



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

January 10, 2019

EA-18-153

Mr. Kevin Satterlee  
President  
Idaho State University  
Technical Safety Office  
921 S. 8th Ave, STOP 8310  
Pocatello ID, 83209-8310

SUBJECT: NRC INSPECTION REPORT 030-32322/2018-001 AND NOTICE OF VIOLATION

Dear Mr. Satterlee:

This letter refers to the inspection conducted on September 25-27, 2018, at the Idaho State University (ISU) facilities in Meridian and Pocatello, Idaho. The purpose of the inspection was to examine the corrective actions and self-assessment activities taken in response to the violations identified in 2017 (Agencywide Document Access and Management System (ADAMS) Accession ML18017A373) involving a lost source, and to evaluate activities conducted under the ISU broadscope license. The enclosed report presents the results of this inspection. The inspectors discussed preliminary inspection findings with the Radiation Safety Committee chairperson and the radiation safety officer at the conclusion of the on-site portion of the inspection. A final exit briefing was conducted (telephonically) with members of your staff on December 19, 2018.

Based on the results of this inspection, one apparent violation was identified and is 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 violation involved the failure to secure two portable gauges containing radioactive sources to prevent unauthorized access or removal. The circumstances surrounding the apparent violation, the significance of the issue, and the need for lasting and effective corrective actions were discussed with members of your staff at the inspection exit briefing on December 19, 2018.

The inspection results indicate inadequate management oversight for ISU's radiation protection program and a failure to prioritize resources for the radiation safety staff such that their responsibilities could be implemented. The NRC is concerned about ISU's ability to effectively control radioactive materials in its possession, exhibited by multiple violations identified during this inspection and the inadequate extent of condition review related to the violations involving the lost source.

Before the NRC makes its enforcement decision regarding the apparent violation, we are providing you an opportunity to request a predecisional enforcement conference (PEC) or request alternative dispute resolution (ADR). If a PEC is held, it will be open for public

observation and the NRC may issue a press release to announce the time and date of the conference. Please contact Mr. James L. Thompson at 817-200-1538 within 10 days of the date of this letter with your decision regarding whether to 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 action, you should be aware that the promptness and comprehensiveness of your actions will be considered in assessing any civil penalty for the apparent violation. The guidance in NRC Information Notice 96-28, "Suggested Guidance Relating to Development and Implementation of Corrective Action," may be helpful and is located 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 this issue. 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 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 these issues through ADR. Alternative dispute resolution sessions are not conducted with public observation though the outcome of the ADR agreement is made public.

In addition, 11 Severity Level IV violations were identified by the NRC during the inspection and are being cited in the Notice of Violation (Notice) in Enclosure 1. The Severity Level IV violations were evaluated in accordance with the NRC Enforcement Policy. Five of these violations (Violations A through E) involved conditions that were directly related to the root cause that ISU identified regarding the lost source, but were not identified as a part of an extent of condition review. All 11 violations were indicative of inadequate management controls and inappropriate radiation safety resource assignments as described in the subject inspection report.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice (Enclosure 1) when preparing the response. Information regarding the reason

for the violations, the corrective actions taken and planned to correct the violations and prevent recurrence, and the date when full compliance will be (was) achieved should be addressed. The NRC review of your response to the Notice will determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

In addition, please be advised that the characterization of apparent violation 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 "Agency Rules of Practice and Procedure," a copy of this letter, its enclosures, and your response, will be made available electronically for public inspection in the NRC Public Document Room and from 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. James L. Thompson of my staff, at 817-200-1538.

Sincerely,

/RA/

Troy Pruett, Director  
Division of Nuclear Materials Safety

Docket No.: 030-32322  
License No.: 11-27380-01

Enclosure:

1. Notice of Violation
2. Inspection Report 030-32322/2018-001

cc w/enclosures:

K. Martin, Manager  
Idaho Radiation Control Program

NRC INSPECTION REPORT 030-32322/2018-001 AND NOTICE OF VIOLATION - DATED  
January 10, 2019

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ADAMS ACCESSION NUMBER: **ML19011A015**

**Ltr & Enclosures:**

ADAMS:

☐ Non-Publicly Available

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Keyword:

☒ SUNSI Review By: JCD

☒ Yes ☐ No

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OFFICE	OGC	D:DNMS				
NAME	LBaer	TPruett				
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DATE	01/08/19	1/10/18				

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## NOTICE OF VIOLATION

Idaho State University  
Technical Safety Office  
Pocatello, Idaho

Docket No.: 030-32322  
License No.: 11-27380-01  
EA-18-153

During an NRC inspection conducted September 25-27, 2018, at the licensee's facilities in Meridian and Pocatello, Idaho, 11 Severity Level IV violations of NRC requirements were identified. In accordance with the NRC Enforcement Policy, the violations are listed below:

- A. 10 CFR 20.1904(a) requires, in part, that the licensee shall ensure that each container of licensed material bears a durable, clearly visible label that must provide sufficient information (such as the radionuclide(s) present, an estimate of the quantity of radioactivity, the date for which the activity is estimated, radiation levels, kinds of materials, and mass enrichment) to permit individuals handling or using the containers, or working in the vicinity of the containers, to take precautions to avoid or minimize exposures.

