



UNITED STATES  
**NUCLEAR REGULATORY COMMISSION**  
REGION I  
2100 RENAISSANCE BOULEVARD, SUITE 100  
KING OF PRUSSIA, PENNSYLVANIA 19406-2713

December 27, 2013

Docket No. 15000037  
EA-13-215

PA License No. PA-1222

J. Joseph Zimmerman  
Executive Vice President & CEO  
Valley Quarries, Inc.  
P.O. Box 2009  
Chambersburg, PA 17201-0809

SUBJECT: NRC INSPECTION REPORT NO. 15000037/2013002, AND INVESTIGATION  
REPORT NO. 1-2013-021

Dear Mr. Zimmerman:

This letter refers to the reactive safety inspection conducted on May 10, 2013, at Valley Quarries, Inc.'s (VQI) facilities located in Chambersburg, PA, with continued in-office review through December 5, 2013. The inspection was a review of the circumstances surrounding VQI's loss of a portable moisture-density gauge on May 3, 2013. The inspection also included an examination of activities conducted under the general license pursuant to 10 CFR 150.20 as it relates to safety and security, compliance with the Commission's rules and regulations, and with the conditions of Commonwealth of Pennsylvania Radioactive Materials License No. PA-1222. The enclosed inspection report presents the results of this inspection.

In addition to the inspection, an investigation was conducted by the NRC Office of Investigations (OI) to determine whether a VQI authorized gauge user deliberately failed to secure the gauge prior to transport on a public highway. Based on the evidence gathered during the investigation, the NRC determined that the authorized gauge user acted deliberately. The results of this OI Investigation are included in the enclosed Factual Summary of OI Investigation Report No. 1-2013-021 (Enclosure 2).

Based on the results of this inspection and the OI investigation, apparent violations were identified and are being considered for escalated enforcement action in accordance with the NRC Enforcement Policy. The current Enforcement Policy is included on the NRC's Web site at <http://www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html>. The apparent violations involved VQI's failures to: (1) comply with U.S. Department of Transportation regulations to properly secure a portable gauge during transport on a public highway while conducting work in NRC jurisdiction in West Virginia, as required by 10 CFR 71.5 and 49 CFR 173.448(a); (2) control and maintain constant surveillance of licensed material that was in a controlled or unrestricted area and that was not in storage, as required by 10 CFR 20.1802; and, (3) use a minimum of two independent physical controls that form tangible barriers to secure portable gauges from unauthorized removal, whenever portable gauges were not under the control and constant surveillance of the licensee, as required by 10 CFR 30.34(i). The circumstances surrounding these apparent violations, the significance of the issue, and the need for lasting and effective corrective actions were discussed with you telephonically by Mr. Blake Welling, Chief, Commercial, Industrial, R&D, and Academic Branch, and Mr. Scott Wilson, Health Physicist,

during an exit meeting conducted on December 5, 2013, and are described herein and in the enclosed Inspection Report No. 15000037/2013002 (Enclosure 1).

The NRC determined that the apparent violations occurred on May 3, 2013. Specifically, a VQI employee (authorized user) did not secure a portable nuclear gauge containing sealed radioactive sources of cesium-137 (9 millicuries) and americium-241 (44 millicuries), while transporting it in the back of a pickup truck over a public highway in West Virginia. Consequently, the gauge fell out of the truck bed and was retrieved by a member of the public, who turned over the gauge to the Pennsylvania Department of Environmental Protection on May 15, 2013.

Since the apparent violations involve the loss of sealed radioactive sources, the NRC is considering proposing imposition of a civil monetary penalty. Section 2.3.4, Civil Penalty, of the NRC Enforcement Policy states that for violations where a licensee has lost required control of its regulated licensed material for any period of time, the NRC normally will impose at least a base civil penalty. The base civil penalty amount is based on approximately three times the expected average cost of authorized disposal; however, the NRC may exercise its discretion to mitigate or escalate a civil penalty amount based on the merits of a specific case. Therefore, you may provide information regarding the actual expected cost of authorized disposal that you believe the NRC should consider in making a final enforcement decision. However, NRC will not normally decrease the civil penalty to an amount below the lowest base civil penalty for such cases (i.e., \$3,500).

