



## EXECUTIVE SUMMARY

Megan, LLC  
NRC Inspection Report No. 03017254/2014001

Megan, LLC is an engineering company that operates in the state of Connecticut. This was a routine, unannounced inspection of licensed activities involving the use of sealed sources of byproduct material (cesium-137 and americium-241) in portable moisture-density gauges (gauges). The gauges were used for measuring the physical properties of materials. Based on the results of the inspection, six apparent violations of NRC requirements were identified.

One apparent violation is being considered for escalated enforcement action regarding the licensee's failure to use two independent physical controls that form tangible barriers to secure portable gauges from unauthorized removal whenever the portable gauges were not under the control and constant surveillance of the licensee, as required by 10 CFR 30.34(i). The inspector identified that one gauge had been stored at the licensee's main office, outside of the locked storage area, providing no independent physical controls to prevent unauthorized removal. Also, on two separate occasions during the inspection the inspector found that the licensee had stored gauges in locked vehicles with only one independent physical control (vehicle locks) preventing unauthorized removal, when the gauges were not under the control and constant surveillance of the licensee.

The inspector also identified five additional apparent violations of NRC requirements that are not being considered for escalated enforcement. The apparent violations involve Megan, LLC's failure to: 1) confine its possession of byproduct material to the activity limits authorized under its license; 2) possess or have access to a radiation survey meter; 3) notify the NRC that a new radiation safety officer had been appointed; 4) maintain a log book of gauge activities; and, 5) comply with the training requirements for HAZMAT employees that had transported licensed materials.

Immediately following the onsite inspection, Megan, LLC took prompt corrective actions. Specifically, Megan, LLC: 1) secured the gauges with two independent physical controls and informed all authorized users on the proper protocol for securing gauges; 2) sent a letter to NRC's Region I office requesting a license amendment to increase the possession limit on the license and to inform the NRC of the new individual serving as radiation safety officer; 3) implemented the use of a log book for utilization of the gauges; 4) ceased the transport of gauges by any Hazmat employees that were not current on required refresher training; and 5) ensured Hazmat employees completed refresher training prior to transporting gauges.

The company owner also stated the following actions will be taken by himself and the radiation safety officer to prevent recurrence: (1) the owner will perform field audits of authorized gauge users, focusing on the safe use and security of gauges; (2) the radiation safety officer will conduct program reviews on a quarterly frequency and the owner will review the results; (3) the owner will ensure the radiation safety officer reviews NRC's guidance document (NUREG-1556, Vol. 1) and the license; and (4) in addition to the required training, the owner will provide guidance on radiation safety officer responsibilities to any new radiation safety officer candidate prior to their appointment to the position (NUREG, Procedures, etc.).

## **REPORT DETAILS**

### **I. Organization and Program Overview**

#### a. Inspection Scope

The inspector reviewed the license application, supporting documents, and other licensee records. Collectively, these documents describe the licensee's radiation safety program. The inspection was conducted using Inspection Procedure (IP) 87124, Focus Elements 1 – 7.

#### b. Observations and Findings

Megan, LLC is authorized under NRC License 06-19279-01 to use byproduct material for measuring physical properties of materials with portable moisture-density gauges (gauges). Licensed material was authorized to be used at the licensee's facility located in Bridgeport, Connecticut and at temporary job sites in areas under NRC jurisdiction. Gauges were used daily for moisture-density testing at a number of projects in Connecticut. The licensee employed eight individuals involved in gauging operations. The radiation safety officer (RSO) reported directly to the company President. The RSO was qualified per NRC's licensing guidance for portable gauge programs; however, he was recently appointed RSO and did not have previous experience in the role.

#### c. Conclusion

No violations were identified.

### **II. Material Receipt, Use, and Control**

#### a. Inspection Scope

The inspector's review of the program included interviews with licensee personnel, direct observations of licensed activities, and a review of procedures and records associated with material receipt, use, transfer and control. The inspector also reviewed the licensee's corrective actions from a violation identified during the previous inspection in December 2009 (03017259/2009001), and conducted independent radiation dose rate surveys. The inspection was conducted using IP 87124, Focus Elements 1 – 7.