Contrary to the above, on September 26 and 27, 2018, the licensee failed to ensure that each container of licensed material bore a durable, clearly visible label that provided sufficient information (such as the radionuclide(s) present, an estimate of the quantity of radioactivity, the date for which the activity is estimated, radiation levels, kinds of materials, and mass enrichment) to permit individuals handling or using the containers, or working in the vicinity of the containers, to take precautions to avoid or minimize exposures.

Specifically, at the Eames Advanced Technical Education Innovations Complex, Center for Advanced Energy Studies, Idaho Accelerator Center, and the Main Campus at Idaho State University, numerous containers of radioactive materials did not have labels, while other containers did not have labels with all of the required information (such as estimated activity and date, isotope material, or radiation levels) to permit individuals working in the vicinity of the containers to take precautions to avoid or minimize exposures.

This is a Severity Level IV violation (NRC Enforcement Policy 6.3.d).

- B. License Condition 25 of Materials License 11-27380-01, Amendment 34 and License Condition 24 of NRC Materials License 11-27380-01, Amendment 35 require, in part, that the licensee conduct physical inventories every 6 months to account for all sealed sources possessed under the license.

Contrary to the above, from February to September 2018, the licensee failed to conduct a physical inventory every 6 months to account for all sealed sources possessed under the license. Specifically, the licensee failed to properly conduct an inventory by physically verifying each individual source was accounted for, and instead only verified that groups of sources were located where they were during a previous inventory.

This is a Severity Level IV violation (NRC Enforcement Policy 6.3.d).

- C. License Condition 30 B of NRC Materials License 11-27380-01, Amendment 35 requires, in part, that the licensee conduct its program in accordance with the

procedures contained in the Radiation Safety Manual. The Radiation Safety Manual, Revision 12, Section 11.1.1(3) requires, in part, that access to a contamination area is permissible only when under the supervision of senior Environmental Health and Safety department personnel.

Contrary to the above, from June through September 27, 2018, the licensee permitted access to contamination areas when staff were not under the supervision of senior Environmental Health and Safety Department personnel. Specifically, at the Eames facility, a contamination area glove box with powdered unsealed uranium was accessible by staff not under supervision of senior Environmental Health and Safety Department personnel.

This is a Severity Level IV violation (NRC Enforcement Policy 6.3.d).

- D. License Condition 31 M of NRC Materials License 11-27380-01, Amendment 34, and License Condition 30 M of NRC Materials License 11-27380-01, Amendment 35 require, in part, that the licensee conduct its program in accordance with the procedures contained in the application dated March 31, 2014. Procedure TS0-10-17, "Decontamination and Decommissioning Procedure," Revision 1, Step D.1 requires, in part, that surveys performed must be thorough and clearly documented so that others can understand them, and Step E requires, in part, that the postings in a decommissioned lab are only removed upon approval of the radiation safety officer.

Contrary to the above, from approximately July 2017 through September 27, 2018, the licensee failed to clearly document surveys so that others can understand them and removed postings in a decommissioned lab without approval of the radiation safety officer. Specifically, the postings in a decommissioned lab were removed prior to approval of the radiation safety officer, and if surveys were performed, they were not documented so that others could understand them.

This is a Severity Level IV violation (NRC Enforcement Policy 6.3.d).

- E. License Condition 30 B of NRC Materials License 11-27380-01, Amendment 35 requires, in part, that the licensee conduct its program in accordance with the procedures contained in the Radiation Safety Manual. The Radiation Safety Manual, Revision 12, Section 15(5) requires, in part, that before any radioactive materials can be transferred to another organization, authorization shall be obtained from the radiation safety officer.

Contrary to the above, from October 2011 to September 27, 2018, the licensee transferred radioactive materials to another organization and authorization was not obtained from the radiation safety officer. Specifically, radioactive materials transfers to other licensed entities in a research consortium at the Center for Advanced Energy Studies were not authorized by the radiation safety officer.

This is a Severity Level IV violation (NRC Enforcement Policy 6.3.d).

- F. 10 CFR 20.1902(e) requires, in part, that the licensee shall post each area or room in which there is used or stored an amount of licensed material exceeding 10 times the quantity of such material specified in Appendix C to 10 CFR Part 20 with a conspicuous

sign or signs bearing the radiation symbol and the words "CAUTION, RADIOACTIVE MATERIAL(S)" or "DANGER, RADIOACTIVE MATERIAL(S)."

Contrary to the above, on September 26 and 27, 2018, the licensee failed to post each area or room in which there was used or stored an amount of licensed material exceeding 10 times the quantity of such material specified in Appendix C to 10 CFR Part 20 with a conspicuous sign or signs bearing the radiation symbol and the words "CAUTION, RADIOACTIVE MATERIAL(S)" or "DANGER, RADIOACTIVE MATERIAL(S)." Specifically, conspicuous signs were not posted in radioactive material storage areas at the Eames Advanced Technical Education and Innovations Complex or at the Idaho Accelerator Center.

