



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

September 24, 2018

EA-18-115

Mr. Robin Sinn, Laboratory Director
St. Louis Testing Laboratories, Inc.
2810 Clark Avenue
St. Louis, MO 63103

SUBJECT: NRC ROUTINE INSPECTION REPORT NO. 03005064/2018001(DNMS) AND
NOTICE OF VIOLATION – ST. LOUIS TESTING LABORATORIES, INC.

Dear Mr. Sinn:

On August 1, 2018, an inspector from the U.S. Nuclear Regulatory Commission (NRC) conducted a routine inspection at your St. Louis office, with continued in-office review through August 24, 2018. 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. Our in-office review included a review of your personnel monitoring program. Ms. Deborah Piskura of my staff conducted a final exit meeting by telephone with Mr. Donald Baumer of your staff on August 24, 2018, to discuss the inspection findings. The enclosed inspection report 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 one Severity Level IV violation of NRC requirements occurred. The violation was evaluated in accordance with the NRC Enforcement Policy. The current Enforcement Policy is included on the NRC's website at <http://www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html>. The violation is cited in the enclosed Notice of Violation (Notice). The NRC is citing the violation in the Notice because the violation was identified by the inspector.

The violation concerned the licensee's failure to ensure that an individual wore all required dosimetry while conducting radiographic operations at a temporary job site on March 5, 2018, as required by Title 10 of the *Code of Federal Regulations* (CFR) Part 34.47(a). During these radiographic operations, the radiographer's personnel dosimeter fell off the individual during a radiographic exposure. The badge remained in the high radiation area during an exposure and the radiographer retrieved the badge once he recognized his badge was missing. The radiographer wore his pocket dosimeter and alarm ratemeter during this last exposure. The root cause of the violation was attributed to human error by the radiographer and his failure to recognize that his dosimeter fell off his person and remained within the high radiation area during one radiographic exposure. Based on the NRC Enforcement Policy, the failure to wear

personnel monitoring devices (alarm ratemeters, direct reading dosimeters, and personnel dosimeters) at all times during radiographic operations is normally categorized as a Severity Level III violation. However, the NRC determined that the health and safety risk was low because the individual failed to wear his dosimeter during only a single exposure and the individual was wearing two of the three pieces of required personnel monitoring devices. As a result, the NRC has categorized the violation at Severity Level IV, recognizing that the incident was an isolated occurrence and that the individual wore two of the three required pieces of safety equipment. You had informed the NRC of a similar incident in 2014 that was cited as a Severity Level IV violation in 2015. Please be aware that future violations of a similar nature may result in escalated enforcement action by the NRC.

Your corrective actions to restore compliance and to prevent recurrence included:

(1) requesting the individual to provide a written statement describing the incident; (2) estimating the individual's exposure for the monitoring period and providing revised exposure data to the dosimetry vendor; (3) discussing this incident with radiography personnel during a safety meeting on August 23, 2018; and (4) providing each radiographer with a multiple compartment holder, worn on the belt, to secure all personnel monitoring devices while conducting radiographic operations.

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 will be achieved is already adequately addressed on the docket in this letter and in the enclosed inspection report. 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 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosures will be 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, your 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 Ms. Piskura if you have any questions regarding this inspection. Ms. Piskura can be reached at 630-829-9867.

Sincerely,

/RA/

Aaron T. McCraw, Chief
Materials Inspection Branch
Division of Nuclear Materials Safety

Docket No. 030-05064
License No. 24-00188-02

Enclosures:

1. Notice of Violation (public)
2. Inspection Report (public)

cc w/encls: Donald Baumer,
Radiation Safety Officer
State of Missouri

Letter to Robin Sinn from Aaron McCraw, dated September 24, 2018

SUBJECT: NRC ROUTINE INSPECTION REPORT NO. 03005064/2018001(DNMS) AND
NOTICE OF VIOLATION – ST. LOUIS TESTING LABORATORIES, INC.