#### b. Observations and Findings

A routine, unannounced inspection of the licensee's office located in Bridgeport, CT was conducted on October 27, 2014, and at building construction sites (temporary jobsites) in Hamden and Ansonia, CT on October 28, 2014. The inspection continued in-office until January 26, 2015.

The inspector interviewed the owner, the RSO, the office manager, and authorized users regarding gauge use, transportation, storage and security, and authorized gauge user (AU) training. The inspector reviewed records including: sealed source leak tests,

dosimetry reports, shipping papers, operating and emergency procedures, and annual program reviews.

In December 2009 the NRC conducted a routine inspection and identified a violation regarding the licensee's failure to conduct annual program reviews in accordance with 10 CFR 20.2201. A review of the licensee's annual program reviews during this inspection showed that the licensee had conducted annual program reviews each year as required. This violation is closed.

During the previous routine inspection in December 2009 the inspector identified that two authorized gauge users dosimetry reports showed higher than expected accumulated doses, one of which exceeded the regulatory annual limit. The licensee subsequently performed an evaluation and determined that the majority of the reported dose was due to the dosimeters being stored with or near gauges for extended periods. At that time, the licensee agreed to perform a thorough review of future dose reports. A review of licensee dosimetry reports and annual program reviews showed that authorized user doses were well within the regulatory limits and that the licensee had conducted the reviews as promised.

The licensee possessed six CPN International Model MC Series gauges, two Troxler Electronic Laboratories Model 3440 gauges and one Humboldt Model 5001EZ gauge. Each gauge contained one cesium-137 and one americium-241 sealed source. The Humboldt gauge was acquired by the licensee on August 20, 2013.

The inspector conducted independent surveys of several gauges and the storage location using NRC's Ludlum Model 2401P (SN142673; Cal Due 09/15/2015), and determined that the dose rates were well below the regulatory limits for dose to members of the public, and the gauge dose rates were comparable to the manufacturers surveys published in the Sealed Source and Device Evaluation for the respective gauges.

On October 27, 2014, the inspector toured the licensee's offices and storage location and observed one gauge stored outside of the licensee's storage cage without any physical barriers to prevent unauthorized access or removal. During interviews with the office manager, radiation safety officer, and an engineer, the inspector determined that the office suite was shared by three unrelated companies and that access to the storage location was not always monitored or controlled by licensee staff.

Additionally, on October 28, 2014, at two separate temporary jobsites, the inspector observed that licensee personnel had stored portable gauges within vehicles using only one independent physical control (locked vehicle), and the portable gauges were not under the control and constant surveillance of the licensee.

The RSO stated that he was unsure how long the gauge stored in the storage room had been stored outside of the storage cage without physical barriers; however, the RSO and other licensee employees with authorized access to the storage room stated that the interior door to the storage room was unlocked during working hours and that authorized individuals were not always present to prevent unauthorized individuals from accessing

the storage room. Specifically, individuals employed by other companies that were not under the control of the licensee shared the same office suite and had unrestricted access to the storage room.

Through interviews with authorized gauge users, the inspector determined that authorized users were adequately trained in emergency procedures, and operated the gauges in accordance with the licensee's procedures.

The inspector reviewed records and interviewed the radiation safety officer, the office manager, and the company owner. Based on a review of the records the inspector determined that the licensee did not have an adequate log book of gauge activity. The log listed only the users name, the gauge number and the date when the gauge was logged out. The radiation safety officer stated that he was not aware of the need to provide full information in the log book and that Megan, LLC had committed to using the procedures in NUREG-1556, Volume 1, Appendix H. All of the gauges were logged out at the beginning of the month.

The radiation safety officer was unable to provide evidence of current HAZMAT training for several of the authorized users.

c. Conclusions

The following apparent violations were identified during the inspection and violation number one is being considered for escalated enforcement:

- 1) 10 CFR 30.34(i) requires, in part, that 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.