This is a Severity Level IV violation (NRC Enforcement Policy 6.3.d).

- G. License Condition 30 B of NRC Materials License 11-27380-01, Amendment 35 requires, in part, that the licensee conduct its program in accordance with the procedures contained in the Radiation Safety Manual. The Radiation Safety Manual, Revision 12, Section 11.1.1(2) requires, in part, that an area to control the spread or accidental intake of radioactive materials must be prominently posted as a contamination controlled area.

Contrary to the above, from June through September 27, 2018, the licensee failed to prominently post an area to control the spread or accidental intake of radioactive materials as a contamination controlled area. Specifically, the licensee had not provided contamination controlled area postings to the authorized users nor provided instruction where to place those postings.

This is a Severity Level IV violation (NRC Enforcement Policy 6.3.d).

- H. License Condition 31 B of NRC Materials License 11-27380-01, Amendment 34, and License Condition 30 B of NRC Materials License 11-27380-01, Amendment 35 require, in part, that the licensee conduct its program in accordance with the procedures contained in the Radiation Safety Manual. The Radiation Safety Manual, Revision 12, Section 9.1(3)(a) requires, in part, that routine radiological surveys evaluating both the strength of any radiation fields present and, as appropriate, the potential presence of radioactive material contamination need to be conducted at a regular periodicity, no less than monthly in labs where dispersible radioactive material is used.

Contrary to the above, from November 2017 through September 2018, the licensee failed to conduct routine radiological surveys evaluating both the strength of any radiation fields present and as appropriate, the potential presence of radioactive material contamination at a regular periodicity, no less than monthly in labs where dispersible radioactive material is used. Specifically, in multiple labs at the main campus and one lab in the Idaho State University Research Park, the licensee failed to conduct surveys at a regular periodicity, no less than monthly where dispersible radioactive materials were used.

This is a Severity Level IV violation (NRC Enforcement Policy 6.3.d).

- I. License Condition 31 B of NRC Materials License 11-27380-01, Amendment 34 and License Condition 30 B of NRC Materials License 11-27380-01, Amendment 35 require,

in part, that the licensee conduct its program in accordance with the procedures contained in the Radiation Safety Manual. The Radiation Safety Manual, Revision 12, Section 10.3 requires, in part, that: (1) potential radiation exposures from any source, or within any facility, are evaluated by the radiation safety officer or designee to determine protection and monitoring requirements; (2) work areas where radioactive materials have been used and storage areas for these materials should be surveyed for external exposure rates whenever changes are made in the quantities, locations or shielding; and (3) user laboratory survey frequencies are daily when radioactive materials are in use or as otherwise specified by Environmental Health and Safety.

Contrary to the above, from November 2017 through September 2018, the licensee failed to ensure that: (1) potential radiation exposures from any source, or within any facility, were evaluated by the radiation safety officer or designee to determine protection and monitoring requirements; (2) work areas where radioactive materials had been used and storage areas for these materials were surveyed for external exposure rates whenever changes were made in the quantities, locations or shielding; and (3) user laboratory survey frequencies were daily when radioactive materials were in use or as otherwise specified by Environmental Health and Safety.

Specifically, at a main campus environmental measurements lab: (1) the radiation safety officer did not evaluate the potential exposures to help individuals working in that area to control their own exposures; (2) the authorized user did not ensure that external exposure rate surveys were performed after the quantity of materials changed; and (3) daily surveys, or surveys as otherwise specified by Environmental Health and Safety, were not conducted for control and monitoring of the staff's external exposure to radiation.

This is a Severity Level IV violation (NRC Enforcement Policy 6.3.d).

- J. License Condition 31 B of NRC Materials License 11-27380-01, Amendments 32-34 and License Condition 30 B of NRC Materials License 11-27380-01, Amendment 35 require, in part, that the licensee conduct its program in accordance with the procedures contained in the Radiation Safety Manual. The Radiation Safety Policy Manual, Revision 12, Section 11.4(10) requires, in part, that fume hoods are to be tested at least annually.

Contrary to the above, from May 2016 through September 2018, the licensee failed to test the fume hoods at least annually.

This is a Severity Level IV violation (NRC Enforcement Policy 6.3.d).

- K. 10 CFR 20.1101(c) requires that the licensee shall periodically (at least annually) review the radiation protection program content and implementation.

Contrary to the above, from March 2, 2017, through September 24, 2018, the licensee failed to periodically (at least annually) review the radiation protection program content and implementation. Specifically, the licensee review for that time period was primarily a description of the Idaho State University broadscope program, but was not a complete review of the radiation protection program content and implementation.

