



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

REGION IV  
1600 EAST LAMAR BOULEVARD  
ARLINGTON, TEXAS 76011-4511

September 17, 2018

EA-18-106

Jim Wright, Director of Safety and Health  
Terracon Consultants, Inc.  
10841 South Ridgeview Road  
Olathe, Kansas 66061

SUBJECT: NRC INSPECTION REPORT 030-32176/2018-002

Dear Mr. Wright:

This letter and the enclosed report refer to the announced inspection conducted on July 12, 2018, at your facility in Olathe, Kansas. The inspection was performed in response to a notification that a portable nuclear gauge had been transported improperly on a public highway in Lee's Summit, Missouri.

This inspection examined activities conducted under your license as they relate to public health and safety and to confirm compliance with the U.S. Nuclear Regulatory Commission's (NRC) rules and regulations and with the conditions of your license. Within these areas, the inspection consisted of an examination of selected procedures and representative records and interviews with personnel both directly and indirectly involved in the transportation event. The enclosed inspection report presents the results of this inspection. The inspector discussed the preliminary inspection findings with you and other members of your staff on July 12, 2018, at the conclusion of the onsite portion of the inspection. A final exit briefing was conducted telephonically with you on September 7, 2018.

Based on the results of this inspection, four 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 Web site at <http://www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html>. The apparent violations involved Terracon Consultants, Inc.'s failures to: (1) block and brace a portable nuclear gauge during transportation on public highways, (2) transport a portable nuclear gauge in its proper shipping container, (3) use a minimum of two independent physical barriers to secure a portable nuclear gauge from unauthorized removal when not under the control and constant surveillance of the licensee, and (4) maintain constant surveillance of a portable nuclear gauge that was not in storage. The circumstances surrounding these apparent violations, the significance of the issues, and the need for lasting and effective corrective action were discussed with you and your staff on September 7, 2018.

Since the NRC has not made a final determination in this matter, a Notice of Violation is not being issued for these apparent violations at this time. 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.

Before the NRC makes its enforcement decision, we are providing you an opportunity to: (1) respond to the apparent violations addressed in the inspection report within 30 days of the date of this letter; (2) request a predecisional enforcement conference (PEC); or (3) request alternative dispute resolution (ADR). If a PEC is held, it will be open for public observation and the NRC will issue a meeting notice to announce the time and date of the conference. Please contact Mr. Michael C. Hay, Chief, Materials Licensing and Inspection Branch, at 817-200-1455 within 10 days of the date of this letter to notify the NRC of your intended response. A PEC should be held within 30 days and an ADR session within 45 days of the date of this letter.

If you choose to provide a written response, it should be clearly marked as a "Response to Apparent Violations in NRC Inspection Report 030-32176/2018-002; EA-18-106" and should include for each apparent violation: (1) the reason for the apparent violation or, if contested, the basis for disputing the apparent violation; (2) the corrective steps that have been taken and the results achieved; (3) the corrective steps that will be taken; and (4) the date when full compliance will be achieved. Your response may reference or include previously docketed correspondence, if the correspondence adequately addresses the required response.

Additionally, your written response should be sent to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Director, Division of Nuclear Materials Safety, U.S. Nuclear Regulatory Commission, Region IV, 1600 E. Lamar Blvd., Arlington, TX 76011-4511, within 30 days of the date of this letter. If an adequate response is not received within the time specified or an extension of time has not been granted by the NRC, the NRC will proceed with its enforcement decision or schedule a PEC.

If you choose to request a PEC, the conference will afford you the opportunity to provide your perspective on these matters and any other information that you believe the NRC should take into consideration before making an enforcement decision. The decision to hold a PEC does not mean that the NRC has determined that a violation has occurred or that enforcement action will be taken. This conference would be conducted to obtain information to assist the NRC in making an enforcement decision.

The topics discussed during the conference may include information to determine whether a violation occurred, information to determine the significance of a violation, information related to the identification of a violation, and information related to any corrective actions taken or planned. In presenting your corrective actions, you should be aware that the promptness and comprehensiveness of your actions will be considered in assessing any civil penalty for the apparent violations. The guidance in NRC Information Notice 96-28, "Suggested Guidance Relating to Development and Implementation of Corrective Action," may be helpful, and is included on the NRC Web site at <http://pbadupws.nrc.gov/docs/ML0612/ML061240509.pdf>.

