



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, ILLINOIS 60532-4352

November 30, 2022

EA-22-103
EN 56141
NMED No. 220435 (closed)

Mr. David Nolan
Vice President
SCI Engineering, Inc.
130 Point West Boulevard
St. Charles, MO 63301

SUBJECT: EXERCISE OF ENFORCEMENT DISCRETION – NRC ROUTINE INSPECTION
REPORT NO. 03017675/2022001(DRSS) AND NOTICE OF VIOLATION – SCI
ENGINEERING, INC.

Dear Mr. Nolan:

On October 3 and 4, 2022, an inspector from the U.S. Nuclear Regulatory Commission (NRC) conducted a routine inspection at your office in St. Charles, Missouri, and at temporary job sites in Ballwin and St. Louis, with continued in-office review through October 18, 2022. The purpose of the inspection was to review activities performed under your NRC license to ensure that activities were being performed in accordance with NRC requirements. The in-office review included an evaluation of the circumstances, root and contributing causes, and corrective actions for an event involving damage to a portable gauge containing licensed material at a temporary job site on June 17, 2022. Mr. Ryan Craffey of my staff conducted a final exit meeting by telephone with you on November 2, 2022, to discuss the inspection findings. This letter presents the results of the inspection.

During this inspection, the NRC staff examined activities conducted under your license related to public health and safety. Additionally, the staff examined your compliance with the Commission's rules and regulations as well as the conditions of your license. Within these areas, the inspection consisted of selected examination of procedures and representative records, observations of activities, and interviews with personnel.

Based on the results of this inspection, the NRC has determined that two violations of NRC requirements occurred. These violations are cited in the enclosed Notice of Violation (Notice) (Enclosure 1) and concerned: (1) the failure to maintain control of licensed material in use at a temporary job site, as required by Title 10 of the *Code of Federal Regulations* (CFR) 20.1802; and (2) the failure to report damage to safety equipment on the device containing this licensed material, as required by 10 CFR 30.50(b)(2).

The violations were evaluated in accordance with the NRC Enforcement Policy, which is available on the NRC's website at <http://www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html>. In accordance with this Policy, the violation of 10 CFR 20.1802 would normally be

categorized at a Severity Level III and considered for escalated enforcement action. However, in accordance with NRC Enforcement Guidance Memorandum (EGM) 18-002, issued August 1, 2018, the NRC is exercising enforcement discretion to categorize this violation as a Severity Level IV instead.

The NRC has concluded that information regarding the reason for the violations, the corrective actions taken and planned to correct the violations and to address recurrence, and the date when full compliance will be achieved is already adequately addressed on the docket in this letter and in the enclosed inspection report (Enclosure 2). Therefore, you are not required to respond to this letter unless the description herein 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.

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

Please feel free to contact Mr. Craffey of my staff if you have any questions regarding this inspection. Mr. Craffey can be reached at ryan.craffey@nrc.gov or 630-829-9655.

Sincerely,



Signed by Edwards, Rhex
on 11/30/22

Rhex A. Edwards, Chief
Materials Inspection Branch
Division of Radiological Safety and Security

Docket No. 030-17675
License No. 24-20039-01

Enclosures:

1. Notice of Violation
2. IR 03017675/2022001(DRSS)

cc w/encl: State of Missouri

Letter to D. Nolan from R. A. Edwards, dated November 30, 2022.

SUBJECT: EXERCISE OF ENFORCEMENT DISCRETION – NRC ROUTINE INSPECTION REPORT NO. 03017675/2022001(DRSS) AND NOTICE OF VIOLATION – SCI ENGINEERING, INC.

