

EXECUTIVE SUMMARY

Superior Paving Corporation
NRC Inspection Report No. 03030258/2008001

A routine NRC safety inspection was conducted from November 21, 2008, to January 21, 2009, of Superior Paving Corporation's portable gauge program. Inspection visits were conducted at Superior Paving Corporation facilities located in Bristow, VA; Manassas, VA; Culpeper, VA; and at a field site located at the Manassas, VA airport. During the inspection period, Superior Paving Corporation's Radiation Safety Officer (RSO) left his position with the company and a member of the Safety department was named as the RSO designee. On January 14, 2009, the RSO designee completed RSO training and was formally named RSO by NRC License Amendment No. 10. As a result of the inspection, four apparent violations of NRC requirements were identified including the following:

- (1) Failure to use a minimum of two independent physical controls that form tangible barriers to secure gauges against unauthorized removal, whenever portable gauges are not under the control and constant surveillance of the licensee as required by 10 CFR 30.34(i), with two examples. Specifically: (1) from at least April 15, 2008, to November 21, 2008, a portable gauge was periodically stored at Superior Paving Corporation's Manassas, Virginia facility inside a building with only a single lock on the door to secure the gauge from unauthorized removal; and (2) from at least April 15, 2008, to January 9, 2009, two portable gauges were periodically stored inside metal boxes at Superior Paving Corporation's Culpeper, VA, facility with only a single lock on each storage container to secure each gauge from unauthorized removal, whenever the gauges were not under the control and constant surveillance by the licensee.
- (2) Failure to have a lock or outer locked container designed to prevent unauthorized or accidental removal of the sealed source from its shielded position as required by NRC License No. 45-24949-01, Amendment 9, Condition 17. Specifically, a Troxler 4640B, portable density gauge was stored at Superior Paving Corporation's Manassas, Virginia, facility without a lock or outer locked container designed to prevent unauthorized or accidental removal of the sealed source from its shielded position.
- (3) Failure to maintain records of source inventory that included all of the information required by NRC License 45-24949-01, Amendment 10, License Condition 16. Specifically, portable gauge inventory records did not include designation of radionuclides or quantities.
- (4) Failure to document results of an annual review of the radiation protection program content and implementation as required by 10 CFR 20.2102. Specifically, records of annual program reviews of licensed activities for 2007 and 2008, were not documented or maintained.

By letter dated January 15, 2009, Mr. Dave Helmick, Vice President, Superior Paving Corporation, transmitted a letter (ML090270472) to NRC detailing comprehensive corrective and preventive actions taken in response to the violations identified during NRC Inspection No. 2008001.

REPORT DETAILS

I. Organization and Scope of the Program

a. Inspection Scope

The inspector reviewed the organization and scope of licensed activities. Information was gathered by a review of documents, interviews with personnel, and through direct inspection.

b. Observations and Findings

Superior Paving Corporation is a large asphalt paving company with its main office located in Bristow, Virginia, which uses NRC licensed gauges to conduct moisture density testing of soils for a wide variety of road construction projects, ranging from small driveways to large Virginia Department of Transportation road extensions. Superior Paving Corporation possesses 10 moisture density gauges and a review of gauge inventory records showed that total gauge activities were within licensed possession limits. The license authorizes seven storage-and-use locations including facilities in Fredericksburg, VA; Centreville, VA; Bealeton, VA; Leesburg, VA; Warrenton, VA; Manassas, VA; and Culpeper, VA. Gauges are typically stored at the locations listed on the license, but may be signed-out and temporarily stored in an authorized gauge user's vehicle when assigned to a construction project. Superior Paving has nine authorized gauge users and typically uses the gauges daily except during the winter. The Radiation Safety Officer (RSO) manages the licensed program and reports directly to the Vice President and Regional Manager.

During the inspection period, in December 2008, the RSO left his position with the company and a representative of Superior Paving's safety department was named as the RSO designee. On January 14, 2009, the RSO designee completed RSO training and was formally named RSO by NRC License Amendment No. 10.

c. Conclusions

The organization and scope of the licensee's portable gauge program reflects the license application and NRC license requirements including byproduct material possession limits, authorized use of gauges, authorized use locations, and oversight by a RSO. No violations of NRC requirements were identified.