This is a Severity Level IV violation (NRC Enforcement Policy 6.3.d)



Pursuant to the provisions of 10 CFR 2.201, Idaho State University Technical Safety Office is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, Region IV, 1600 E. Lamar Blvd., Arlington, Texas 76011, within 30 days of the date of the letter transmitting this Notice of Violation (Notice). This reply should be clearly marked as a "Reply to a Notice of Violation; EA-18-153" and should include for each violation: (1) the reason for the violation, or, if contested, the basis for disputing the violation or severity level; (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 previous docketed correspondence, if the correspondence adequately addresses the required response. If an adequate reply is not received within the time specified in this Notice, an order or a Demand for Information may be issued requiring information as to why the license should not be modified, suspended, or revoked, or why such other action as may be proper should not be taken. Where good cause is shown, consideration will be given to extending the response time.

If you contest this enforcement action, you should also provide a copy of your response, with the basis for your denial, to the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

Your response will be made available electronically for public inspection in the NRC Public Document Room or in 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, your response should not include any personal privacy or proprietary information so that it can be made available to the public without redaction.

If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information).

In accordance with 10 CFR 19.11, you may be required to post this Notice within 2 working days of receipt.

Dated this 10th day of January 2019

U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV

Docket: 030-32322

License: 11-27380-01

Report: 030-32322/2018-001

EA No.: EA-18-153

Licensee: Idaho State University  
Technical Safety Office

Locations Inspected: Center for Advanced Energy Studies  
995 University Boulevard, Idaho Falls, Idaho;

Idaho Accelerator Center  
1500 Alvin Ricken Drive, Pocatello, Idaho;

Eames Advanced Technical Education and Innovations Complex  
1999 Alvin Ricken Drive, Pocatello, Idaho;

Idaho State University Main Campus  
919 South 8th Street, Pocatello, Idaho;

Idaho State University Meridian Health Science Center  
1311 E. Central Drive, Meridian, Idaho.

Inspection Dates: September 25-27, 2018

Exit Meeting Date: December 19, 2018

Inspector: Jason Dykert, Health Physicist  
Materials Licensing and Inspection Branch

Accompanied by: Troy Pruett, Director  
Division of Nuclear Materials Safety

Approved By: James Thompson, Chief  
Materials Licensing and Inspection Branch

Attachment: Supplemental Inspection Information

## **EXECUTIVE SUMMARY**

### **Idaho State University Technical Safety Office NRC Inspection Report 030-32322/2018-001**

#### **Program Overview**

The Idaho State University Technical Safety Office is authorized to possess and use byproduct, source, and special nuclear material under the broadscope license for research and development, analysis, instruction, calibration, and animal studies at multiple facilities, in addition to the use of portable density/moisture gauges. (Section 1)

#### **Background Information**

This inspection followed-up on corrective actions taken in response to the licensee's second loss of sealed sources. The first loss was reported in 2010, documented in NRC Inspection Report 2010-001 (NRC's Agencywide Documents Access and Management System (ADAMS) Accession ML12053A232), which identified weaknesses in the ability to maintain accountability over sources and less than adequate management oversight for the program. The second loss was reported in 2017, documented in NRC Inspection Report 2017-001, (ADAMS Accession ML18017A373) and resulted in imposition of a civil penalty (EA-17-206).

This inspection identified similar weaknesses as the 2010 inspection which were related to problems with positive source control, ineffective comprehensive corrective actions, and inadequate problem ownership and management oversight. The root cause which led to the second loss of a source has not been addressed throughout the program and the violations from NRC Inspection Report 2017-001 were not closed. (Section 2)

#### **Inspection Findings**

One apparent violation of NRC requirements was identified which involved the control of two portable nuclear gauges in storage. Typically only one barrier was in place to prevent unauthorized removal, but during the NRC inspection, all of the barriers were removed and the gauges were left alone without constant surveillance by an authorized user.

In addition, 11 Severity IV level violations were identified that involved failures to label radioactive materials, conspicuously post "Caution, Radioactive Materials" in areas where radioactive materials were stored, properly perform physical inventories of sealed sources, follow decommissioning procedures for closing a research lab, post or supervise entry into contamination areas, obtain approval for transfer of radioactive materials to other research groups, perform area surveys and exposure monitoring surveys, calibrate fume hoods annually, and perform adequate annual audits of the broadscope radiation safety program. (Section 3)

#### **Corrective Actions**

The licensee immediately secured the portable nuclear gauges with two independent barriers after the inspectors identified the issue. The licensee initiated corrective actions to address the Severity Level IV violations while the NRC inspectors were onsite. Planned long-term corrective actions include recognizing the radiation safety officer's responsibilities as a full time position and not a collateral duty, improving change management with university staff turnover, and improving the radiation safety committee's oversight of the program. (Section 4)

## **Report Details**

### **1 Program Overview**

On September 25-27, 2018, an onsite routine inspection of Idaho State University's (ISU) Type A Academic broadscope license was conducted, as well as a follow-up inspection to the escalated enforcement that resulted from NRC review of a 2017 event report regarding a lost source, Event Notification Report 53012.