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OFFICIAL RECORD COPY

NOTICE OF VIOLATION

SCI Engineering, Inc.
St. Charles, MO

License No. 24-20039-01
Docket No. 030-17675
EA-22-103

During a U.S. Nuclear Regulatory Commission (NRC) inspection conducted on October 3 and 4, 2022, with continued in-office review through October 18, 2022, two violations of NRC requirements were identified. In accordance with the NRC Enforcement Policy, the violations are listed below:

- A. Title 10 of the *Code of Federal Regulations* (10 CFR) 20.1802 requires that the licensee control and maintain constant surveillance of licensed material that is in a controlled or unrestricted area and that is not in storage.

Contrary to the above, on June 17, 2022, SCI Engineering, Inc. did not control and maintain constant surveillance of a Humboldt 5001EZ portable moisture density gauge nominally containing 10 millicuries of cesium-137 and 40 millicuries of americium-241 that was in an unrestricted area and that was not in storage at a temporary job site in Lake St. Louis, Missouri.

This is a Severity Level IV violation (EGM-18-002).

- B. Title 10 CFR 30.50(b)(2) requires that each licensee notify the NRC within 24 hours after the discovery of an event in which equipment is disabled or fails to function as designed when: (i) The equipment is required by regulation or license condition to prevent releases exceeding regulatory limits, to prevent exposures to radiation and radioactive materials exceeding regulatory limits, or to mitigate the consequences of an accident; (ii) The equipment is required to be available and operable when it is disabled or fails to function; and (iii) No redundant equipment is available and operable to perform the required safety function.

Contrary to the above, as of October 3, 2022, SCI Engineering, Inc. did not notify the NRC after the discovery on June 17, 2022, that one of its Humboldt 5001EZ portable moisture density gauges nominally containing 10 millicuries of cesium-137 and 40 millicuries of americium-241 had been run over by construction equipment, damaging the device's index rod, and preventing the rod from fulfilling its safety function. Specifically, the index rod is required by Sealed Source and Device Registry Safety Evaluation No. NC-356-D-101-S to prevent the Cs-137 source rod from being withdrawn from the gauge and causing exposures which could have exceeded regulatory limits; is always required to be available; and no redundant equipment was available to prevent the Cs-137 source from being withdrawn from the gauge.

This is a Severity Level IV violation (Enforcement Policy Section 6.9).

The NRC has concluded that information regarding the reason for the violation, the corrective actions taken and planned to correct the violation and prevent recurrence, and the date when full compliance was achieved, is already adequately addressed on the docket and in the enclosed inspection report (Enclosure 2). 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, IR 03017675/2022001(DRSS)" 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.

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 Website at <http://www.nrc.gov/reading-rm/adams.html>. Therefore, to the extent possible, the response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction.

If you contest this enforcement action, you should also provide a copy of your response, with the basis for your denial, to the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001.

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

Dated this 30th day of November 2022.

**U.S. Nuclear Regulatory Commission
Region III**

Docket No. 030-17675

License No. 24-20039-01

Report No. 03033903/2022001(DRSS)

EA No./NMED No. EA-22-103 / 220435 (Closed)

Licensee: SCI Engineering, Inc.

Locations Inspected: 130 Point West Boulevard
St. Charles, MO 63301

Temporary job site in Ballwin, MO

Temporary job site in St. Louis, MO

Inspection Dates: October 3-4, 2022

Exit Meeting Date: November 2, 2022

Inspector: Ryan Craffey, Senior Health Physicist

Approved By: Rhex A. Edwards, Chief
Materials Inspection Branch
Division of Nuclear Materials Safety

EXECUTIVE SUMMARY

SCI Engineering, Inc. NRC Inspection Report 03017675/2022001(DRSS)

This was an unannounced routine inspection of a consulting engineering firm authorized by NRC Materials License No. 24-20039-01 to store portable moisture density gauges at its main office in St. Charles, Missouri, and at a field office in Rolla, Missouri, and to use them at temporary job sites in NRC jurisdiction. The inspection also included a review of the circumstances surrounding a reportable event involving damage to a portable gauge containing licensed material at a temporary job site which occurred in June 2022.