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NOTICE OF VIOLATION

St. Louis Testing Laboratories, Inc.
St. Louis, Missouri

License No. 24-00188-02
Docket No. 030-05064
EA-18-115

During a U.S. Nuclear Regulatory Commission (NRC) inspection conducted on August 1, 2018, with continued in-office review through August 24, 2018, one violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the violation is listed below:

Title 10 of the *Code of Federal Regulations* (CFR) 34.47(a) requires, in part, that the licensee not permit any individual to act as a radiographer or a radiographer's assistant unless, at all times during radiographic operations, each individual wears, on the trunk of the body, a direct reading dosimeter, an operating alarm ratemeter, and a personnel dosimeter that is processed and evaluated by an accredited National Voluntary Laboratory Accreditation Program (NVLAP) processor.

Contrary to the above, on March 5, 2018, at a temporary job site in Vincennes, Indiana, the licensee permitted a radiographer to perform radiographic operations without wearing a personnel dosimeter at all times during radiographic operations. Specifically, the personnel dosimeter fell off of the radiographer and remained within the high radiation area while the radiographer performed one exposure.

This is a Severity Level IV violation (Section 6.3).

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 in this letter and in the enclosed inspection report. 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 03005064/2018001(DNMS)" 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'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>. 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 24th day of September 2018.

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

Docket No. 030-05064

License No. 24-00188-02

Report No. 03005064/2018001(DNMS)

Licensee: St. Louis Testing Laboratories, Inc.

Facility: 2810 Clark Avenue
St. Louis, MO

Inspection Dates: August 1, 2018, with continued
in-office review through August 24, 2018

Exit Meeting Date: August 24, 2018

Inspector: Deborah A. Piskura, Senior Health Physicist

Approved By: Aaron T. McCraw, Chief
Materials Inspection Branch
Division of Nuclear Materials Safety

EXECUTIVE SUMMARY

St. Louis Testing Laboratories, Inc. NRC Inspection Report 03005064/2018001(DNMS)

This was a routine, unannounced inspection conducted to review licensed activities under License No. 24-00188-02. The purpose of the inspection was to ensure that all licensed activities performed by the licensee were conducted safely and in accordance with U.S. Nuclear Regulatory Commission (NRC) requirements. The inspection included observations of radiographic operations within the licensee's permanent radiographic installation.

The inspector identified a violation of Title 10 of the *Code of Federal Regulations* (CFR) 34.47(a). On March 5, 2018, during radiographic operations at the temporary job site, the radiographer's personnel dosimeter fell off the individual during a radiographic exposure. The badge remained in the high radiation area during an exposure. As the radiographer approached the exposure set up, he saw his dosimeter laying on the ground and retrieved the badge. The radiographer wore his pocket dosimeter and alarm ratemeter during this last exposure. The root cause of the violation involving 10 CFR 34.47(a) was attributed to human error by the radiographer and his failure to recognize that his personnel dosimeter fell off his person and remained on the ground by the exposure set up during one radiographic exposure.

The licensee implemented several corrective actions to restore compliance and to prevent recurrence that included: (1) requesting the individual to provide a written statement describing the incident; (2) estimating the individual's exposure for the monitoring period and providing revised exposure data to the dosimetry vendor; (3) discussing this incident with radiography personnel during a safety meeting on August 23, 2018; and (4) providing each radiographer with a multiple compartment holder, worn on the belt, to secure all personnel monitoring devices while conducting radiographic operations.