Idaho State University's (ISUs) broadscope license authorized possession and use of byproduct, source, and special nuclear materials in any form. In addition, ISU has three other NRC licenses including the isotope production or accelerator license (License: 11-27380-04, Docket: 030-38726), special nuclear materials license that authorizes uranium enriched in the isotope 235 (License: SNM 1373, Docket: 070-01374), and research test reactor license (License: R-110, Docket: 050-00284).

#### **1.1 Inspection Scope**

The inspectors evaluated activities conducted under ISU's broadscope license utilizing Inspection Procedure 87126, "Industrial/Academic/Research Programs," through observations of licensed activities, interviews with authorized users, review of procedures and the licensee's radiation safety manual, independently conducting physical inventories and radiation surveys, and a review of decommissioned facility release for unrestricted use.

Corrective actions and the licensee's self-assessment activities related to the lost source were reviewed utilizing Inspection Procedure 92722 and the guidance found in Inspection Manual Chapter 2800 for escalated enforcement follow-up. The inspectors reviewed the root causes identified by ISU, corrective actions taken to address each cause, and evaluated whether the event conditions or causes existed in other activities conducted under the broadscope license.

### **2 Background Information**

The 2018 inspection at ISU was announced two weeks in advance. Five days before it began, the radiation safety officer (RSO) resigned his responsibilities as RSO, despite having represented ISU at a predecisional enforcement conference regarding a lost source. Although he is still employed by ISU as a researcher, professor, and authorized user of radioactive materials, he was completely unavailable during the inspection. A newly appointed RSO, previously a senior health physicist at ISU, started the job 3 days before the inspection began.

Eleven Severity Level IV violations and one apparent violation were identified during this inspection. Many of the Severity Level IV violations were observed at multiple authorized locations of use during this inspection. The cause of many of the violations is attributed to inadequate problem ownership throughout the radiation safety organization and program. A breakdown in management controls and oversight, and ineffective corrective actions from the previous escalated enforcement were contributing causes to many of the violations.

Idaho State University's RSO has historically fulfilled multiple roles on campus as a researcher, professor, and authorized user as well as RSO. The accepted practice at ISU has been that the RSO position is performed as collateral duty. Because of this practice, many RSO's have not always taken the time to ensure that authorized users' have been meeting the basic requirements in the Radiation Safety Manual (RSM).

The RSM also places some radiation safety responsibilities on senior health physicists of the Environmental Health and Safety Department. However, at the time of inspection, there were no senior health physicists, as described in the RSM, on staff. Additionally the RSM does not have an established protocol for the RSO or Environmental Health and Safety staff to follow when authorized users are not meeting the RSM or the conditions of their permit.

If the RSO did not identify issues, the authorized users assumed that their current practices were acceptable, even though they may not have been in accordance with the RSM. The Radiation Safety Committee (RSC) management oversight of the RSO did not historically provide enough of a problem ownership expectation. The expectation was that the RSO duties could be performed as a collateral duty.

The most recent prior inspection of ISU's broadscope license was conducted onsite May 19-22, 2015, with an in-office review through March 30, 2016. This past inspection identified a security-related violation of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 37, and a violation of a license condition requiring use of tamper indicating tape (EA-16-033). Inspectors independently verified that the tamper tape left tamper indication if removed, and that the tape was in place on the source holder. The inspectors verified that the security-related violation of 10 CFR Part 37 was corrected, as described by ISU on the docket on May 10, 2016. Both of these violations are now closed.

## 2.1 Escalated Enforcement Follow-Up to Event Notification Report 53012 (IP 92722)

In October 2017, ISU identified and reported that they were unable to locate a nuclear accident dosimeter source, or locate any records that indicated a proper disposal. The NRC performed an in-office review of the event, and determined that two Severity Level III violations had occurred. The first violation was assessed a civil penalty against 10 CFR 20.1801 and 10 CFR 20.1802 for failing to properly store and control licensed materials, the second violation was a failure to accurately complete the submitted Materials Balance Report, as required by 10 CFR 74.13 (EA-17-206).

In a written response to the 2017 escalated enforcement, ISU stated that the root cause for losing the source and subsequent inaccurate inventories was a failure to fully document the disposition of the source and the informal method of controlling the internal ISU inventory.

During the inspection it became apparent that the root cause of the violations had not been addressed in other areas of the broadscope program. The inspectors noted that the inventory tracking software (HPA Assistant, commonly called "HP Assist,") had errors in it, and that the RSO and others within the organization were unaware of this issue. The inspectors identified several violations over the course of the inspection that were directly related to failures to fully document disposition of sources and an informal method of controlling inventory.

Examples included the failure to follow decommissioning (i.e., final documented disposition) procedures, documenting the RSO's approval of transfer (disposition) of materials to other licensed entities, incorrectly performing physical inventories, incorrectly labeling materials for inventory control, informally controlling access to contamination areas, and failing to secure or control sources for preventing their loss or unauthorized removal. These violations are documented in the enclosed notice and further described in Section 3 of this report.