We believe we have sufficient information to make an enforcement decision regarding the apparent violations. Therefore, you may accept the violations as characterized in this letter and notify us of that decision within 10 days. Alternatively, before the NRC makes its final enforcement decision, you may choose to provide your perspective on these matters, including the significance, causes, and corrective actions, as well as any other information that you believe the NRC should take into consideration by: (1) requesting a pre-decisional enforcement conference (PEC) to meet with the NRC and provide your views in person; (2) requesting Alternative Dispute Resolution (ADR); or (3) responding to the apparent violations in writing.

If you choose to request a PEC, the meeting should be held in our office in King of Prussia, PA, within 30 days of the date of this letter. The conference will include an opportunity for you to provide your perspective on these matters and any other information that you believe will assist the NRC in making an enforcement decision.

In lieu of a PEC, you may also request ADR with the NRC in an attempt to resolve this issue. ADR is a general term encompassing various techniques for resolving conflicts using a neutral third party. The technique that the NRC has decided to employ is mediation; a voluntary, informal process in which a trained neutral mediator works with parties to help them reach resolution. If the parties agree to use ADR, they select a mutually agreeable neutral mediator who has no stake in the outcome and no power to make decisions. Mediation gives parties an opportunity to discuss issues, clear up misunderstandings, be creative, find areas of agreement, and reach a final resolution of the issues. Additional information concerning the NRC ADR program can be obtained at <http://www.nrc.gov/about-nrc/regulatory/enforcement/adr.html>. The Institute on Conflict Resolution (ICR) at Cornell University has agreed to facilitate the NRC program as a neutral third party. Please contact ICR at 877-733-9415 within 10 days of the date of this letter if you are interested in pursuing resolution of this issue through ADR. The ADR mediation session should be held in our office in King of Prussia within 45 days of the date of this letter.

Either the PEC or the ADR would be closed to public observation because the NRC's preliminary findings are based on an NRC OI report that has not been publicly disclosed. However, the time and date of the PEC or ADR will be publicly announced.

If you choose to provide a written response on these matters, it should be sent to the NRC within 30 days of the date of this letter. Your response may reference or include previously docketed correspondence, if the correspondence adequately addresses the required response. You should clearly mark the response as a "Response to Apparent Violations in NRC Investigation No. 1-2013-021; EA-13-215," 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 I, 2100 Renaissance Boulevard, King of Prussia, PA 19406.

Please contact Mr. Blake Welling, Chief Commercial, Industrial, R&D, and Academic Branch, at 610-337-5205 within **10** days of the date of this letter to notify the NRC whether you are interested in attending a PEC or ADR, providing a written response, or accepting the violations as characterized in this letter and its attachment (in which case the NRC will proceed with its enforcement decision).

In addition, please be advised that the number and characterization of apparent violations described in the enclosed inspection report may change as a result of further NRC review. You will be advised by separate correspondence of the results of our deliberations on this matter.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosures, and the response, if VQI chooses to provide one, 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 Web site at <http://www.nrc.gov/reading-rm/adams.html>. 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.

Current NRC regulations and guidance are included on the NRC's website at [www.nrc.gov](http://www.nrc.gov); select **Nuclear Materials; Med, Ind, & Academic Uses**; then **Regulations, Guidance and Communications**. The current Enforcement Policy is included on the NRC's website at [www.nrc.gov](http://www.nrc.gov); select **About NRC, Organizations & Functions; Office of Enforcement; Enforcement documents**; then **Enforcement Policy (Under 'Related Information')**. You may also obtain these documents by contacting the Government Printing Office (GPO) toll-free at 1-866-512-1800. The GPO is open from 8:00 a.m. to 5:30 p.m. EST, Monday through Friday (except Federal holidays).

