



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 EAST LAMAR BOULEVARD
ARLINGTON, TEXAS 76011-4511

October 27, 2023

EA-22-041
EA-23-032
EA-23-106

Jon C. O'Rullian, President
and Radiation Safety Officer
Radiation Solutions, LLC
229 Sugar Avenue
Sugar City, ID 83448

SUBJECT: RADIATION SOLUTIONS, LLC - NRC INSPECTION REPORTS
030-38691/2022-001, 030-38691/2022-002, AND 030-38691/2023-001;
AND INVESTIGATION REPORTS 4-2021-009 AND 4-2022-010

Dear Jon C. O'Rullian:

This letter refers to investigations conducted by the U.S. Nuclear Regulatory Commission (NRC) Office of Investigations. The purpose of these investigations was to determine whether an official at Radiation Solutions, LLC, willfully failed to confine the possession and use of byproduct material to the locations and purposes authorized in NRC License No. 11-35111-01. Investigation 4-2021-009 was initiated on August 18, 2021, and completed on May 12, 2022. Investigation 4-2022-010 was initiated on March 11, 2022, and completed on March 8, 2023. A factual summary of Investigation 4-2021-009, which substantiated willful behavior, is provided as Enclosure 1. Based on the evidence developed during the second investigation, 4-2022-010, the concern that an official from Radiation Solutions, LLC, willfully failed to confine the possession and use of byproduct material to the locations and purposes authorized in NRC License No. 11-35111-01 was not substantiated.

This letter also refers to the announced routine inspection conducted on January 27, 2022, at your facility in Sugar City, Idaho, with continued in-office review through September 27, 2023. The purpose of the inspection was to examine your licensed activities as they relate to public health and safety and to the NRC rules and regulations. Within these areas, the inspection consisted of an examination of selected procedures and representative records, observation of facilities, independent radiation measurements, and interviews with personnel. Enclosure 2 presents the results of the routine inspection. A final exit briefing was held via videoconference with you on October 5, 2023.

Based on the results of this inspection and the investigation, two 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 website at <http://www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html>. The apparent violations

both involve the failure to confine possession and use of byproduct material to the locations and purposes authorized in NRC License No. 11-35111-01.

Before the NRC makes its enforcement decision, we are providing you an opportunity to: (1) request a predecisional enforcement conference (PEC); or (2) request alternative dispute resolution (ADR) mediation. If a PEC is held, the PEC will be closed to public observation because information related to an Office of Investigations report will be discussed and the report has not been made public. Please contact Dr. Lizette Roldán-Otero at 817-200-1455 or by email at Lizette.Roldan-Otero@nrc.gov within 10 days of the date of this letter with your decision to either participate in a PEC or pursue ADR. 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 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 in preparing your response (Agencywide Documents Access and Management System (ADAMS) Accession No. ML061240509).

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 mediator. 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.

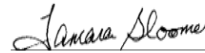
Additional information concerning the NRC's ADR program can be obtained at: <http://www.nrc.gov/about-nrc/regulatory/enforcement/adr.html>. The Institute on Conflict Resolution at Cornell University has agreed to facilitate the NRC's program as a neutral third party. Please contact the Institute on Conflict Resolution 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.

Since the NRC has not made a final determination in this matter, a Notice of Violation is not being issued for the apparent violations at this time. In addition, please be advised that the number and characterization of the apparent violations may change because 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 "Agency Rules of Practice and Procedure," a copy of this letter and its enclosures will be made available electronically for public inspection in the NRC Public Document Room or in the NRC's ADAMS, accessible from the NRC website at <http://www.nrc.gov/reading-rm/adams.html>.

If you have any questions concerning this matter, please contact Dr. Lizette Roldán-Otero of my staff at 817-200-1455.

Sincerely,



Signed by Bloomer, Tamara
on 10/27/23

Tamara E. Bloomer, Director
Division of Radiological Safety & Security

Docket No. 030-38691
License No. 11-35111-01

Enclosures:

1. Factual Summary of Investigation 4-2021-009
2. Combined NRC Inspection Report
030-38691/2022-001, 030-38691/2022-002,
030-38691/2023-001

cc w/Enclosures:

Landry Austin
INL Oversight Program Manager
Idaho Department of Environmental Quality
900 North Skyline Drive, Suite B
Idaho Falls, ID 83402

RADIATION SOLUTIONS, LLC - NRC INSPECTION REPORT 030-38691/2022-001, 030-38691/2022-002, AND 030-38691/2023-001, AND INVESTIGATION REPORTS 4-2021-009 AND 4-2022-020 – DATED OCTOBER 27, 2023

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ADAMS ACCESSION NUMBER: ML23283A331

SUNSI Review: ADAMS: Non-Publicly Available Non-Sensitive Keyword:
 By: ACR Yes No Publicly Available Sensitive NRC-002