The inspectors did not close the 2017 escalated enforcement violations during this follow-up inspection. However, the inspectors noted that ISU's direct response to the violations did correct the immediate issues. The Materials Balance Report had been updated and was accurate, and the inspectors independently verified this by conducting portions of the inventory with the RSO. The method of controlling the NRC's Nuclear Materials Management and Safeguards System (NMMSS) special nuclear inventory had been formalized and improved by the current RSO.

The special nuclear materials inventory has been updated such that ISU's internal inventory correlates one-to-one with the Department of Energy and the NRC material identifier codes, permit holder's program, and a unique ISU identifier for each special nuclear materials (SNM) container or source.

The inspectors independently conducted a partial verification of the SNM inventory at the Idaho Accelerator Center and Eames Complex. Idaho State University currently had five permit holders who possessed SNM, and reported all of the physical inventory on a NRC Form 742C. A materials balance report (Form 742) was compared with NMMSS Report TJ-45 (transactions report) and the physical inventory to verify that each record properly documented and accounted for disposals, loss, transfers, and current inventory of SNM.

At the time of inspection, ISU stated that the 13 nuclear accident dosimeter sources had been returned to the Department of Energy, which will be documented in the next annual cycle of NMMSS reports. The inspectors reviewed the most current copy of NMMSS Report D-3, which contained contact and administrative information, and noted that the form would need to be updated with the new RSO's information and the previous RSO contact information would need to be removed from the form.

### **3 Inspection Findings (IP 87126)**

While onsite at ISU, the inspectors requested to observe the portable gauge program operating under the broadscope license. Upon arriving at the storage area where the gauges were kept, the inspectors noticed that the gauges were completely unsupervised and unlocked, and that no formal controls were in place to prevent the loss of the gauges. This was not permitted by regulations, the authorized user's permit, or ISU's RSM, and was a failure to properly store and control licensed materials. This is not the first time that the NRC has identified a failure to control materials in storage. A violation of 10 CFR 20.1801 was identified in the 2017 escalated enforcement inspection report and was also an issue of concern regarding the lost sources in 2010.

The apparent violation partially resulted from a miscommunication between the RSO and the authorized user permitted for the portable gauges. The RSO communicated, by a

text message, to the authorized user requesting he provide access to the portable gauges for the NRC inspection. Based on this communication, the authorized user believed that the NRC inspectors and RSO were present at the facility where the gauges were stored, but did not verify this.

The authorized user unlocked a chain that secured the two portable gauges to a permanent shelf inside of a storage room and then made the decision to leave the building without verifying that the inspectors and RSO were present. The door to the storage room was left unlocked and open, the gauges were left without any barriers to prevent unauthorized removal, and no one was present to maintain constant surveillance of the gauges.

More than an hour later, the inspectors and RSO arrived at the facility. The inspectors discovered the gauges completely unsecured in the storage room, which was accessible by an unlocked parking lot entrance door, a hallway where the general public could receive student haircuts, or by the civil engineering building.

The inspectors examined the door to the storage room, which had a Caution, Radioactive Materials posting on it, as well as a sign that indicated the storage room door was to remain closed and locked at all times. The inspectors looked for any staff or faculty in the area, and eventually found two professors in the civil engineering department who stated that the storage room door was always left open so that students could access the equipment inside. During the day, the accepted practice was to have only one barrier to prevent unauthorized removal (the chain and locks) in place.

The authorized user did not remember that the requirement was to have two barriers in place and thought having the chain and locks for the two gauges was adequate. He thought that keeping the door closed and locked was an extra control in place, but not required. The authorized user left the facility without ensuring the gauges were under constant surveillance because of a miscommunication and misunderstanding that the RSO was responsible for the gauges and would provide constant surveillance. The new RSO was unaware that the accepted practice at ISU was to have only one barrier in place to prevent unauthorized removal of the portable gauges and had not been to the gauge storage area prior to the inspection.

#### **Apparent Violation of 10 CFR 30.34(i) and 10 CFR 20.1801**

Title 10 CFR 30.34(i) requires 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.

Title 10 CFR 20.1801 requires that the licensee shall secure from unauthorized removal or access licensed materials that are stored in controlled or unrestricted areas.

On September 27, 2018, the licensee failed to use a minimum of two independent physical controls that form tangible barriers to secure portable gauges from unauthorized removal when the portable gauges were not under the control and constant surveillance of the licensee, and did not secure from unauthorized removal or access, licensed materials that were stored in unrestricted areas. Specifically, the licensee removed the

locked chain that secured the two portable gauges from removal and then left the gauges unattended in a storage room open to the public.