As a result of this inspection, the NRC identified two Severity Level IV violations of regulatory requirements: (1) the failure to maintain control of licensed material in use at a temporary job site, as required by Title 10 of the *Code of Federal Regulations* (CFR) 20.1802; and (2) the failure to report damage to safety equipment on the device containing this licensed material, as required by 10 CFR 30.50(b)(2).

The findings of the routine inspection, as well as the circumstances surrounding the event, its root causes, contributing factors, and the licensee's corrective actions, are discussed in more detail in the following report.

REPORT DETAILS

1 Program Overview and Inspection History

SCI Engineering, Inc. is a consulting engineering firm authorized by NRC Materials License No. 24-20039-01 to store portable moisture density gauges at its main office in St. Charles, Missouri, and at a field office in Rolla, Missouri, and to use them at temporary job sites in NRC jurisdiction. At the time of the inspection, the licensee had 30 Humboldt 5001 series gauges in Missouri, and 43 individuals authorized to use them. The company has other offices (and other Humboldt 5001 series gauges) at offices in Illinois, Colorado, and Texas.

The NRC last performed a routine inspection of SCI Engineering on April 10, 2017. One Severity Level IV violation was identified at that time for failure to provide recurrent hazmat training per Title 10 of the *Code of Federal Regulations* (10 CFR) 71.5(a) and 49 CFR 172.704(c)(2). The completion and effectiveness of the licensee's corrective actions were evaluated during this inspection (see Section 6).

Prior to that, the NRC performed a routine inspection of the licensee on March 27, 2012. No violations of NRC requirements were identified at that time.

2 Radiation Safety Program

2.1 Inspection Scope

The inspector visited the office in St. Charles and job sites in Ballwin and St. Louis, Missouri, interviewed personnel, and reviewed a selection of records related to the licensee's continued oversight of its radiation safety program.

2.2 Observations and Findings

The inspector toured the facility in St. Charles. All areas were adequately posted, and all licensed material was adequately secured behind two barriers. The inspector performed independent and confirmatory surveys of the facility (the licensee had its own calibrated survey meter); radiation levels were well before regulatory limits to members of the public in unrestricted areas. Gauges and cases present were in good condition and adequately labeled. The inspector interviewed the RSO and construction testing personnel to review measures for gauge accountability and maintenance, as well as authorized user training and exposure monitoring, and found the program to be adequately overseen.

The inspector visited two authorized users at temporary job sites: one at a commercial construction project at 430 Arbor Spring Drive in Ballwin, and another at a commercial construction project along Watson Road near its intersection with Sappington Road in St. Louis. The inspector observed compaction testing, interviewed the users to discuss safe use of material in normal and abnormal conditions, and found them to be knowledgeable of radiation protection principles, applicable procedures, and regulatory requirements. The inspector confirmed that their gauges and cases were in good condition and were adequately secured for transport with two barriers.

The inspector also reviewed a selection of records related to the radiation safety program, including utilization logs, shipping papers, semiannual physical inventories, sealed source leak test results, gauge user training documentation, and personnel dosimetry reports.

During a review of semiannual physical inventories, the inspector noted that the June 2022 inventory listed a gauge as “destroyed on-site” on June 17, 2022. The inspector extensively reviewed this incident with the licensee; observations and findings are discussed in the following sections of this report.

2.3 Conclusions

The inspector reviewed the licensee’s radiation safety program and had no findings exclusive of the incident on June 17, 2022.

3 **Sequence of Events and Licensee Response**

3.1 Inspection Scope

The inspector interviewed licensee personnel and reviewed a selection of records to obtain a detailed understanding of the circumstances surrounding an event involving damage to a portable gauge, and to evaluate the licensee’s response.