OFFICE	ACES	MIB	MIB	BC:MIB	TL:ACES
NAME	ARoberts	KBischoff	JKatanic	LRoldan-Otero	JGroom
SIGNATURE	/RA/ E	/RA/ E	/RA/ E	/RA/ E	/RA/ E
DATE	10/03/23	10/5/23	09/27/23	09/29/23	10/12/23
OFFICE	RC	OE	NMSS	OGC	D:DRSS
NAME	DCylkowski	PSnyder	RSun	RAugustus	TBloomer
SIGNATURE	/RA/ E	/RA/ E	/RA/ E	/NLO/ E	/RA/
DATE	10/13/23	10/25/23	10/18/23	10/19/23	10/27/2023

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FACTUAL SUMMARY
NRC INVESTIGATION REPORT 4-2021-009

On August 18, 2021, the U.S. Nuclear Regulatory Commission (NRC), Office of Investigations (OI), Region IV, initiated an investigation to determine whether an official at Radiation Solutions, LLC (Radiation Solutions or licensee) in Sugar City, Idaho willfully failed to confine the possession and use of byproduct material to the locations and purposes authorized in the NRC license. The investigation was completed on May 12, 2022.

On or about April 12, 2021, during a remote inspection of a different NRC licensee in Gillette, Wyoming, an NRC Region IV inspector was provided documentation of the disposal of a fixed gauge by a State of Tennessee licensee, working in Wyoming under a reciprocity agreement with the NRC. The documentation indicated that on or about May 20, 2020, two cesium-137 (Cs-137) sources had been separated from the fixed gauge and shipped to Radiation Solutions. At that time, Radiation Solutions' NRC license authorized the licensee to perform work at customer locations, but not to take possession of, or receive, licensed material at its facility.

Past correspondence between the licensee official and the NRC indicate that the licensee official was aware that taking possession of Cs-137 sources was not authorized by the license. In license amendment requests dated August 12, 2019, and November 19, 2020, the licensee requested that the license be amended to authorize possession of licensed materials. (Both of these requests were denied by the NRC.) By applying to expand the activities authorized by the license, the licensee demonstrated knowledge of the existing limitations of the license.

Also, during this investigation, the licensee official stated in an interview with OI that they justified taking possession of the Cs-137 sources because they considered the Sugar City location to be a "temporary job site"; even so, in their words, "I knew I wasn't able to take possession."

Based on the evidence developed during the investigation, it appears that the official engaged in deliberate misconduct in violation of 10 CFR 30.10(a)(1) because the official took possession of two Cs-137 sources knowing that this would cause the licensee to be in violation of 10 CFR 30.3(a).

**U.S. NUCLEAR REGULATORY COMMISSION
REGION IV**

Docket No.: 030-38691

License No.: 11-35111-01

Inspection Report Nos.: 030-38691/2022-001
030-38691/2022-002
030-38691/2023-001

EA Nos.: EA-23-106
EA-22-041
EA-23-032

Licensee: Radiation Solutions, LLC

Locations Inspected: 229 Sugar Avenue
Sugar City, Idaho 83448

Inspection Dates: January 27, 2022, through March 8, 2023

Exit Meeting Date: October 5, 2023

Inspectors: Janine F. Katanic, PhD, CHP
Senior Health Physicist
Materials Inspection Branch
Division of Radiological Safety & Security, Region IV

Kyle Bischoff
Health Physicist
Materials Inspection Branch
Division of Radiological Safety & Security, Region IV

Allyce Bolger
Intergovernmental Liaison Project Manager
State Agreement & Liaison Program Branch
Division of Materials Safety, Security, State & Tribal
Programs, NMSS

Approved by: Lizette Roldán-Otero, PhD
Chief, Materials Inspection Branch
Division of Radiological Safety & Security, Region IV

Attachment: Supplemental Inspection Information

EXECUTIVE SUMMARY

Radiation Solutions, LLC (Radiation Solutions or licensee) NRC Inspection Report Nos. 030-38691/2022-001; 030-38691/2022-002; and 030-38691/2023-001

Radiation Solutions, LLC (licensee) is authorized under U.S. Nuclear Regulatory Commission (NRC) License number 11-35111-01, to use radioactive byproduct material incident to providing services at client or customer facilities. The service activities authorized under the license consist of installation, repair, servicing, relocation, removal of sources from, and performing radiation surveys of specified manufacturers and models of devices that contain radioactive sealed sources. The licensee is also authorized to package and repackage licensed materials for transport and shipping from customer facilities and to perform leak testing of sealed sources. Services are authorized to be provided at customer facilities. As a service provider, the licensee's activities impact the regulatory compliance of its customers who are other NRC and Agreement State licensees.