II. Material Receipt, Use, Transfer, and Control

a. Inspection Scope

The inspector reviewed material use, transfer, and control. Information was gathered by a review of documents, interviews with personnel, and through direct inspection of licensee facilities located in Manassas and Culpeper, VA, and the storage and control of a gauge at a field site at the Manassas airport.

b. Observations and Findings

On November 21, 2008, the inspector performed a field inspection at a temporary job site located at the Manassas airport. At the time of the inspection the gauge was not in-use and the inspector observed that a single Troxler Model 3450 gauge was stored inside a shipping container and secured with two tangible barriers to prevent unauthorized removal. The inspector interviewed the authorized gauge user and requested the authorized gauge user to remove the gauge from the vehicle and demonstrate use of the gauge. The authorized gauge user demonstrated thorough knowledge of gauge use and radiation safety procedures and practices. The inspector noted that appropriate shipping documentation was present in the cab of the truck and stored immediately adjacent to the driver. The authorized gauge user also had in his possession appropriate radiation monitoring dosimetry.

During the inspection period, the inspector used an NRC Eberline RO-2 ion chamber, Serial No. 609, to obtain independent radiation survey measurements of gauges stored at Superior Paving Corporation's Manassas site, Culpeper site, and during a field inspection at a temporary job site at the Manassas airport. All gauge sources were properly shielded and radiation survey results showed normal radiation levels that were within levels reported in the sealed source and device registry.

Apparent Violation of 10 CFR 30.34(i) Example 1

On November 21, 2008, the inspector toured the licensee's Manassas, Virginia, facility and examined the control and storage of licensed gauges. The site was surrounded by a chain link fence and the inspector observed that passenger vehicles and trucks entered and exited the open site access gate without formal security screening. The RSO escorted the inspector to the gauge storage room. Access to the gauge was controlled with a single exterior door that was secured with a single lock. Upon entry into the gauge storage room the inspector observed that a single Troxler Model 4640B gauge was stored on the floor inside a shipping container, and the shipping container was not secured with any additional tangible barriers to prevent unauthorized removal (e.g., chains or locks). The RSO explained that access to the gauge and equipment storage room was controlled with keys that were limited to the RSO, authorized gauge users, and the site supervisor or his designee. However, the RSO acknowledge that company employees, who were not authorized gauge users, and who had not been trained to recognize the presence of radioactive material or been given specific instructions on how to minimize their exposure or maintain access control, could obtain a key to the storage room from the Site Supervisor in order to access the room to store or remove equipment. Based on those observations the inspector informed the RSO that the gauge was not consistently secured with two tangible barriers to prevent unauthorized removal whenever the gauge was not under the control and constant surveillance by the licensee as required by 10 CFR 30.34(i).

The RSO explained that he had assumed that the site access gate represented one tangible barrier and the locked equipment storage room door represented a second tangible barrier. However, he acknowledged that access through the site access gate was not consistently monitored by the site supervisor; and company employees, who were not part of the licensed gauge program, could gain access to the gauge storage room.

Apparent Violation of 10 CFR 30.34(i) Example 2

On January 6, 2009, the inspector toured the licensee's Culpeper facility and examined the control and storage of licensed gauges. Two gauges were stored at the Culpeper facility including a Troxler Model 4640B gauge and a Troxler Model 4640 gauge. Gauge use logs were present and demonstrated that logs were routinely used to track the location and use of gauges. Each gauge was housed in a locked shipping container and each source rod was locked to prevent inadvertent exposure.

The RSO designee reported that gauges are typically signed-out on a weekly basis and stored on-site in the back of a pickup truck and secured with two tangible barriers. On weekends and during periods of infrequent use, the gauges are stored in metal storage containers and secured with a single door hasp and lock, and the metal container is chained to a trailer. The inspector observed that passenger vehicles and trucks can gain access to the site without going through formal security screening.

The inspector determined that the single hasp and lock represented only one tangible barrier to prevent unauthorized removal, whenever the gauges were not under the control and constant surveillance by the licensee, and represented an apparent violation of 10 CFR 30.34(i). The RSO designee stated that he had assumed that the chain securing the metal container to the trailer represented a second tangible barrier.