The NRC's Safety Culture Policy Statement became effective in June 2011. While a policy statement and not a regulation, it sets forth the agency's *expectations* for individuals and organizations to establish and maintain a positive safety culture. You can access the policy statement and supporting material that may benefit your organization on NRC's safety culture Web site at <http://www.nrc.gov/about-nrc/regulatory/enforcement/safety-culture.html>. We strongly encourage you to review this material and adapt it to your particular needs in order to develop and maintain a positive safety culture as you engage in NRC-regulated activities.

If you have any questions related to this matter, please contact Mr. Welling of my staff at 610-337-5205.

Sincerely,

***Original Signed by James Clifford***

James W. Clifford, Director  
Division of Nuclear Materials Safety

Enclosures:

1. Inspection Report No. 15000037/2013002
2. Factual Summary of OI Investigation Report  
No. 1-2013-021

cc w/Enclosures:

John C. Englerth, Radiation Safety Officer  
Commonwealth of Pennsylvania

If you have any questions related to this matter, please contact Mr. Welling of my staff at 610-337-5205.

Sincerely,

***Original Signed by James Clifford***

James W. Clifford, Director  
Division of Nuclear Materials Safety

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John C. Englerth, Radiation Safety Officer  
Commonwealth of Pennsylvania

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\*See previous concurrences

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U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

INSPECTION REPORT

Inspection No. 15000037/2013002  
Event Notification No. 49000  
NMED Item No. 130210  
EA No. EA-13-215  
Docket No. 15000037  
PA License No. PA-1222  
Licensee: Valley Quarries, Inc.  
Location: P.O. Box 2009,  
Chambersburg, PA 17201-0809  
Inspection Dates: May 10, 2013 – December 5, 2013

Inspector:	<u>/RA B. Welling f/</u>	<u>12/27/13</u>
	Scott Wilson, Health Physicist Commercial, Industrial, R&D and Academic Branch Division of Nuclear Materials Safety	date
Approved By:	<u>/RA/</u>	<u>12/27/13</u>
	Blake D. Welling, Chief Commercial, Industrial, R&D and Academic Branch Division of Nuclear Materials Safety	date

## EXECUTIVE SUMMARY

Valley Quarries, Inc.  
NRC Inspection Report No. 15000037/2013002

Valley Quarries, Inc. (VQI) is a road construction and materials testing company that operates primarily within the Commonwealth of Pennsylvania. VQI is authorized by a Commonwealth of Pennsylvania Department of Environmental Protection (PADEP) Radioactive Material License, for the possession and use of portable moisture-density gauges (gauges) containing sealed sources of radioactive material. VQI is also authorized to conduct licensed activities within Nuclear Regulatory Commission (NRC) jurisdiction under the general license provisions of 10 CFR 150.20 "Recognition of Agreement State licenses."

The NRC conducted a reactive inspection to review the circumstances surrounding the licensee's loss of a portable moisture-density gauge while the licensee was working within NRC jurisdiction in the State of West Virginia. The event occurred on May 3, 2013, when an authorized user placed a gauge in the bed of a VQI truck, without using the certified shipping container and properly securing the gauge to prevent movement or loss. The authorized user subsequently drove on a public highway to a local VQI construction yard. Upon arrival at the construction yard, the authorized user determined that the gauge had fallen from the truck during transport and was missing. The licensee later learned that the gauge was found beside the highway by a member of the public who maintained the gauge within the trunk of a personal vehicle until May 15, 2013, when it was returned to PADEP, and subsequently to VQI on the same day. Upon return of the gauge, the licensee inspected the gauge for damage and conducted a leak test to ensure no radioactive contamination was present. The inspection and leak test confirmed that it was not damaged and that no contamination was present. VQI conducted a dose evaluation confirming that no individual member of the public exceeded regulatory dose limits during the incident.