Title 10 of the *Code of Federal Regulations* (10 CFR) 30.3(a) states, in part, that no person shall receive, acquire, own, possess, or use byproduct material except as authorized in a specific or general license issued in accordance with the regulations in Chapter I.

The inspection and investigations identified multiple instances of the licensee's failure to confine its possession and use of byproduct material to the locations and purposes authorized in NRC License No. 11-35111-01. These instances involved: (1) the licensee's receipt, possession, and use of radioactive materials at locations that were not authorized by an NRC license; (2) the licensee receiving, acquiring, owning, possessing, or using byproduct material, in the form of radioactive isotopes that were not authorized by an NRC license; and (3) the licensee's use, through providing various services to customers, of device manufacturer and model numbers that were not authorized in an NRC license.

Two apparent violations were identified regarding the licensee's failure to receive and possess byproduct material as authorized in an NRC license. Deliberate misconduct is associated with one of the apparent violations.

REPORT DETAILS

1 Program Overview (Inspection Procedure (IP) 87126, IP 87141)

1.1 Program Scope

Radiation Solutions, LLC (Radiation Solutions or licensee) is authorized under U.S. Nuclear Regulatory Commission (NRC) License No. 11-35111-01 to use radioactive byproduct material incident to providing services at customer facilities. The activities authorized under the license consist of installation, repair, servicing, relocation, removal of sources from, and performing radiation surveys of specified manufacturers and models of gauging devices, electron capture detectors, self-shielded irradiators, calibrators, and stereotactic radiosurgery units. The licensee is also authorized to package and repackage licensed materials for transport and shipping from customer facilities and to perform leak testing of sealed sources. The authorized uses of the licensed material are for use incident to performing the authorized service activities at the customer facility. The customer facilities are referred to as temporary job sites while the licensee is onsite at the customer facility performing licensed activities. Customers are also referred to as clients for the purpose of this report.

The licensee also provides training to other NRC and Agreement State licensees in the areas of: Radiation Safety Officer (RSO) and authorized user for fixed nuclear gauges; RSO and authorized user for portable nuclear gauges; RSO and authorized user for well logging activities, U.S. Department of Transportation Class 7 (Radioactive) shipping and transport, and fundamentals of radiation safety. Additional services provided include performing audits of customer radiation safety programs to determine customer compliance with regulatory requirements.

As a service provider, the licensee's activities can impact many other NRC and Agreement State licensees. If Radiation Solutions does not comply with regulatory requirements, there can be regulatory and other unintended consequences for the customer licensees.

2 Service Provider Activities (IP 87126, IP 87141)

2.1 Inspection Scope

On January 27, 2022, the NRC conducted an announced routine inspection at the licensee's facility in Sugar City, Idaho. The inspection continued with in-office review of additional records provided by the licensee following the inspection. The scope of the inspection examined activities conducted under the Radiation Solutions license to confirm compliance with the NRC's rules and regulations and with the conditions of the license.

The inspectors also reviewed NRC Office of Investigations Reports 4-2021-009 and 4-2022-010.

The inspectors observed the licensee's facilities; reviewed records, procedures, and documents maintained by the licensee; performed independent radiation measurements; and interviewed licensee personnel. The inspectors also obtained and reviewed additional documents provided by the licensee to support the inspection activities.

2.2 Background

Radiation Solutions received its NRC license on May 29, 2014. This initial license only authorized the licensee to use and possess radioactive byproduct material incidental to installation, removal, repair, relocation, servicing, packaging, and shipping of specified manufacturer and model fixed and portable nuclear gauging devices. The license did not authorize the possession of radioactive material, but rather the incidental possession of such radioactive materials while performing services at customer facilities. The licensee operated the business from a personal residence in Rexburg, Idaho.

The licensee subsequently requested additional authorizations, and Amendment No. 1 was issued on August 13, 2015. The additional requests included expanding the licensee's authorization to include installation, initial radiation survey, repair, maintenance of components related to the radiological safety, relocation, replacement, alignment, or removal from service of specified manufactures and model numbers of self-shielded irradiators and gamma stereotactic radiosurgery units. The amendment also authorized the licensee to perform leak test collection and analysis. The licensee also relocated its operations to a small rented commercial office space in Rexburg, Idaho, which consisted of a one-room office.

Although the licensee was authorized to perform analysis of leak tests, there was no location of use of byproduct material authorized in the license where the leak tests would be analyzed. After significant follow-up by NRC, the licensee provided the requested information and license Amendment No. 3 was issued on February 9, 2017, authorizing the licensee to possess and store only leak test samples at its rented commercial office space in Rexburg, Idaho.

In the intervening years, several additional amendment requests resulted in the licensee receiving authority to perform various types of service on additional manufacturer and models of devices that contained radioactive sealed sources.