Summary of Apparent 10 CFR 30.34(i) Violations

10 CFR 30.34(i) requires each portable gauge licensee 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.

Contrary to the above, two examples of the failure to use two independent physical controls to secure portable gauges from unauthorized removal, when the gauges are not under the control and constant surveillance of the licensee were identified. Specifically: (1) from at least April 15, 2008, to November 21, 2008, a portable gauge was periodically stored at Superior Paving Corporation's Manassas facility inside a building with only a single lock on the door to secure the gauge against unauthorized removal; and (2) from at least April 15, 2008, to January 9, 2009, two portable gauges were periodically stored inside metal boxes at Superior Paving Corporation's Culpeper facility with only a single lock on each storage container to secure each gauge from unauthorized removal, whenever the gauges were not under the control and constant surveillance of the licensee.

Corrective and Preventive Actions for Apparent 10 CFR 30.34(i) Violations

By letter dated January 15, 2009, Superior Paving Corporation reported that corrective and preventive actions were taken in response to the apparent violations of 10 CFR 30.34(i). At the Manassas facility, on November 21, 2008, a cable and chain with two locks were installed to secure the gauge shipping container to a permanent structure. At the Culpeper facility, on January 9, 2009, an additional hasp and lock were installed on each gauge storage container. In response to these findings, the RSO

designee performed an audit of gauge security practices and identified additional non-compliances. The additional non-compliances were corrected on January 9, 2009. Preventive actions included: (1) conducting briefings with all gauge users regarding 10 CFR 30.34(i) compliance; (2) updating gauge user training to include a detailed review of the requirements of 10 CFR 30.34(i); and (3) ensuring that 10 CFR 30.34(i) requirements are included in the annual audit.

Apparent Violation of NRC License No. 45-24949-01, Amendment 9, Condition 17

On November 21, 2008, the inspector toured the licensee's gauge storage area at its Manassas facility. The inspector observed that there were no locks on the gauge shipping container or the source rod to prevent inadvertent exposure. The former RSO stated that due to inattention to detail a security cable was improperly installed on the outside of the gauge shipping container which allowed the container to be opened without using a key.

NRC License No. 45-24949-01, Amendment 9, Condition 17 requires each portable nuclear gauge to have a lock or outer locked container designed to prevent unauthorized or accidental removal of the sealed source from its shielded position.

Contrary to this requirement, the licensee did not have a lock or outer locked container to prevent unauthorized or accidental removal of the sealed source from its shielded position. Specifically, a Troxler 4640B, portable density gauge was stored at the licensee's Manassas facility without a lock or outer locked container designed to prevent unauthorized or accidental removal of the sealed source.

Corrective and Preventive Actions for Apparent Violation of NRC License No. 45-24949 01, Amendment 9, Condition 17

The RSO designee stated that on November 21, 2008, locks were installed on the shipping container and source rod at the Manassas facility. Preventive actions included: (1) additional locks were purchased and distributed in the event a lock is not working properly; (2) a review of the purpose and requirements of NRC License No. 45-24949-01, Amendment 9, Condition 17 will be added to annual gauge user training; and (3) a requirement to conduct a review of compliance with NRC license conditions will be added to the annual program audit.

c. Conclusions

Two apparent violations of NRC requirements were identified including: (1) failure to use a minimum of two independent physical controls that form tangible barriers to secure gauges from unauthorized removal, whenever portable gauges are not under the control and constant surveillance of the licensee as required by 10 CFR 30.34(i); and (2) failure to have a lock or outer locked container designed to prevent unauthorized or accidental removal of the sealed source from its shielded position as required by NRC License No. 45-24949-01, Amendment 9, Condition 17.

III. Management Oversight of the Program

a. Inspection Scope

The inspector reviewed management oversight of licensed program activities. Information was gathered by a review of documents, interviews with personnel, and direct inspections at the main office, two authorized use locations, and one field site.

b. Observations and Findings

The inspector reviewed sealed source leak test records and determined that leak tests were performed, evaluated by a licensed contractor, and records of leak test results were appropriately maintained.