Concurrent with the inspection, the NRC's Office of Investigations (OI) opened an investigation to determine whether the VQI authorized user had engaged in deliberate misconduct for the failure to properly package and secure the gauge during transport. The OI investigation concluded that the authorized user acted deliberately when he failed to properly package and secure the gauge during transport in accordance with the regulations. (For a synopsis of the OI Investigation, see Enclosure 2 to the cover letter transmitting this Inspection Report.)

Based on the results of the inspection, apparent violations of NRC requirements were identified regarding VQI's failure to: (1) secure a shipment of Class 7 (radioactive) materials to prevent shifting during normal transportation as required by 10 CFR 71.5 and 49 CFR 173.448(a); (2) control and maintain constant surveillance of licensed material as required by 10 CFR 20.1802; and, (3) use a minimum of two independent physical controls that form tangible barriers to secure portable gauges from unauthorized removal, whenever portable gauges were not under the control and constant surveillance of the licensee, as required by 10 CFR 30.34(i). The violations resulted in the loss of a portable moisture-density gauge from May 3 to May 15, 2013.

## **REPORT DETAILS**

### **I. Organization and Scope of the Program**

#### **a. Inspection Scope**

The inspector reviewed the organization and scope of the licensee's portable gauge program. Information was gathered through direct inspection, review of records, and interviews with cognizant individuals.

#### **b. Observations and Findings**

Valley Quarries, Inc. (VQI) is a road construction and materials testing company that operates primarily in the Commonwealth of Pennsylvania. VQI is authorized by Radioactive Material License No. 1222, issued by the Commonwealth of Pennsylvania, to possess portable moisture-density gauges (gauges) containing sealed sources of americium-241 (44 millicuries) and cesium-137 (8 millicuries), and conducts licensed activities within NRC jurisdiction under the general license provisions of 10 CFR 150.20 "Recognition of Agreement State licenses."

The Radiation Safety Officer (RSO) for VQI is also the Health and Safety Director and is responsible for establishing programs and procedures applicable to the radiation safety program. The RSO directly oversees the implementation of the radiation safety program and reports to the Executive Vice President and CEO.

Six individuals were authorized to use the gauges. Authorized users were assigned to road construction crews and typically reported to the individual foreman responsible for controlling the work site activities.

#### **c. Conclusions**

No violations of NRC requirements were identified.

### **II. Management Oversight of the Program**

#### **a. Inspection Scope**

The inspector reviewed the management oversight of licensed activities, the implementation of the radiation safety program, and VQI's use of portable gauges under reciprocity in areas of NRC jurisdiction. Information was gathered through a review of records and interviews with the RSO and the company vice president.

#### **b. Observations and Findings**

Through a review of records and interviews with the RSO, the inspector determined that the RSO had completed annual reviews of the program, conducted sealed source leak tests, ensured that authorized gauge users were trained at the proper frequency, and conducted field audits of authorized users performing licensed activities with the gauges. The vice president and the RSO appeared to be engaged in the management of the program and provided that VQI was committed to safe and compliant use of the gauges.



c. Conclusions

No violations of NRC requirements were identified.

III. **Event Follow up**

a. Inspection Scope

The inspector reviewed an event that occurred on May 3, 2013, and the licensee's follow up of the event, including its corrective actions.

Prior to the onsite portion of the inspection, the inspector reviewed the Event Notification Report, Number 49000. The inspector performed an onsite inspection on May 10, 2013, which included a tour of the licensee's facility, interviews with licensee staff, direct observation of gauge shipping and transport, and a review of selected licensee records. Additionally, the inspector reviewed the licensee's final written report, dated May 30, 2013, and the NRC's Office of Investigation's report.

b. Observations and Findings

On May 3, 2013, VQI's radiation safety officer notified the NRC Headquarters Operations Officer via telephone that, while the licensee was conducting licensed activities in the State of West Virginia under reciprocity with the NRC, a portable moisture-density gauge was lost. The report was made in accordance with the reporting requirements in 10 CFR 20.2201. According to the report, an authorized user had placed the gauge in the bed of a VQI truck and driven approximately 1.5 miles on a public highway in the State of West Virginia (I-81), to a VQI construction material staging yard to pick up a coworker. When the authorized user arrived at the construction yard, he determined that the truck's tailgate was down and the gauge was missing. The authorized user reported that the gauge had not been secured in its shipping container or secured to the truck bed to prevent movement during transport. The authorized user then informed his job superintendent and the RSO was ultimately notified via telephone that the gauge was lost.