On November 19, 2020, the licensee submitted an amendment request to add a new location in Sugar City, Idaho. The licensee described that the location had been built for the purpose of gauge and irradiator service and repair. The licensee requested that the possession of various radioactive byproduct material in various quantities be authorized at the new location in Sugar City. This proposed request was a significant change in licensed activities because the licensee had only been authorized for possession of these types of radioactive byproduct materials, sources, and devices incidental to performing service at customer or client facilities. The licensee did not provide an adequate response to NRC's request for additional information regarding the new location, and the amendment request was not approved.

Amendment No. 11, issued on February 9, 2022, authorized additional manufacturer and models of devices, and changed the licensee's mailing address from its rented commercial office in Rexburg, Idaho, to the mailing address in Sugar City, Idaho. The license still did not authorize the possession or storage of radioactive byproduct materials at the Sugar City, Idaho, location. Amendment No. 11 continued to authorize the possession and storage of only leak test samples at the licensee's rented commercial office in Rexburg, Idaho.

Amendment No. 13, issued on April 7, 2022, authorized the licensee to use or store the licensed materials authorized on the license at its facility located in Sugar City, Idaho. The amendment also authorized the release of the rented commercial office in Rexburg, Idaho, for unrestricted use, and removed this as a location of possession and storage of leak test samples.

Subsequent amendment requests resulted in the licensee receiving authority to perform various types of service on additional manufacturer and models of devices that contained radioactive sealed sources.

2.3 Observations and Findings

2.3.1 Routine Inspection

In May 2021, the NRC attempted to perform a routine inspection of the licensee. However, the RSO informed the inspectors that they would be out of state and not be available during the proposed week. The RSO also informed the inspectors that Radiation Solutions no longer had the rented commercial office in Rexburg and that the office was located at the address in Sugar City, Idaho.

On May 10, 2021, the inspectors visited the location in Sugar City, Idaho. Outside of the Sugar City location, visible from the public street, the inspectors observed items on pallets, which included: self-shielded irradiator shielding; several 55-gallon drums with U.S. Department of Transportation "7A Type A" (Hazardous Radioactive Materials) markings with the licensee's rented commercial office in Rexburg, Idaho, as the shipping address; and pallets of fixed gauge shielding and parts from several manufacturers and model types.

A relative of the RSO was present at the facility, and with permission from the RSO, allowed the inspectors to observe portions of the interior of the Sugar City, Idaho, facility. The facility was approximately 2,400 square feet and appeared to be divided into a large workshop or storage area with a roll-up door, a work area with tools and equipment, an office space, a kitchenette with living area, and a room that was closed and could not be observed by the inspectors. The inspectors observed an NRC Form 3 "Notice to Employees" outside of the room that the inspectors were not able to observe. The fact that the form was posted was unusual since at the time of the visit, the Sugar City, Idaho, location had not been approved by the NRC as a location of use or storage of radioactive materials.

On January 27, 2022, an inspector performed the announced routine inspection. The RSO described the difficulties they had encountered in obtaining the financial assurance that NRC required in order to authorize the Sugar City, Idaho, location as a location of use or storage of radioactive byproduct materials. The licensee noted that they had twice unsuccessfully tried to get the license amended by the NRC to reflect the new address in Sugar City.

The inspector inquired as to whether the licensee had performed any activities involving radioactive byproduct material at the Sugar City location. The inspector informed the licensee that since they vacated the rented commercial office in Rexburg, where they had handled leak tests, they needed to provide the NRC with documentation, including radiation surveys, that the facility met the criteria to be released for unrestricted use.

The RSO acknowledged that since they vacated their rented commercial office in Rexburg, they had been performing leak test analysis services at the Sugar City location. The inspector observed the area where the licensee had its leak testing analysis equipment set up. The inspector informed the licensee that they were not authorized to use any radioactive byproduct materials at the Sugar City location, which included the analysis of leak tests.

The inspector observed the room that had been closed during the May 10, 2021, NRC visit. The room had two sections. One section was referred to by the licensee as the "containment room" for handling of radioactive materials and devices, and the other section was referred to by the licensee as the "source storage room." The licensee acknowledged to the inspector that they had "de-sourced" devices in the containment room in calendar years 2020 and 2021 but declined to provide any further information to support the inspection inquiry. The inspector inquired as to what radioactive materials were currently stored in the source storage room. The RSO stated that only exempt sources for checking the functionality of the licensee's instruments were stored in the room at the time of the inspection.

The inspector attempted to review the activities that the licensee had performed under its license. The licensee used a "Services Request form" to document the types of service it performed for its customers, which included: preventative maintenance, maintenance and repair, relocation, source reloading, device decommissioning, training, auditing, leak test sample collection and analysis, and gauge shutter checks. The licensee had difficulty producing records of all activities performed under the license. Often the records would only provide a customer name and types of service checked off on the form or would provide device serial numbers but not the manufacturer or model of the device, or the isotope and activity. For example, a form for a customer in Montana simply stated "leak tests and shutter checks of 26 gauges" but provided no further information about the manufacturer or model number of the gauges or the isotopes and activity involved.