Apparent Violation of NRC License 45-24949-01, Amendment 9, Condition No. 16

The inspector reviewed licensee compliance with NRC License 45-24949-01, Amendment 9, Condition No. 16, "Source Inventory." The former RSO stated that gauge inventories are routinely obtained and documented in gauge-use logs and during routine source leak tests, and that a separate gauge inventory record is not documented or maintained. The inspector reviewed gauge-use logs and leak test records and noted that the records did not include specification of radionuclides or quantities.

NRC License No. 45-24949-01, Amendment 9, Condition 16 requires licensees to conduct a physical inventory every six months and to maintain records of the inventory that includes radionuclides, quantities, manufacturer's name and model numbers, and the date of the inventory.

Contrary to this requirement, the licensee did not maintain records of source inventory that included all of the information required by license condition. Specifically, portable gauge inventory records did not include designation of radionuclides or quantities.

The former RSO reported that due to inattention to detail, he had routinely relied on gauge leak test records to also represent gauge inventory records and did not notice that leak test records did not contain designation of radionuclides or quantities.

Corrective and Preventive Actions for Apparent Violation of NRC License 45-24949-01, Amendment 9, Condition No. 16

An electronic spread sheet was developed to track and document source inventory. On December 15, 2008, an updated inventory was completed and the inventory record includes all information required by NRC License 45-24949-01, Amendment 9, Condition 16. In addition, the requirement to conduct and properly document the source inventory will be added to the annual audit.

Apparent Violation of 10 CFR 20.1902

The inspector attempted to review the licensee's documented annual review of the radiation protection program content and implementation. Information was gathered through discussions with the former RSO. The former RSO stated that in 2007 and 2008, he performed audits of the radiation protection program content and implementation and reviewed results of the audits during annual gauge user training sessions. However, he explained, that due to a busy schedule, he never fully documented the results.

Title 10 CFR 20.2102 requires that each licensee maintain records of the radiation protection program, including audits and other reviews of program content and implementation, and that the licensee shall retain the records required by paragraph (a)(2) of this section for three years after the record is made.

Contrary to the above, the licensee did not maintain records of radiation protection program audits as required by 10 CFR 20.2102. Specifically, records of annual program reviews of licensed program activities for 2007 and 2008, were not documented or maintained.

Corrective and Preventive Actions for Apparent Violation of 10 CFR 20.1902

On January 13, 2009, an annual review of the radiation program was completed and documented using guidance in NUREG-1556, Vol. 1, Rev. 1, Appendix F. The new RSO indicated that he is committed to conducting and documenting annual reviews of the licensed program.

New Radiation Safety Officer

In December 2008, the RSO left his position with Superior Paving Corporation and a staff member from the Safety Department was assigned as the RSO designee. The RSO designee completed Radiation Safety Officer training provided by North East Technical Services, Inc. on January 14, 2009. On January 14, 2009, NRC License No. 45-24949-01 was amended (Amendment 10) to name Sean Knick as the RSO. Mr. Knick stated that he was committed to safety, security, and compliance with NRC regulations and license requirements.

Management Response to NRC Inspection Findings

By letter dated January 15, 2009, Mr. Helmick, Vice President, Superior Paving Corporation transmitted a letter (ML090270472) to NRC detailing corrective and preventive actions taken in response to the violations identified during NRC Inspection No. 2008001.

c. Conclusions

Two apparent violations of NRC requirements were identified including: (1) failure to maintain records of source inventory that included all of the information including designation of radionuclides and quantities as required by NRC License 45-24949-01, Amendment 10, License Condition 16; and (2) failure to document results of an annual review of the radiation protection program content and implementation for 2007 and 2008 as required by 10 CFR 20.2102.

IV. Exit Meeting

On January 21, 2009, a final inspection exit meeting was conducted by telephone with Mr. Helmick, Vice President, and Mr. Knick, RSO. The inspector described the inspection results. The licensee acknowledged the inspection findings. Mr. Helmick emphasized that appropriate corrective and preventive actions had been taken and that Superior Paving Corporation was committed to safety, security, and compliance with NRC requirements.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

Dave Helmick, Vice President
Tony Loconti, former Radiation Safety Officer
Sean Knick, Radiation Safety Officer
Jeff Shanks, Authorized Gauge User