In an effort to locate the gauge, the licensee traversed the travel path several times but did not find it. The licensee notified the West Virginia State Police, the local newspaper, and a regional television station. The NRC and PADEP also issued public notices regarding the loss of the gauge on May 6, and May 15, respectively. On May 15, 2013, a citizen called the Pennsylvania Department of Environmental Protection's (PADEP) Bureau of Radiation Protection and stated that he had found the gauge and took possession of it on the day VQI reportedly lost it. The individual transferred the gauge to a PADEP representative that evening and the gauge was subsequently returned to the licensee.

Licensee staff and management were interviewed regarding the loss of the gauge. The AU directly involved in the event stated that he was aware of the transportation requirements and that he had been trained appropriately; however, on the date the gauge was lost, he stated that his focus was on retrieving a coworker from the construction yard a mile away and quickly returning to the job and that, since he was only traveling a short distance, and was in a hurry, he did not properly secure the gauge in the truck. The RSO

indicated that the authorized user had been an employee for approximately seven years and that he had been an authorized gauge user for more than two years. The RSO further stated that the authorized user's training was current and that he had no prior instances of violating licensee procedures or regulations.

The licensee submitted a written report to the NRC within 30 days of the initial report, as required by 10 CFR 20.2201. The inspector performed an in-office review of VQI's written report, dated May 30, 2013, and determined that it was consistent with the information provided by licensee staff during the inspection interviews.

Following the return of the gauge, VQI took the following corrective and preventative actions: 1) conducted a search for the missing gauge; 2) notified local authorities and the media of the missing gauge and offered a reward for its return; 3) suspended the authorized user involved in the event from employment for one week, and his authorization to use gauges was suspended for one month; 4) provided refresher training to all authorized gauge users on the requirements for the use and transport of portable gauges; 5) conducted a sealed source leak test on the gauge and sent it to a service provider for evaluation confirming that no contamination was present and no physical damage had occurred; 6) interviewed the individual that had found the gauge and conducted a dose evaluation confirming that no individual member of the public exceeded regulatory dose limits; and, 7) installed global positioning system tracking devices on its gauges.

#### Evaluation of Radiation Dose Estimate for Members of the Public

The inspector reviewed VQI's report to NRC dated May 30, 2013, which provided an assessment of radiation dose to members of the public who came in contact with the gauge and may have received radiation doses as a result of that contact. VQI based their dose assessment on information gathered through interviews with the individual who recovered the lost gauge and radiation surveys of the gauge.

The individual who recovered the gauge reported that when he saw the gauge, he stopped his vehicle, picked up the gauge, and placed it into the trunk of his car, which took about 5 minutes; he drove the vehicle with the gauge in the trunk for about 88 hours; and he handled the gauge for several minutes when he returned the gauge. The individual also reported that during the time the gauge was stored in the trunk of his car, his two children rode in the back seat of the car for about 2 hours each. With the assistance of a contract company, VQI estimated that the individual who recovered the gauge received no more than 26.4 millirem (mrem) of radiation dose, and his children received less than 1 mrem of radiation dose each.

Title 10 of the Code of Federal Regulations, Part 20.1301, "Radiation dose limits for individual members of the public," specifies that the total dose to individual members of the public from licensed operations must not exceed 100 mrem in a year.