Based on discussions with the RSO and a review of relevant records, on or about December 2017, Radiation Solutions packaged two Metorex (Oxford Instruments America, Inc.) Model HEPS X-ray fluorescence probes from an NRC licensee customer in Idaho. These devices were not authorized to be used by Radiation Solutions. One of the probes contained a 60 millicurie (mCi) americium-241 sealed source, and the other contained a 30 mCi curium-244 sealed source. In addition to Radiation Solutions not being authorized to use remove, or package Metorex Model HEPS devices, the Radiation Solutions license also did not authorize the licensee to use curium-244 sealed sources of any type. The RSO stated that they believed that they did not need to have this manufacturer and model authorized in the license because the customer possessed the gauge under an NRC general license rather than a specific license.

Based on discussions with the RSO and a review of relevant records, on or about April 2018, Radiation Solutions packaged one Texas Nuclear Model 5020 neutron backscatter gauging device from an NRC licensee customer in Montana. The Texas Nuclear Model 5020 contained a 200 mCi americium-241/beryllium sealed source. The device is intended to be used to locate liquid levels inside of chemical process equipment and is normally used for outside environments at chemical process plants. The device is portable and is intended to be moved to use locations throughout a facility and placed in

storage when not used. The Radiation Solutions license did not authorize the licensee to use, remove, transfer for disposal, or package the Texas Nuclear Model 5020. The licensee stated that this was a “portable gauge” and that they did not need to be authorized on the license because they only packaged and shipped it for disposal.

For a customer that was decommissioning its fixed gauges, the licensee stated that it brought a work trailer to the customer site in Wyoming. The licensee stated that it removed the gauges from various locations in the customer facility, and then removed the sources from the gauges in the work trailer. The licensee stated that it placed the removed sources into a “shield” which went into a 55-gallon drum. The licensee stated that they transported the drum to a freight forwarder in Idaho but could not locate the shipping records of that transport.

The licensee’s procedure OP-PRO-602, dated February 21, 2013, Rev. 1, predates when the licensee received its NRC license. Section 3.1, “Procedure Limitations,” stated that “Source removal from shielding will be performed only at the Radiation Solutions facility located in Rexburg, Idaho.” The date of this procedure also predates when the licensee rented the commercial space in Rexburg and therefore appears to be referring to the licensee’s personal residence in Rexburg, Idaho.

2.3.2 NRC Investigation 4-2021-009

On April 12, 2021, NRC inspectors performed a routine remote inspection of an NRC fixed gauge licensee located in Gillette, Wyoming. During the routine inspection the inspector reviewed fixed gauge disposal documents. Radiation Solutions assisted with the disposal. The disposal documents showed that a fixed gauge was disposed of on or around May 20, 2020. Documentation provided by the fixed gauge licensee disclosed that eight sealed sources were contained in the fixed gauge. The fixed gauge contained six californium-252 sealed sources and two cesium-137 sealed sources. The sealed sources contained in the fixed gauge were separated by isotope and were then shipped to different locations. The six californium-252 sealed sources were sent to an Agreement State licensee. The two cesium-137 sealed sources, containing 5.47 mCi and 5.29 mCi, were sent to the Radiation Solutions facility in Sugar City, Idaho. The possession of these two cesium-137 by Radiation Solutions, at the facility in Sugar City, Idaho, facility was not authorized by the license.

An Investigation was initiated by the NRC on August 18, 2021, to determine whether a Radiation Solutions official willfully failed to confine the possession and use of byproduct material to the locations and purposes authorized in an NRC license. Documentation provided to the NRC by Radiation Solutions identified several other instances of the licensee failing to confine its possession and use of byproduct material to the locations and purposes authorized in the license.

From February 12, 2020, to March 4, 2020, Radiation Solutions received and possessed, from multiple customers, approximately 419 mCi of cesium-137, at its facility in Rexburg, Idaho. Additionally, from May 13, 2020, to September 28, 2021, Radiation Solutions received and possessed, from multiple customers, approximately 2.054 Ci of cesium-137, 4.87 mCi of californium-252, 100 mCi of strontium-90, 150 mCi of nickel-63, and 2.27 mCi of cobalt-60, at their facility in Sugar City, Idaho. During these time frames, the licensee was not authorized to use, possess, or store any radioactive materials other than leak test samples at their rented commercial office in Rexburg, and was not

authorized to use, possess, or store any radioactive materials at its facility in Sugar City, Idaho.