The licensee's failure to use a minimum of two independent physical controls that form tangible barriers to secure portable gauges from unauthorized removal when the portable gauges were not under the control and constant surveillance of the licensee, and the failure to secure from unauthorized removal or access, licensed materials that were stored in unrestricted areas in accordance with 10 CFR 30.34(i) and 10 CFR 20.1801 was identified as an apparent violation. (030-32322/2018-001-01)

### **Severity Level IV Violations**

The 11 Severity Level IV violations identified below are cited the Notice of Violation in Enclosure 1 to this inspection report and were failures to meet NRC regulations and license conditions.

The root cause of losing the source in 2017 was, in part, due to the informal method of controlling the internal ISU inventory. This condition existed in Violations A-C but was not identified as a part of an extent of condition review. In addition, the root cause of losing the source in 2017 was, in part, due to a failure to document fully the disposition of that source. This condition existed in Violations D and E and was also not identified as a part of an extent of condition review.

#### **A. Labeling radioactive materials as required by 10 CFR 20.1904(a).**

While inspecting at the main campus, accelerator facility, Eames complex, and the Center for Advanced Energy Studies, the inspectors noted that storage safes, lockers, and cabinets did not all conform to the same labeling requirement. Some containers had labels for each radioactive material on the outside, but then some of those labels did not contain all of the required information. Some of the containers only had a general label on the outside "Caution, Radioactive Materials" but on the inside of those containers some materials were not labeled with all the required information. Some containers had logbooks on the top of them that indicated what materials were inside, however, the labels for each of the materials were not necessarily present. Some containers were not labeled.

The licensee's failure to ensure that each container of licensed material bears a durable, clearly visible label that must provide sufficient information (such as the radionuclide(s) present, an estimate of the quantity of radioactivity, the date for which the activity is estimated, radiation levels, kinds of materials, and mass enrichment) to permit individuals handling or using the containers, or working in the vicinity of the containers, to take precautions to avoid or minimize exposures, in accordance with 10 CFR 20.1904(a) was identified as a violation. (030-32322/2018-001-02)



B. Physical inventory of sealed sources as required by License Condition.

The inspectors identified that physical inventories were performed every 6 months, however, the inventories performed relied upon counting bags and groups of materials stored together. Some of those groups of materials were not labeled correctly, and each individual source was not identified and counted as part of the physical inventory performed. Idaho State University had not segregated the actively used sources from the non-active use sources. The inspectors observed that for non-active use sources, if labeled correctly and secured with tamper indicating devices, could have been inventoried as a group via a formal method for controlling the source inventory.

The licensee's failure to conduct a physical inventory every 6 months to account for all sealed sources possessed under the license, in accordance with its license was identified as a violation. (030-32322/2018-001-03)

C. Controlling contamination area entry as required by License Condition.

The contamination area entry controls were added to the RSM in June of 2018. The contamination area was defined as an area that may readily exceed 1,000 dpm/100 cm<sup>2</sup> beta gamma emissions and 100 dpm/100 cm<sup>2</sup> alpha. The RSO and RSC chairperson must designate the contamination areas in writing, and ensure that access is permissible only under the supervision of senior Environmental Health and Safety department personnel. At the Eames facility, a contamination area glove box with powdered unsealed uranium was accessible by staff not under supervision of senior Environmental Health and Safety department personnel.

The licensee's failure to permit access to contamination areas only under the supervision of senior Environmental Health and Safety Department personnel, in accordance with its license was identified as a violation. (030-32322/2018-001-04)

D. Following decommissioning procedures as required by License Condition.

The inspectors observed a hot lab that no longer had any "Caution, Radioactive Materials" postings, but was accessible by research faculty and student employees. Appropriate radiation surveys for the types of materials that had been used were not documented, nor could the RSO confirm that any were performed prior to removing the postings from the hot lab. Additionally, ISU had not required that the principle investigator provide initial decommissioning funding or that he request decommissioning prior to leaving the university.

The licensee's failure to clearly document surveys so that others can understand them and the failure to obtain radiation safety officer approval prior to removal of postings in a decommissioned lab, in accordance with its license was identified as a violation. (030-32322/2018-001-05)

E. Materials transfers approved by the RSO as required by License Condition.

Radioactive materials were transferred to other licensed entities working together with ISU in a research consortium, but were not authorized by the RSO. The RSO

would have approved of the transfers, and indirectly did, but the approvals were not documented in writing.

The licensee's failure to obtain authorization by the RSO prior to transferring radioactive materials to another organization, in accordance with its license was identified as a violation. (030-32322/2018-001-06)

F. Posting "Caution, Radioactive Materials," as required by 10 CFR 20.1902(e).

Postings were not placed in each area or room at the Eames complex or the accelerator facility where radioactive materials were used or stored. The inspectors observed that some areas or rooms had small postings incorporated into an 8x11 inch laminated sheet of paper, which included many other warnings or instructions. However, these laminated sheets were on multiple entrance or exit doors, were not conspicuous, and what areas or rooms the radioactive materials were stored in could not be discerned from those laminated sheets. In other areas, radioactive materials were stored, but the area was not posted.