3.2 Observations and Findings

A. Sequence of Events Leading up to the Incident

On the morning of June 17, 2022, a technician took possession of a Humboldt 5001EZ portable moisture density gauge (serial no. 10026) from the licensee’s office in St. Charles. The gauge was manufactured in April 2021 and contained two sealed sources of radioactive material: one containing 10 millicuries (mCi) of cesium-137 (Cs-137) (serial no. Q1842), the other containing 40 mCi of americium-241 (Am-241) in a beryllium matrix (serial no. K039-21). The technician, a recent hire, had completed initial gauge safety training and DOT hazmat training on April 15, 2022. His assignment that day was to perform compaction testing and other duties at the Missouri Bluffs residential development project off Research Park Drive in Lake St. Louis, Missouri.

That morning, the technician had been performing compaction testing with this gauge on soil backfill for a sanitary sewer line being placed in a trench along a new street for the project. At around 10:30 am, he relocated from one side of the trench to the other to make room for a mini-excavator attempting to place additional fill in the trench. However, the technician left his gauge behind when doing so, and it was subsequently struck by one of the excavator’s tracks as it approached the trench.

B. Licensee’s Response to the Incident

The technician returned to the other side of the trench, detained the excavator, and evacuated the immediate area. The technician then contacted personnel at the office to report the incident. In consultation with the licensee’s RSO, they then contacted an authorized service provider (R.M. Wester and Associates, NRC License No. 24-20091-01) to respond and retrieve the gauge. Within approximately 30 minutes,

a representative for the service provider arrived on-scene, surveyed the device, confirmed no elevated exposure readings, took leak tests of the gauge, then took possession of it. The gauge's keypad, top case, and index rod were broken, but was otherwise intact. The source rod was in the shielded position at the time of the impact and was not affected.

The service provider transported the gauge to their facility in St. Peters, Missouri, and analyzed the leak tests taken on-site; no leakage or contamination was found. The service provider rebuilt the gauge, and on July 5, 2022, returned it to the licensee. The gauge remains in-service at the time of the inspection.

The licensee's RSO subsequently interviewed the technician and determined that he failed to maintain adequate control of the gauge in his possession. The RSO identified this as a violation of the licensee's operating and emergency procedures. However, since this violation was revealed through an event, the NRC inspector did not consider the violation as licensee-identified.

Title 10 CFR 20.1802 states that the licensee shall control and maintain constant surveillance of licensed material that is in a controlled or unrestricted area and that is not in storage. The technician's failure to maintain control and constant surveillance of the portable gauge during the conduct of a density test at the temporary job site in Lake St. Charles is a violation of 10 CFR 20.1802.

This violation would normally be categorized at a Severity Level III in accordance with Enforcement Policy example 6.3c.3 and would be considered for escalated enforcement action. However, in accordance with Enforcement Guidance Memorandum (EGM) 18-002, issued August 1, 2018, the violation was characterized at a Severity Level IV instead for the following reasons: (1) the failure to maintain control occurred during operational conditions; (2) the failure was an isolated, non-willful occurrence of short duration and circumstance; and (3) no unauthorized contact by nor unintended exposure to an individual occurred.

As corrective action, the RSO held an additional round of annual refresher training (normally held each January) with all technicians based in St. Charles and in Rolla to reiterate the necessity of maintaining control of gauges in active construction sites. This training was completed between June 22 and July 6, 2022.

3.3 Conclusions

The inspector noted a SLIV violation of 10 CFR 20.1802.

4 Notification and Reporting

4.1 Inspection Scope

The inspectors discussed applicable reporting requirements with the licensee's RSO and reviewed the licensee's initial notification and 30-day written report for this event to evaluate compliance with reporting requirements.

4.2 Observations and Findings

The licensee concluded that since the Cs-137 source remained in the shielded position, the event did not need to be reported to the NRC. However, a failure of the index rod, which normally prevents the Cs-137 source rod from being withdrawn from the top of the gauge, is reportable because the index rod is: (1) required by Sealed Source and Device Registry Safety Evaluation No. NC-356-D-101-S to prevent the Cs-137 source from being withdrawn from the gauge and causing exposures which could have exceeded regulatory limits, notably those to members of the public; (2) is always required to be available; and (3) no redundant equipment was available to prevent the Cs-137 source from being withdrawn from the gauge.