2.3.3 NRC Investigation 4-2022-010

On February 2, 2022, NRC inspectors performed a routine remote inspection of an NRC exempt distribution licensee. This licensee distributes devices that contain carbon-14 sealed sources. The carbon-14 sealed sources are not exempt from NRC regulations and licensing requirements, but the approved device containing the carbon-14 sealed source can be distributed as an exempt device. When the source is installed in the device it can be distributed as an exempt device to end users and therefore can be disposed of by the end user of the device. For this device, the normal end users are environmental agencies and fire departments. The end user, who is the purchaser of the device and to whom the device was distributed by the NRC exempt distribution licensee, is exempt from regulatory requirements. The end user can dispose of the device containing the carbon-14 source as regular trash, following any local ordinances over such material. However, when the carbon-14 sources are removed from the device, they are no longer exempt and must be disposed of in accordance with NRC or Agreement State regulatory requirements.

During the routine inspection of the NRC exempt distribution licensee, it was discovered that the distribution licensee was using Radiation Solutions to dispose of carbon-14 sealed sources. The sealed sources each contained a nominal activity of 60 microcuries of carbon-14 and were originally distributed in exempt devices. The distribution licensee would occasionally receive the originally distributed devices back from the end users as part of normal service or for end-of-life disposal. If the device was no longer serviceable, the distribution licensee would remove the carbon-14 source from the device and set it aside for disposal. When enough carbon-14 sources had been set aside, the distribution licensee shipped the sealed sources to Radiation Solutions for disposal.

Disposal records provided by the distribution licensee identified that 313 sealed sources, each containing a nominal 60 microcuries of carbon-14, were transferred to Radiation Solutions for disposal between October 26, 2016, and July 30, 2021. Radiation Solutions received and possessed the sealed sources at their facilities in Rexburg and Sugar City. Radiation Solutions would hold and accumulate these carbon-14 sealed sources over a period before shipping them to a disposal site.

The NRC interviewed company officials and reviewed documents associated with the transfer and disposal of the 313 carbon-14 sealed sources. Company officials acknowledged engaging with the distribution licensee and receiving their carbon-14 sources for disposal. A Radiation Solutions company official asserted that they thought they could dispose of carbon-14, because they believed that carbon-14 was naturally occurring radioactive material (NORM). This same individual stated that their determination that carbon-14 was NORM was made after conducting online research through sites such as Wikipedia. The NRC reviewed 22 invoice documents between the distribution licensee and Radiation Solutions, none of which identified the material as NORM but instead identified the material as carbon-14 sources.

The NRC reviewed documents from Radiation Solutions for disposal of the carbon-14 sources, and none of the documents identified the material as NORM, but instead identified it as exempt. When asked to point out where on the Radiation Solutions

license it authorized the possession of carbon-14, a Radiation Solutions company official pointed to the portion of the license that authorizes “Any byproduct material with Atomic Numbers 1 through 96.” However, that section explicitly states possession of these byproduct materials is incident to performing leak tests. The same company official stated that Radiation Solutions did not perform leak tests for the distribution licensee for the carbon-14 sources.

2.4 Apparent Violations

The inspection and investigation identified multiple instances of the licensee: (1) receiving, possessing, and using radioactive materials at locations that were not authorized in the NRC license; (2) receiving, acquiring, owning, possessing, or using byproduct material (radioactive isotopes) that were not authorized by a specific or general NRC license; and (3) using (through providing services to customers) device manufacturer and model numbers that were not authorized in an NRC license.

The licensee received, possessed, and used radioactive materials at two locations that were not authorized in the NRC license: its facility in Rexburg, Idaho, and its facility in Sugar City, Idaho.

For its location in Rexburg, Idaho, a location that was not authorized in the NRC license for possession of radioactive material other than leak test samples, the inspection and investigations identified that: (1) between October 26, 2016, and August 7, 2020, 250 sealed sources, each containing a nominal activity of 60 microcuries of carbon-14, were received and possessed by the licensee; and (2) from February 12, 2020, to March 4, 2020, the licensee received approximately 419 mCi of cesium-137.

For its location in Sugar City, Idaho, a location that was not authorized in the NRC license, the inspection and investigations identified that: (1) from May 13, 2020, to September 28, 2021, the licensee received and possessed approximately 2.057 Ci of cesium-137, 4.87 mCi of californium-252, 100 mCi of strontium-90, 150 mCi of nickel-63, and 2.27 mCi of cobalt-60, and (2) from May 5, 2021, to July 30, 2021, the licensee received 63 sealed sources, each containing a nominal activity of 60 microcuries of carbon-14.