Contrary to the above:

- a) On October 27, 2014, the licensee stored a portable gauge in a room at its authorized storage location in Bridgeport, Connecticut, without a minimum of two independent physical controls that form tangible barriers to secure the portable gauge from unauthorized removal, and the portable gauge was not under the control and constant surveillance of the licensee. Specifically, the gauge was stored outside of the licensee's locked storage cage with no physical barriers in place to secure it from unauthorized removal; and
- b) On October 28, 2014, the licensee stored portable gauges at two different locations (temporary jobsites) inside one personal and one company vehicle, without a minimum of two independent physical controls that form tangible barriers to secure the portable gauges from unauthorized removal, and the portable gauges were not under the control and constant surveillance of the licensee. Specifically, the gauges were stored inside the vehicles with the doors and/or trunk locked, consisting of one physical barrier, but without an additional barrier as required.

As immediate corrective actions, the office manager secured the gauge in the licensee's locked storage cage within the storage room and ensured that the gauges stored in vehicles at temporary jobsites were secured with an additional cable and lock. The RSO contacted all authorized gauge users and informed the users to ensure portable gauges were secured with two independent physical controls to prevent unauthorized access to the gauges while in storage and not under the control and constant surveillance of the licensee. These actions were taken prior to the inspector leaving each site.

The following five apparent violations were also identified:

- 2) Item No. 8 of NRC License 06-19279-01, Amendment No. 12, specifies that the maximum sealed source activity the licensee was authorized to possess under the license was 100 millicuries of cesium-137 (Cs-137), and 400 millicuries of americium-241 (Am-241).

Contrary to the above, between August 20, 2013 and November 12, 2014, the licensee did not limit its possession of licensed materials to the quantities specified in Item 8 of the NRC License. Specifically, the license authorized sealed sources up to 400 millicuries of Am-241 and the licensee possessed gauges containing a total of 420 millicuries of Am-241 in sealed sources.

The licensee stated that the violation was an oversight as the RSO at the time did not recognize that the maximum amount authorized by the license would be exceeded prior to acquiring an additional gauge.

As an immediate corrective action, on October 29, 2014, the licensee submitted a letter requesting a license amendment. The license was amended on November 12, 2014.

- 3) Condition 19-A of NRC License 06-19279-01, Amendment No. 12, requires, in part, that the licensee comply with the terms and conditions of the licensee's application dated March 22, 2011 (Application). Item No.10 of the Application, "Radiation Safety Program, Survey Instruments," specifies that the licensee will either possess and use, or have access to and use, a radiation survey meter that meets the Criteria in the section entitled "Radiation Safety Program – Instruments" in NUREG-1556, Volume 1, Rev. 1.

Contrary to the above, between December 1, 2009, and October 27, 2014, the licensee neither possessed and used, nor had access to and used, a radiation survey meter that met the Criteria in NUREG-1556, Volume 1, Rev. 1, section entitled "Radiation Safety Program – Instruments."

As an immediate corrective action, the licensee committed to acquiring an appropriate radiation survey meter. The licensee entered into an agreement with a local portable gauge vendor for the use of a survey meter on an as-needed basis on November 12, 2014. The agreement also included survey meter user training.

- 4) Condition 12 of NRC License 06-19279-01, Amendment No. 12, states, in part, Radiation Safety Officer for the license is Sebastian Corbin.

Contrary to the above, on or about December 2013, the Radiation Safety Officer for the license was not Sebastian Corbin. Specifically, Megan, LLC had appointed another qualified individual as the Radiation Safety Officer for the license and did not submit a request for license amendment regarding the newly appointed Radiation Safety Officer.

As an immediate corrective action on October 29, 2014, the licensee submitted a letter requesting a license amendment to add the new RSO. The license was amended on November 12, 2014.

- 5) Condition 19-A of NRC License 06-19279-01, Amendment No. 12, requires, in part, that the licensee comply with the terms and conditions of the licensee's application dated March 22, 2011. Item No.10 of the application dated March 22, 2011, "Radiation Safety Program, Operating and Emergency Procedures," specifies that licensee personnel will implement and maintain the Operating and Emergency Procedures in Appendix H of NUREG-1556, Volume 1, Rev. 1. The Operating and Emergency Procedures in Appendix H require, in part, that the licensee sign-out the portable gauge in a log book including the date of use, name of the authorized user, and the temporary job site where the portable gauge will be used.