In lieu of a PEC, you may request ADR with the NRC in an attempt to resolve these issues. Alternative dispute resolution 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. Mediation is 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's ADR program can be obtained at <http://www.nrc.gov/about-nrc/regulatory/enforcement/adr.html>, as well as NRC brochure NUREG/BR-0317, "Enforcement Alternative Dispute Resolution Program" Revision 2 (Agencywide Documents Access and Management System (ADAMS) Accession ML18122A101). The Institute on Conflict Resolution at Cornell University has agreed to facilitate the NRC's program as a neutral third party. Please contact Cornell University at 877-733-9415 within 10 days of the date of this letter if you are interested in pursuing resolution of these issues through ADR.

In accordance with 10 CFR 2.390 of the NRC's "Agency Rules of Practice and Procedure," a copy of this letter and its enclosure, and your response, if you choose to provide one, will be made available electronically for public inspection in the NRC Public Document Room or in the NRC's ADAMS, accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy or proprietary information so that it can be made available to the public without redaction.

If you have any questions concerning this matter, please contact Mr. Michael C. Hay of my staff at 817-200-1455.

Sincerely,

/RA/ LLH for

Troy W. Pruett, Director  
Division of Nuclear Materials Safety

Docket: 030-32176  
License: 15-27070-01

Enclosure:  
NRC Inspection Report 030-32176/2018-002

cc w/Enclosure:  
Kimberly S. Steves, Chief  
State of Kansas Radiation Control Program  
Keith Henke, Director  
State of Missouri Radiation Control Program

NRC INSPECTION REPORT 030-32176/2018-002 - DATED September 17, 2018

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SIGNATURE	/RA/	/RA/	/RA/	/RA/	/RA/ E	/RA/ E	/RA/ LLH for
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**U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV**

Docket: 030-32176  
License: 15-27070-01  
Report: 2018-002  
EA No.: EA-18-106  
Licensee: Terracon Consultants, Inc.  
Location Inspected: Main office in Olathe, Kansas  
Inspection Dates: July 12, 2018, through September 7, 2018  
Exit Meeting Date: September 7, 2018  
Inspector: James L. Thompson, Senior Health Physicist  
Materials Licensing and Inspection Branch  
Approved by: Michael C. Hay, Chief  
Materials Licensing and Inspection Branch  
Attachment: Supplemental Inspection Information

## **EXECUTIVE SUMMARY**

### **Terracon Consultants, Inc. NRC Inspection Report 030-32176/2018-002**

#### **Program Overview**

Terracon Consultants, Inc. (Terracon) is authorized under NRC Materials License 15-27070-01 for the use of byproduct material, including cesium-137 and americium-241, in portable nuclear gauging devices in areas of exclusive Federal jurisdiction. On June 28, 2018, Terracon was using a portable nuclear gauge to perform asphalt compaction studies in Lee's Summit, Missouri, an area of exclusive Federal jurisdiction. (Section 1)

#### **Inspection Findings**

Four apparent violations of NRC requirements were identified involving Terracon's use of a portable nuclear gauge on June 28, 2018, in the State of Missouri. The apparent violations involved the failures to: (1) block and brace a portable nuclear gauge during transportation on public highways, (2) transport a portable nuclear gauge in its proper shipping container, (3) use a minimum of two independent physical barriers to secure a portable nuclear gauge from unauthorized removal when not under the control and constant surveillance of the licensee, and (4) maintain constant surveillance of a portable nuclear gauge that was not in storage. (Section 3)

#### **Corrective Actions**

Terracon's corrective actions included coaching the technician (gauge user) on the rules that were violated, suspending the technician for one week without pay, and requiring that the technician undergo the initial gauge manufacturer's training. Terracon also held a company-wide stand down meeting to discuss the incident and ensure that all employees understand the actual and potential consequences of the incident. Additionally, Terracon plans to provide company-wide refresher training on the importance of properly storing gauges and properly preparing gauges for transportation upon completion of work at temporary job sites. (Section 4)

## REPORT DETAILS

### 1 Program Overview (87124)

#### 1.1. Program Scope

Terracon Consultants, Inc. (Terracon) is authorized under NRC Materials License Number 15-27070-01 for the use of byproduct material, including cesium-137 and americium-241, in portable nuclear gauging devices in areas of exclusive Federal jurisdiction. In addition to its NRC license, Terracon is also licensed by the State of Kansas for the possession and use of portable nuclear gauges where its main office is located.

