findings

The inspector discussed the training program for the AUs, with the ARSO, and reviewed training records. The ARSO stated that all AUs are required to complete either the manufacturer's or equivalent training program and are provided training in the licensee's operating and emergency procedures. In addition to this training, on-the-job training is provided to all new employees prior to being authorized to use the gauges. The training records indicated that the AU who had been using the gauge at the licensee's job site in Delaware on June 29, 2009, had completed Portable Gauge Safety Training on June 9, 2009. The training was from a commercial web site and was completed on-line. The records also included a certificate from Troxler Electronic Laboratories, Inc., indicating that the lead field engineer at the job site had completed his initial portable gauge training on July 10, 2001, and had received the refresher training as required. The ARSO stated that refresher training was provided periodically to all AUs, and included the refresher Hazmat training, which is required to be completed at least every three years. The ARSO stated that following the incident on June 29, 2009, the refresher training program content was revised and now included emphasis on security of gauges at temporary job sites and that a written test has been developed and all AUs will be required to complete this training annually.

c. Conclusions

No violations or safety concerns were identified.

VI. Exit Meeting

The licensee's senior associate/RSO was not available on September 10, 2009, at the end of the inspection. The inspector summarized the inspection findings to the ARSO, including the apparent violation identified during the inspection. The inspector also explained the NRC's enforcement policy to him. The inspector later discussed the inspection findings with the senior associate/RSO via telephone on September 15, 2009.

In addition, on September 22, 2009, during telephone discussions with the NRC staff, the senior associate/RSO stated that the licensee did not have any additional information to provide to the NRC and declined an opportunity to either attend a predecisional enforcement conference or provide additional information.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

Arthur C. Roesler, P.E., Assistant RSO

John Wallace, AU at the Delaware job site

Michael Fritzges, Lead Field Engineer at Delaware job site

Andrew Schwaiger, P.E., Assistant Project Manager at Delaware job site

Leonard D. Savino, Senior Associate/RSO (via Telephone)