Contrary to the above, between December 1, 2009, and October 27, 2014, the licensee had used portable gauges at temporary jobsites numerous times and did not sign out the portable gauges in a log book including the date of use, name of the authorized user, and the temporary job site where the portable gauge will be used.

As an immediate corrective action, on October 28, 2014, the licensee implemented a log book for the purpose of logging out portable gauges, and informed all authorized users in its proper use.

- 6) 10 CFR Part 71 requires, in part, that each licensee who transports licensed material outside the site of usage, as specified in the NRC license, shall comply with the applicable requirements of the Department of Transportation regulations in 49 CFR parts 171 through 180, appropriate to the mode of transport.

49 CFR 172.704 requires, in part, that a HAZMAT employee shall receive training required by the subpart, at least once every three years.

Contrary to the above, between September 11, 2014, and October 27, 2014, two HAZMAT employees who performed functions subject to the requirements of 10 CFR 71.5, were not trained as required. Specifically, on multiple occasions from September 11, 2014, to October 27, 2014, two HAZMAT employees transported portable gauges containing licensed material outside the site of usage and the employees had not received the training required by 49 CFR 172.704 since September 11, 2011, a period greater than three years.

As an immediate corrective action, the licensee agreed to provide HAZMAT employee training to all employees as required prior to the employees performing any functions subject to the requirements of 49 CFR Part 171 – 177, within 30 days. The HAZMAT

employee refresher training was completed on November 16, 2014. Also, the licensee committed to implement a system of reminders within 30 days to notify the RSO when HAZMAT employee training is due.

Licensee management stated that they had assessed the causes of the apparent violations and had determined that a common root cause was insufficient oversight by management. As a preventative action to improve management oversight, the company owner stated that he will take following comprehensive actions to prevent recurrence:

1. The owner will perform field audits of the authorized gauge users, focusing on the safe use and security of gauges, starting in the first quarter of 2015.
2. The RSO will conduct program reviews quarterly and the owner will review the results, starting in the first quarter of 2015.
3. The owner will ensure that the RSO performs a review of NRC's guidance document (NUREG-1556, Vol. 1), the license requirements, and the license application, within 30 days.
4. The owner will provide guidance to any new individual prior to assignment to the position of RSO (NUREG, Procedures, etc.), in addition to the required training.

### **III. Exit Meeting**

On January 26, 2015, a telephonic exit meeting was conducted with the company owner and the current RSO. Licensee representatives acknowledged the inspector's findings. No proprietary information was identified.

## **PARTIAL LIST OF PERSONS CONTACTED**

### Licensee

#\*James Quill, P.E., Owner  
#\*Dennis Kieley, RSO  
#Maria Valdez, Office Manager  
Darek El-Ayoub, Technician  
Brian Giblin, Technician  
David Pulcinetta, Engineer

# - present at entrance meeting  
\* - present at exit meeting

### **INSPECTION PROCEDURES USED**

NRC Inspection Procedure 87124, "Fixed and Portable Gauge Programs"

### **ITEMS OPEN, CLOSED, AND DISCUSSED**

The following apparent violations were identified:

1. Failure to use a minimum of two independent physical controls to secure portable gauges from unauthorized removal, a violation of 10 CFR 30.34(i). (Section II)
2. Failure to confine its possession of byproduct material to the activity limits authorized in Item 8 of its license, a violation of Item 8 of the NRC License. (Section II)
3. Failure to comply with the terms and conditions of the license for possession or access to a radiation survey meter, a violation of Condition 19-A of the NRC license. (Section II)
4. Failure to inform the NRC that a new RSO had been appointed, a violation of Condition 12 of the NRC license. (Section II)
5. Failure to comply with the terms and conditions of the license for maintaining a log book of gauge activities, a violation of License Condition 19-A. (Section II)
6. Failure to comply with the terms and conditions of the license for transporting licensed material, a violation of 10 CFR 71.5. (Section II)