The licensee received, acquired, owned, possessed, or used byproduct material (radioactive isotopes) that were not authorized by an NRC license. The period that the licensee was not authorized possession and use of material was from October 26, 2016, to September 28, 2021. During this time, NRC License number 11-35111-01 was amended eight times, starting with Amendment No. 2 issued October 14, 2016, and ending with Amendment No. 10 issued November 26, 2019. All of these license amendments contained a standard license condition, License Condition 8, which authorized a maximum possession limit of each radionuclide. The license specifically stated, under License Condition 8 that “No possession is authorized.” This statement was included but was not limited to the following radionuclides: barium-133, cobalt-57, cobalt-60, nickel-63, cesium-137, americium-241/beryllium, radium-226, uranium-depleted in uranium-235, americium-241, and californium-252. Additionally, all of these amendments contained another license condition, License Condition 10, which stated “This license does not authorize the licensee to take possession of radioactive material from its clients.”

The only possession that the licensee was authorized for was for any byproduct material with atomic numbers 1 through 96, with a maximum possession limit of 10 mCi per radionuclide and 100 mCi total, limited to the use of possession incident to performing leak test and sample analysis for the licensee and as a commercial service. The type of material possessed under this authorization would, for example, be removable radioactive contamination contained on a wipe test sample and would not include sealed sources or devices.

The licensee received, acquired, owned, possessed, or used the following byproduct material (radioactive isotopes) that were not authorized by an NRC license: (1) carbon-14, (2) strontium-90, and (3) curium-244, materials that were not authorized to be possessed on the license. Since the inception of the license in 2014, up to and including the current license, Amendment No. 15, dated August 1, 2022, Radiation Solutions has not been authorized for the use of these three isotopes.

The licensee used (through providing services to customers) device manufacturer and model numbers that were not authorized in an NRC license. The licensee used or performed licensed activities including packaging and repackaging of devices for transport, removal, and shipping from customer facilities for transfer and disposal of sealed sources and devices, for manufacturer and model numbers of devices that were not authorized in the NRC license. This includes two Metorex (Oxford Instruments America, Inc.) Model HEPS X-ray fluorescence probes and one Texas Nuclear Model 5020 neutron backscatter gauging device.

Based on the inspection and investigations, two apparent violations of 10 CFR 30.3(a) were identified by the NRC. The first apparent violation involves the possession of two cesium-137 sealed sources at its facility and is based on the results of OI Investigation 4-2021-009, as described in Enclosure 1, Factual Summary of Investigation 4-2021-009. The second apparent violation involves multiple examples of the receipt, possession, and use of byproduct material not authorized in a specific or general license and is based on the results of OI Investigation 4-2022-010 and the NRC's routine inspection of the Radiation Solutions' service provider license.

Apparent violation of 10 CFR 30.3(a)

Title 10 CFR 30.3(a) requires, in part, that no person shall receive, acquire, own, possess, or use byproduct material except as authorized in a specific or general license issued in accordance with the regulations in Chapter I.

License Condition 10 of NRC License 11-35111-01, Amendment No. 10 states that the license does not authorize the licensee to take possession of radioactive material from its clients.

Contrary to the above, on May 20, 2020, Radiation Solutions received and possessed byproduct material not authorized in a specific or general license issued in accordance with the regulations in Chapter I. Specifically, Radiation Solutions received and deliberately took possession of two cesium-137 sealed sources at its facility. The cesium-137 sources contained approximately 5.47 millicuries and 5.29 millicuries, and the licensee was not authorized by its license to possess this byproduct material.

The licensee's ownership and possession of byproduct material in a manner not authorized in a specific license was identified as an apparent violation of 10 CFR 30.3(a). (030-38691/2022-002-01)

Apparent violation of 10 CFR 30.3(a)

Title 10 CFR 30.3(a) requires, in part, that no person shall receive, acquire, own, possess, or use byproduct material except as authorized in a specific or general license issued in accordance with the regulations in Chapter I.

License Condition 10 of NRC License 11-35111-01, Amendment Nos. 2 through 10, states that this license does not authorize the licensee to take possession of radioactive material from its clients.

Contrary to the above, Radiation Solutions received, possessed, and used byproduct material not authorized in a specific or general license issued in accordance with the regulations in Chapter I, as evidenced by the following five examples:

1. From February 12, 2020, to May 21, 2021, Radiation Solutions received, possessed, and used the following radioactive materials at the Radiation Solutions facility, a location that was not authorized in the NRC license:
 - approximately 2.47 curies of cesium-137
 - approximately 4.87 mCi of californium-252
 - approximately 2.27 mCi of cobalt-60
 - approximately 150 mCi of nickel-63
2. On September 28, 2021, Radiation Solutions received, possessed, and used approximately 100 mCi of strontium-90, in the form of a sealed source. The Radiation Solutions license did not authorize the licensee to use, receive, or possess strontium-90 sealed sources, at any location or in any form, except for possession incident to performing leak test and sample analysis.
3. From October 26, 2016, to July 30, 2021, Radiation Solutions received, possessed, and used 313 carbon-14 sealed sources, each with a nominal activity of 60 microcuries. The Radiation Solutions license did not authorize the licensee to use, receive, or possess carbon-14 sealed sources, at any location or in any form, except for possession incident to performing leak test and sample analysis.
4. On or about December 2017, Radiation Solutions packaged two Metorex (Oxford Instruments America, Inc.) Model HEPS X-ray fluorescence probes. One of the probes contained an approximately 60 mCi americium-241 sealed source, and the other contained an approximately 30 mCi curium-244 sealed source. The Radiation Solutions license did not authorize the licensee to use, remove, transfer for disposal, or package this manufacturer and model number device, Metorex Model HEPS, or to use any type of curium-244 sealed sources.
5. On or about April 2018, Radiation Solutions packaged one Texas Nuclear Model 5020 neutron backscatter gauging device containing an approximately 200 mCi americium-241/beryllium sealed source. The Radiation Solutions license did not authorize the licensee to use, remove, transfer for disposal, or package