REPORT DETAILS

1 Program Overview and Inspection History

License No. 24-00188-02 authorized St. Louis Testing Laboratories, Inc. (the licensee) to possess sealed sources in exposure devices and source changers for the conduct of industrial radiography. The licensee is authorized to perform radiographic operations at temporary job sites and on the business property as well as within a permanent radiographic installation (PRI). Radiographic operations were conducted daily by seventeen radiographers who utilized QSA Global, Inc. exposure devices containing iridium-192 and cobalt-60 sources. At the time of this inspection, the licensee employed no radiographer's assistants. The licensee possessed two cesium-137 sources for instrument calibrations. The majority of the radiographic operations were conducted at temporary job sites. In-house radiography was conducted routinely within the licensee's PRI. The licensee performed instrument calibrations within the PRI. The PRI was constructed with solid concrete blocks providing adequate shielding for licensee staff working in the adjacent areas, as well as members of the public. The licensee installed CCTV monitoring and radiation detectors on the roof directly over the PRI. Access to the roof was restricted during exposures within the PRI.

Routine safety inspections on July 24, 2017, and June 29, 2016, identified no violations of NRC requirements. The licensee experienced a similar incident involving a dropped personnel dosimeter in 2014 that was reviewed during a routine inspection on June 24, 2015, with continued in-office review through August 13, 2015. The NRC cited the licensee for a violation of Title 10 of the *Code of Federal Regulations* (CFR) 34.47(a) as a Severity Level IV violation.

2 Management Oversight

2.1 Inspection Scope

The inspector reviewed the licensee's management of its radiation safety program and its internal audit program. The inspector interviewed the Radiation Safety Officer (RSO) and a designee who assisted the RSO.

2.2 Observations and Findings

Mr. Donald Baumer was the Radiation Safety Officer (RSO) at the time of this inspection. Mr. Baumer also served as the assistant director of the laboratory and reported directly to the company president. The RSO or the department supervisor conducted unannounced audits of all radiography personnel at least every 6 months. The audit forms were reviewed and noted to include: radiation safety, surveys, dosimetry, radiographic operations, transportation, training, leak tests, and equipment maintenance. The auditor indicated that no violations of NRC regulations or the license requirements were identified during his reviews.

The licensee reviewed the radiation safety program annually. The inspector reviewed the audit report for the year 2017 and noted that the licensee did not identify any violations of NRC requirements.

2.3 Conclusions

No violations of NRC requirements were identified in this program area.

3 **Conduct of Radiographic Operations**

3.1 Inspection Scope

This inspection included a review of an incident that occurred on March 5, 2018, involving a dropped personnel dosimeter at a temporary job site. The inspector reviewed the vendor's dosimetry reports, the licensee's dose evaluation and summary of the incident. The inspector interviewed the radiographer and the RSO. The inspector also observed radiographic operations within the licensee's PRI. The inspector interviewed the radiographer, reviewed the utilization log and performed confirmatory surveys.

3.2 Observations and Findings

Title 10 CFR 34.47(a) requires, in part, that the licensee not permit any individual to act as a radiographer or a radiographer's assistant unless, at all times during radiographic operations, each individual wears, on the trunk of the body, a personnel dosimeter that is processed by an accredited National Voluntary Laboratory Accreditation Program (NVLAP) processor.

During a review of personnel dosimetry reports, the inspector noted that during the monitoring period of March 2018, a radiographer's exposure was initially recorded as 1,373 millirem. The licensee informed the inspector that this exposure was only to the radiographer's personnel dosimeter that fell off the individual near the exposure area during the preparations for the last radiographic exposure for the job on March 5, 2018. The badge remained in the high radiation area lying on the ground during the exposure. As the radiographer approached the exposure area, he recognized the badge was lying on the ground by the casting. The individual asserted that he wore his alarming ratemeter and pocket dosimeter at all times during the radiographic operations. The radiographer immediately reported this incident to the RSO.

The licensee's failure to ensure that a radiographer wore his personnel dosimeter during radiographic operations on March 5, 2018, is a violation of 10 CFR 34.47(a).