#### 1.2. Observations and Findings

On June 28, 2018, the day of the incident, Terracon was using a portable nuclear gauge under its NRC license to perform asphalt compaction studies in Lee's Summit, Missouri, an area of exclusive Federal jurisdiction.

### 2 Background Information

On June 28, 2018, an engineering technician for Terracon was working at a temporary job site in Lee's Summit, Missouri, performing asphalt compaction studies in the parking lot of a restaurant. At the conclusion of work, the technician placed the portable nuclear gauge (a Troxler Model 3430) on the lowered tailgate in the back of the pickup truck. The gauge was not placed back into its transportation case, nor was the gauge secured and properly blocked and braced in the bed of the vehicle. After placing the gauge on the tailgate next to the opened transportation case, the technician went to the cab of the vehicle to complete the paperwork for the day's activities.

After about 30 minutes of working on paperwork, the technician, apparently forgetting that the gauge was not properly prepared for transport, drove away from the site, and proceeded to take Highway 50 North, to I-470 West. Approximately 12 minutes from the project site, on I-470 westbound, at a road construction site near the Blue Ridge Boulevard Bridge, the technician was made aware that the transportation case had fallen out of the back of the truck by another driver that "flagged down" the technician.

The technician stopped the vehicle and observed that the gauge was still on the tailgate, but the Type A transportation case was missing. The technician immediately called the field office and informed a project engineer at Terracon what had happened. The project engineer instructed the technician to remain at that location until another Type A transportation container arrived. After securing the gauge in the new transport container, it was brought back to the Terracon office in Lanexa, Kansas. The original gauge transportation case was found damaged by the project manager and returned to the office. Upon return, the gauge was tagged out-of-service, and a leak test sample was taken and sent for analysis.

### **3 Inspection Findings (87124)**

#### **3.1 Inspection Scope**

An NRC inspector arrived onsite to perform an inspection of the event on July 12, 2018. The purpose of the inspection was to understand the circumstances surrounding the nature of the work being performed on the day of the event, and the reasons why the portable nuclear gauge was not properly controlled and transported.

#### **3.2 Observation and Findings**

- 10 CFR 71.5(a) requires, in part, that each licensee who transports licensed material outside the site of usage, as specified in the NRC license, or where transport is on public highways shall comply with the applicable requirements of the U.S. Department of Transportation (DOT) regulations in 49 CFR Parts 171 through 180 appropriate to the mode of transport.

49 CFR 173.448(a) requires, in part, that each shipment of Class 7 (radioactive) materials must be secured to prevent shifting during normal transportation conditions.

On June 28, 2018, a licensee portable nuclear gauge technician failed to secure a shipment of Class 7 radioactive materials to prevent shifting during normal transportation conditions. Specifically, the technician failed to secure a portable nuclear gauge to prevent movement when the technician transported the gauge on the tailgate of a pickup truck over public highways.

The licensee's failure to secure a portable nuclear gauge during transport on public highways to prevent shifting during normal transportation conditions was identified as an apparent violation of 49 CFR 173.448(a). (030-32176/2018-002-01)

- Condition 20 of NRC License 15-27070-01, Amendment 49, dated June 25, 2018, states, in part, that the licensee shall conduct its program in accordance with the statements, representations, and procedures contained in Section A, the licensee's application dated February 27, 2013. The procedures identified in the application, entitled "Terracon Radiation Safety Program," Section IV-1, "Transportation," states, in part, that nuclear source gauges will only be transported in their DOT-approved shipping containers.

On June 28, 2018, the licensee failed to transport a nuclear source gauge (portable nuclear gauge) in its DOT-approved shipping container. Specifically, a licensee technician transported a portable nuclear gauge outside of its DOT Type A shipping container, in the bed of a pickup truck, for approximately 6 miles on a public highway in Lee's Summit, Missouri. This transportation event occurred after the technician used the portable nuclear gauge at a temporary job site for asphalt compaction studies, and forgot to properly secure it in its transportation container as required by the licensee's safety procedures.



The licensee's failure to transport a portable nuclear gauge in its DOT-approved shipping container was identified as an apparent violation of Condition 20 of NRC License 15-27070-01, Amendment 49. (030-32176/2018-002-02)

- 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.