The inspector noted that the Registry of Radioactive Sealed Sources and Devices Safety Evaluation for the gauge reports that the maximum dose rate at 10 cm from the gauge is 9.4 millirem per hour, and 0.4 millirem per hour at one meter. Based on the reported exposure times and distances, the inspector determined that the licensee's dose

assessment appeared reasonable and exposures to members of the public did not likely exceed the public dose limit of 100 millirem.

c. Conclusions

Apparent violations of NRC requirements were identified regarding VQI's failure to secure a shipment of licensed materials to prevent shifting during normal transportation conditions as required by 10 CFR 71.5 and 49 CFR 173.448(a), resulting in the loss of a portable nuclear gauge from May 3-May 15, 2013. During that time, the gauge was in an unrestricted area and not under the licensee's control and constant surveillance, as required by 10 CFR 20.1802; and the gauge was not secured by a minimum of two independent physical controls that form tangible barriers to secure the gauge from unauthorized removal, as required by 10 CFR 30.34(i).

**IV. Exit Meeting**

On December 5, 2013, an exit meeting was conducted via telephone to discuss the inspection results and the apparent violations. VQI acknowledged the inspection results, and provided the corrective and preventative actions contained in the report.

## **PARTIAL LIST OF PERSONS CONTACTED**

### **Licensee**

J. Joseph Zimmerman, Executive Vice President & CEO  
John C. Englerth, Health & Safety Director and Radiation Safety Officer  
Technician No. 1 (authorized user)  
Technician No. 2  
Technician No. 3

## **SUPPLEMENTAL INFORMATION**

OI Report 1-2013-021

## **INSPECTION PROCEDURES USED**

Inspection Procedure 87103, "Inspection of Material Licensees Involved in an Incident or Bankruptcy Filing." The Focus Elements addressed were 05.01 through 05.14.

## **LIST OF DOCUMENTS REVIEWED**

Utilization logs.

Training records.

Shipping papers.

Registry of Radioactive Sealed Sources and Devices, Safety Evaluation No. NC-646-D-130-S (document not publicly available).

NRC Event Notification No. 49000

VQI's Written Report to NRC dated May 30, 2013

NRC OI Report No. 1-2013-0021

## Factual Summary of NRC Office of Investigations Case No. 1-2013-021

On May 3, 2013, Valley Quarries, Inc. (VQI, a Pennsylvania licensee) reported to the NRC that a portable nuclear gauge had been lost during transport in West Virginia, where the licensee was working under reciprocity. During an NRC special inspection, the VQI employee who had been transporting the gauge acknowledged to the inspector that he had not secured the gauge because he was in a hurry. As a result, the gauge fell off of the back of the transport truck. The gauge was found by a member of the public who, approximately 12 days later, turned it over to the Pennsylvania Department of Environmental Protection (PADEP).

At the time of the event, the employee had worked for VQI for approximately 7 years, and for 2 1/2 years had been a nuclear gauge authorized user. The employee acknowledged to the investigator from the NRC Office of Investigations (OI) that he had received both computer-based and hands-on training on how to use and control gauges. The employee testified that, on the day of the event, he had been using a gauge to take compaction readings at a road construction site along I-81 in West Virginia. He had not been getting acceptable compaction readings and had to have workers roll over the location several times. The employee received a request from VQI to pick up a coworker from an equipment staging yard approximately 1-2 miles away. The employee testified to OI that his focus was on retrieving the coworker and quickly returning to the job and that, since he was only traveling a short distance, he didn't properly secure the gauge in the truck. Additionally, the employee testified that he knew at the time this violated the requirements for transportation of gauges. Instead, he placed the unsecured gauge in the truck bed and traveled to the staging yard, which required driving the truck in reverse for approximately 1/2 mile, maneuvering around some jersey barriers, and quickly crossing over to the other side of I-81 to get to the off ramp.

Upon arriving at the staging area, the employee identified that the tailgate was down and the gauge missing. The employee immediately returned to the work site, called his supervisor, and searched for the gauge before learning that a road crew worker had seen a man place the gauge in his car and drive away. The employee testified that he'd previously had trouble with the tailgate of the truck not fully securing, and he believed that this, coupled with the torturous travel path to the staging yard, resulted in the gauge falling from the truck. The employee also testified to OI that he had on previous occasions not secured the gauge when traveling very short distances.