The root cause of the violation involving paragraph 34.47(a) was attributed to human error by the radiographer and his failure to recognize that his personnel dosimeter fell off his person and remained on the ground near the casting during one radiographic exposure. The licensee experienced a similar incident where a radiographer's assistant accidentally dropped his personnel dosimeter during an exposure in 2014. For this recent incident, the radiography crew had worked a long shift with this last exposure taken approximately 10:30 p.m. The radiographer typically wore his dosimeter on his shirt pocket. The individual believed that as he entered the area and crawled around a large casting for the film placement, the dosimeter (clipped on the outside of his shirt pocket) fell off undetected. The individual became aware of the missing dosimeter after the completion of the exposure. As the radiographer approached the exposure set up, he saw his dosimeter laying on the ground. The actual exposure involved a 5 minute exposure of a large casting using an iridium-192 source.

The incident was identified by the licensee and discussed with the inspector during the inspection on August 1, 2018. The individual provided a written statement describing the incident to the RSO. The licensee estimated the individual's exposure for the monitoring period and provided revised exposure data to the dosimetry vendor. The licensee referred to the daily pocket dosimeter reports to estimate the radiographer's exposure for the monitoring period and assigned the individual an exposure of 80 millirem. The licensee instructed the individual to wear his dosimeter clipped facing the interior of the shirt pocket. The licensee discussed this incident with its radiography personnel during a safety meeting on August 23, 2018; the licensee instructed the staff on the proper locations to wear dosimetry. The licensee also provided the radiographers with a multiple compartment holder, worn on the belt, to secure all dosimetry equipment while conducting radiographic operations.

On August 1, 2018, the inspector observed radiographic operations within the PRI. The radiographer examined a large casting using an iridium-192 source. The inspector determined that the licensee's facilities observed during the inspection were the same as those described in the licensee's NRC license renewal application and supporting material. The inspector confirmed that the radiographer wore his assigned dosimetry; possessed and used a calibrated, operable survey meter; performed surveys at the completion of each exposure; and maintained control and surveillance of the exposure device. The inspector reviewed the utilization log and the radiographer's certification. The inspector also observed the visible and audible warning signals at the entrance of the PRI as required by subparagraph 34.33(a)(2).

3.3 Conclusions

One violation of 10 CFR 34.47(a) was identified during this inspection involving a radiographer's failure to wear a personnel dosimeter at all times during radiographic operations. The licensee experienced a similar incident involving a dropped dosimeter during radiographic operations in 2014. The licensee implemented corrective actions to prevent similar violations.

4 **Training and Qualifications of Radiography Personnel**

4.1 Inspection Scope

The inspection included a review of the licensee's training program. The inspectors interviewed the RSO and select radiography personnel and reviewed select records.

4.2 Observations and Findings

All radiographers were certified in isotope radiography through a recognized radiographer's certification program. A review of each radiographer's wallet cards verified that these individuals were currently certified to perform work in isotope radiography. The inspector interviewed several radiographers and these individuals demonstrated their knowledge in the operating and emergency procedures. The licensee provided in-house training to radiographer's assistants. Each assistant was required to pass written and practical examinations demonstrating competence in the licensee's operating and emergency procedures and in the use of radiography equipment. After completing a minimum of 2 months on-the-job training under a radiographer's supervision, an assistant was eligible to take the radiographer's certification examination. At the time of this inspection, the licensee employed no radiographer's assistants.

The licensee provided annual refresher training to its radiography personnel with the most recent training session conducted on August 23, 2018. The licensee discussed the March 2018 dropped dosimeter incident and provided new multicompartment holders for all radiographers to wear and carry their dosimetry devices.

4.3 Conclusions

The inspector determined that the licensee's trainings program sufficiently addressed radiation safety. No violations of NRC requirements were identified with the licensee's training program.

5 **Personnel Radiation Protection**

5.1 Inspection Scope

The inspector interviewed the RSO and select radiography personnel. The inspector reviewed select records and the reports from the dosimetry vendor.