this manufacturer and model number device, Texas Nuclear Model 5020 neutron backscatter gauging devices.

The licensee's ownership, possession, and use of byproduct material in a manner not authorized in a specific license was identified as an apparent violation of 10 CFR 30.3(a). (030-38691/2022-002-01; 030-38691/2022-002-02; 030-38691/2023-001-01)

3 Causal Evaluation

The inspectors did not perform a formal causal factors analysis as it was beyond the scope of the inspection. The inspectors did, however, make some observations regarding the apparent causal factors regarding the deficiencies identified.

The licensee maintains inadequate records of the types of activities performed, making regulatory review of the licensee's program very difficult. The NRC often learns of the licensee's activities through inspection of other NRC licensees that are the customers that utilize Radiation Solutions to perform various services.

4 Corrective Actions

The licensee submitted an amendment request regarding the Sugar City, Idaho, facility on January 20, 2022. The licensee requested that the license be amended to reflect the new facility in Sugar City, Idaho. The licensee withdrew this request on February 1, 2022, and stated that an additional request would be made to resolve the location request. An amendment request was made on February 3, 2022, requesting authorization for the possession of licensed material at its facility in Sugar City, Idaho. After additional communication with the NRC, and an onsite security review performed by the NRC, Amendment No. 13 was issued on April 7, 2022, which authorized the possession of licensed byproduct material at the licensee's facility in Sugar City, Idaho.

The licensee informed the inspector that they would develop a spreadsheet of all manufacturer and model numbers of devices that they are authorized to service so that they can more easily determine what services they can provide to customers. The RSO expected that after they developed the spreadsheet, they would submit an amendment to request several more manufacturer and model numbers added to the license.

The NRC has not received any corrective actions that pertain to confining possession and use to the byproduct material authorized by NRC license or the manufacturer and model number devices authorized by the NRC license. The licensee has not requested an amendment to receive, possess, or use strontium-90, carbon-14, or curium-244 sealed sources. The licensee has not requested an amendment to add the Metorex (Oxford Instruments America, Inc.) Model HEPS X-ray fluorescence probe and the Texas Nuclear Model 5020 neutron backscatter gauging device to the NRC license.

5 Conclusions

Two apparent violations were identified regarding the licensee's: (1) deliberate failure to receive and possess byproduct material as authorized in an NRC license; and (2) the failure to receive and possess byproduct material as authorized in an NRC license.

6 Exit Meeting

On October 5, 2023, a final exit meeting was conducted by videoconference with the Radiation Solutions owner/Radiation Safety Officer, to discuss the inspection and investigation findings. The NRC representatives discussed the content of the inspection report, described the NRC's enforcement process, and described the options for the licensee to: (1) request a predecisional enforcement conference, or (2) request alternative dispute resolution.

Supplemental Inspection Information

LIST OF PERSONS CONTACTED

Jon Charles O'Rullian, President and Radiation Safety Officer

INSPECTION PROCEDURES USED

IP 87126 Industrial/Academic/Research Programs
IP 87141 Limited Scope Academic and Research & Development Programs
Including Animal Use

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

030-38691/2022-002-01	AV	Deliberate failure to receive and possess byproduct material as authorized in an NRC license. (10 CFR 30.3(a))
030-38691/2022-001-01 030-38691/2022-002-02 030-38691/2023-001-01	AV	Failure to receive and possess byproduct material as authorized in an NRC license. (10 CFR 30.3(a))

Discussed

None

Closed

None

LIST OF ACRONYMS AND ABBREVIATIONS USED

10 CFR	Title 10 of the <i>Code of Federal Regulations</i>
ADAMS	Agencywide Documents Access and Management System
ADR	Alternative Dispute Resolution
AV	Apparent Violation
IP	Inspection Procedure
NORM	Naturally Occurring Radioactive Material
NRC	U.S. Nuclear Regulatory Commission
OI	U.S. NRC Office of Investigations
PEC	Predecisional Enforcement Conference
RSO	Radiation Safety Officer