On June 28, 2018, the licensee failed to use a minimum of two independent physical controls that form tangible barriers to secure a portable gauge from unauthorized removal when not under the control and constant surveillance of the licensee. Specifically, a licensee technician failed to secure the gauge in the back of a pickup truck with any physical controls, and it remained in that condition for approximately 30 minutes, while the technician was inside of the cab of the truck doing paperwork. The technician subsequently drove off of the work site with the portable nuclear gauge still in an unsecured position on the tailgate of the truck for approximately 6 miles, until the technician was "flagged down" by a passing motorist.

The licensee's failure to use a minimum of two independent physical controls that formed tangible barriers to secure a portable gauge from unauthorized removal when the portable gauge was not under the control and constant surveillance of the licensee, was identified as an apparent violation of 10 CFR 30.34(i). (030-32176/2018-002-03)

- 10 CFR 20.1802 requires, in part, that the licensee shall control and maintain constant surveillance of licensed material that is in a controlled or unrestricted area and that is not in storage.

On June 28, 2018, the licensee failed to control and maintain constant surveillance of licensed material that was in a controlled or unrestricted area and was not in storage. Specifically, a licensee technician placed a portable nuclear gauge on the tailgate of a pickup truck at the conclusion of the work and conducted paperwork inside of the truck for approximately 30 minutes, failing to maintain constant surveillance of the gauge. The technician subsequently drove off of the work site with the gauge on the tailgate of the truck in an unsecured and uncontrolled manner.

The licensee's failure to control and maintain constant surveillance of licensed material that is in a controlled or unrestricted area and that is not in storage was identified as an apparent violation of 10 CFR 20.1802. (030-32176/2018-002-04)

### 3.3 Conclusions

The NRC identified four apparent violations regarding Terracon's failures to: 1) block and brace a portable nuclear gauge during transportation on public highways; 2) transport a portable nuclear gauge in its proper shipping container; 3) use a minimum of two independent physical barriers to secure a portable nuclear gauge from unauthorized removal when not under the control and constant surveillance of the licensee; and, 4) maintain constant surveillance of a portable nuclear gauge that was not in storage.

#### **4 Corrective Actions**

When the technician realized that he had been driving down the highway with the portable nuclear gauge sitting on the tailgate, the technician immediately pulled to the side of the road and called back to Terracon's main office to explain what had happened, and that the technician had lost the gauge transportation case somewhere along the way. The technician was instructed by a Terracon project engineer to remain at the location and that another transportation case would be brought out to the technician so that it could properly be transported back to the office.

Terracon conducted a company-wide stand down to discuss the incident and ensure that all employees understood the actual and potential consequences of the incident. Terracon's short-term corrective actions included coaching the technician on the rules that were violated, suspension of the technician for one week without pay, and requiring that the technician retake the initial gauge manufacturer's training course. Terracon's long-term corrective actions include plans to provide company-wide refresher training on the importance of properly storing the gauge and properly preparing gauges for transportation following completion of work at temporary job sites.

#### **5 Exit Meeting Summary**

The inspector presented the preliminary inspection findings at the conclusion of the on-site inspection in Olathe, Kansas on July 12, 2018; present at the preliminary exit meeting were Jim Wright, Director of Safety and Health, and Adam Maier, Terracon's radiation safety officer. On September 7, 2018, a final telephonic exit meeting was conducted with various members of Terracon's management. The licensee acknowledged the inspection findings and did not dispute any of the details presented during the exit call.

## SUPPLEMENTAL INSPECTION INFORMATION

### PARTIAL LIST OF PERSONS CONTACTED

Jim Wright, Terracon Director of Safety and Health  
Adam Maier, Terracon Radiation Safety Officer

### INSPECTION PROCEDURES USED

87124 Fixed and Portable Gauge Programs

### ITEMS OPENED, CLOSED, AND DISCUSSED

#### Opened

03032176/2018-002-01	APV	The failure to block and brace a portable nuclear gauge during transportation on public highways
03032176/2018-002-02	APV	The failure to transport a portable nuclear gauge in its proper shipping container
03032176/2018-002-03	APV	The failure to use a minimum of two independent physical barriers to secure a portable nuclear gauge from unauthorized removal when not under the control and direct surveillance of the licensee
03032176/2018-002-04	APV	The failure to maintain constant surveillance of a portable nuclear gauge that was not in storage

#### Closed

None

#### Discussed

None

### LIST OF ACRONYMS USED

ADAMS	Agencywide Documents Access and Management System
CFR	<i>Code of Federal Regulations</i>
NRC	Nuclear Regulatory Commission
PEC	Predecisional Enforcement Conference
APV	Apparent Violation