5.2 Observations and Findings

The inspector reviewed radiation exposure dosimetry records from July 2017 to present and discussed those records with licensee representatives to determine if the licensee's personnel dosimetry program met regulatory and license requirements. The inspector also observed the use of personnel dosimetry by licensee personnel handling licensed materials. Radiography personnel were issued whole body dosimetry, exchanged on a monthly basis, pocket dosimeters (range, 0-200 milliRoentgens) charged daily, and alarm ratemeters (set point at 500 milliRoentgens/hour). Interviews with the RSO and selected radiographers and a review of the utilization logs and the dosimeter logs confirmed that no off-scale or high pocket dosimeter readings had occurred during the 2017 to year to date 2018 period.

The following table summarizes the maximum total effective dose equivalent (TEDE) to personnel in millirem:

Year	TEDE
2017	2,090 millirem, Average monthly exposure 100 millirem
YTD 5/31/2018	788

5.3 Conclusions

Based on the above referenced reviews, discussions, and observations, the inspector determined that the licensee was maintaining personnel radiation exposures ALARA and that no individual exceeded NRC regulatory radiation exposure limits.

6 Other Areas Inspected

6.1 Inspection Scope

The inspection included review of other radiation safety program areas including survey instrument calibration; radiation surveys; maintenance of exposure devices, containers and source changers; depleted uranium contamination tests and sealed source leak tests; transportation and source exchanges. The inspector interviewed selected individuals, toured the licensee's facilities, examined the licensee's radiography devices and reviewed selected records.

6.2 Observations and Findings

At the time of this inspection, the licensee possessed several survey meters (range 0-1 Roentgens per hour), calibrated every six months by either the licensee or an authorized service company. The licensee maintained copies of the calibration certificates on file. The inspector found a sampling of these survey meters to be calibrated within the required frequency and operable.

The inspector performed independent surveys of the licensee's camera storage area using a Canberra UltraRadic survey meter, NRC Tag No. 33558G, calibration date January 23, 2018. The inspector determined that the highest levels were measured directly on metal storage cabinet housing the radiographic exposure devices. All other surveys in adjacent areas to the camera storage area were indistinguishable from background.

The inspector toured the licensee's facility to evaluate the licensee's measures for material security, hazard communication and exposure control. The inspector reviewed other aspects of the licensee's radiation protection program, which included the security of licensed material, audits of the radiation protection program, rad worker and DOT Hazmat training, survey instrument calibration, physical inventory and leak testing of sealed sources, labeling of containers, and postings.

Through interviews, the inspector determined that the licensee staff understood exposure control and security requirements for licensed material. The inspector examined selected exposure devices in the licensee's possession. The inspector noted that each camera and the source calibrator unit had a clearly visible label identifying the radionuclide and source activity. The licensee performed inventories, depleted uranium contamination tests, and sealed source leak tests and documented the results. The inspector observed that the licensee posted a copy of NRC Form 3. The inspector also observed that the areas where licensed material was used and stored were posted with required "CAUTION-RADIOACTIVE MATERIALS" signs.

6.3 Conclusions

The inspector identified no violations of NRC requirements.

7 **Exit Meeting Summary**

The inspector discussed the preliminary inspection findings, as described in this report, with licensee management during the exit meetings conducted at the licensee's facility on August 1, 2018. The inspector also discussed the violation, activities reviewed and the inspection findings with the RSO during a final telephone exit conference on August 24, 2018. The licensee did not identify any information reviewed during the inspection and proposed for inclusion in the inspection report as proprietary in nature.

LIST OF PERSONNEL CONTACTED

- #+ Don Baumer, Assistant Laboratory Director, Radiation Safety Officer
 - Greg Bauswell, Radiographer
 - Josh Cummings, Radiographer
 - Darren Gentry, Radiographer
 - Glen Schrieber, Radiographer
- # Ronald Werth, Radiographer

- # Attended exit meeting on August 1, 2018
- + Individual contacted by telephone on August 24, 2018

INSPECTION PROCEDURES USED

IP 87121, "Industrial Radiography Programs"