Title 10 CFR 30.50(b)(2) requires that each licensee notify the NRC within 24 hours after the discovery of an event in which equipment is disabled or fails to function as designed when: (i) The equipment is required by regulation or license condition to prevent releases exceeding regulatory limits, to prevent exposures to radiation and radioactive materials exceeding regulatory limits, or to mitigate the consequences of an accident; (ii) The equipment is required to be available and operable when it is disabled or fails to function; and (iii) No redundant equipment is available and operable to perform the required safety function. The licensee's failure to report this event is a SLIV violation of 10 CFR 30.50(b)(2).

As corrective action, the licensee's RSO contacted the NRC's Operations Center at approximately 4:00 pm on October 4, 2022. The notification resulted in Event Number (EN) 56141, reportable under 10 CFR 30.50(b)(2) – *Safety Equipment Failure*, and was recorded in the Nuclear Materials Events Database (NMED) as Item No. 220435.

The licensee submitted its 30-day written report to the NRC on October 28, 2022. The report included all information required by 10 CFR 30.50(c)(2): a description of the event and its location, details of the equipment and radioactive material involved, corrective actions taken, and confirmation that there were no abnormal exposures to radiation or radioactive material as a result of this event.

4.3 Conclusions

The inspector identified a SLIV violation of 10 CFR 30.50(b)(2).

5 **NRC Assessment of the Event**

5.1 Inspection Scope

The inspector interviewed licensee personnel and reviewed a selection of records to evaluate the consequences of the event and the adequacy of the licensee's response.

5.2 Observations and Findings

A. Root Cause and Contributing Factors

The inspector concluded that the direct cause of the event was a lack of control of licensed material.

The inspector concluded that the root cause of the violation of 10 CFR 20.1802 was an oversight by the technician.

The inspector concluded that the root cause of the violation of 10 CFR 30.50(b)(2) was a misunderstanding of reporting requirements.

B. Independent Assessment of Radiation Exposure

The inspector concluded that since the source remained fully shielded at all times, no workers or members of the public likely received any measurable exposures to radiation as a result of this event.

C. Assessment of Radiation Safety Practices

The inspectors noted that the technician diligently followed the licensee's emergency procedures by detaining equipment and restricting access to the gauge, and that the organization responded promptly to notification that the incident had occurred. The licensee's service provider also responded to and resolved the matter promptly.

5.3 Conclusions

The inspector had no additional findings from his assessment of the event.

6 Review of Previous Violations

6.1 Inspection Scope

The inspector evaluated the licensee's implementation of corrective actions for a violation cited by the NRC during its last routine inspection through interviews with the licensee's RSO, two authorized users, and a review of records.

6.2 Observations and Findings

The inspector confirmed that the licensee had taken corrective action as described in IR 03017675/2017001(DNMS). Licensee personnel were knowledgeable of hazmat training topics, and no additional examples of the violation were identified from a review of hazmat training records. The inspector therefore determined that the licensee had implemented effective corrective actions. This violation is closed.

6.3 Conclusions

The inspector closed the previous violation.

7 Exit Meeting Summary

The NRC inspectors presented preliminary inspection findings following the onsite inspection on October 4, 2022, and during a final exit meeting by telephone on November 2, 2022. The licensee acknowledged the findings presented on both occasions.

LIST OF PERSONNEL CONTACTED

Rudy Lemuz – Authorized User
Collin McIntyre – Authorized User
1,2 David Nolan – Vice President, RSO
Karl Thomasson – Senior Engineer

¹ Attended preliminary exit meeting on October 4, 2022

² Attended final exit meeting by telephone on November 2, 2022

INSPECTION PROCEDURES USED

87103 – Inspection of Nuclear Material Licensees Involved in an Incident or Bankruptcy
87139 – Portable Gauge Programs