The licensee's failure to post each area or room in which there is used or stored an amount of licensed material exceeding 10 times the quantity of such material specified in Appendix C to Part 20 with a conspicuous sign or signs bearing the radiation symbol and the words "CAUTION, RADIOACTIVE MATERIAL(S)" or "DANGER, RADIOACTIVE MATERIAL(S)", in accordance with 10 CFR 20.1902(e) was identified as a violation. (030-32322/2018-001-07)

G. Posting contamination controlled areas as required by License Condition.

The licensee recently added the definition of contamination controlled areas to the RSM, i.e., an area that may readily exceed 70 dpm/100 cm<sup>2</sup> beta or gamma emissions and 7 dpm/100 cm<sup>2</sup> alpha in June of 2018. The licensee had not implemented the changes made in June prior to the September 2018 inspection. The licensee designated these areas to control the spread or accidental intake of radioactive materials, but had not defined what areas needed to be posted as such, like the exhaust access panel from an unsealed materials fume hood or glove box. Posting labels and instructions for each authorized user had not been provided at the time of inspection.

The licensee's failure to prominently post an area to control the spread or accidental intake of radioactive materials as a contamination controlled area, in accordance with its license was identified as a violation. (030-32322/2018-001-08)

H. Area monitoring surveys as required by License Condition.

The RSM requires routine radiological surveys that evaluate both the strength of any radiation fields present and as appropriate, the potential presence of radioactive material contamination. Section 9 of the RSM is focused on area contamination surveys, which are required to be conducted no less than monthly in labs where dispersible radioactive material are used. However, in various labs at the main campus and one lab in the Idaho State University Research Park, surveys were not conducted at least monthly when dispersible radioactive materials were used. The inspectors requested an authorized user provide the survey maps used to perform

these surveys. The authorized user could not locate the maps, nor demonstrate that monthly surveys were routinely performed.

The licensee's failure to conduct routine radiological surveys evaluating both the strength of any radiation fields present and as appropriate, the potential presence of radioactive material contamination at a regular periodicity, no less than monthly in labs where dispersible radioactive material is used, in accordance with its license was identified as a violation. (030-32322/2018-001-09)

I. Exposure evaluation surveys as required by License Condition.

Section 10 of the RSM focuses on control and monitoring of personnel's external exposure to radiation. The inspectors observed that in the environmental monitoring lab on the main campus, small amounts of materials were used daily and physical surveys were not being performed. The authorized user using materials needed an evaluation from Environmental Health and Safety to demonstrate physical surveys would not detect exposure and calculative surveys were appropriate, or, physical surveys needed to be performed for all materials used in the lab. The documentation evaluating personnel exposure could not be located, and physical surveys were not performed daily.

The RSM requires that: (1) potential radiation exposures from any source, or within any facility, are evaluated by the RSO or designee to determine protection and monitoring requirements; (2) work areas where radioactive materials have been used and storage areas for these materials should be surveyed for external exposure rates whenever changes are made in the quantities, locations or shielding; and (3) survey frequencies are daily when radioactive materials are in use or as otherwise specified by Environmental Health and Safety.

The licensee's failure to ensure that the requirements of Section 10 of the RSM were followed as directed by its license was identified as a violation. (030-32322/2018-001-10)

J. Fume Hood calibration as required by License Condition.

The Radiation Safety Policy Manual, Revision 12, Section 11.4(10) requires, in part, that fume hoods are to be tested at least annually. Fume hoods at the Eames facility, and on the main campus had not been tested for airflow at least annually, however some fume hoods at the Center for Advanced Energy Studies facility had been tested annually.

The licensee's failure to test fume hoods at least annually, in accordance with its license was identified as a violation. (030-32322/2018-001-11)

K. Review of the radiation protection program content and implementation as required by 10 CFR 20.1101(c).

The inspectors noted that the review of the radiation protection program content and implementation, commonly referred to as the annual audit, only contained descriptions of the broadscope program and its current activities. However, the

annual audit did not review the radiation protection program content and implementation.

Idaho State University's license contains a commitment to use the example audit found in the NRC's Program-Specific Guidance About Licenses of Broadscope, NUREG-1556, Volume 11 as a guide to review of the radiation protection program content and implementation. The guidance provided in NUREG-1556, Volume 11, on page 8-27 states, in part, regarding annual audits that in a Type A broadscope program, the RSC assists executive management in performing this oversight function. Detailed written procedures should be developed and implemented for the operation of the RSC to ensure that appropriate oversight is provided.

The guidance further states, in part, that the RSC should be fully aware of the operations and activities of the RSO. The RSC should conduct periodic interactive management audits and evaluations of the radiation safety program's performance, including: nonconformance reports, corrective action, status reports and audits, incident investigation reports, ALARA program development and implementation, effluent releases, qualification and radiological safety training, and performance of the RSO. Licensees should report results of the RSC's audit and program reviews to executive management to allow for timely remedial actions sufficient in scope to ensure safe operations and compliance with NRC regulations and license conditions.

At ISU, the RSC did not document periodic evaluations of the program and of the performance of the RSO, or report results of the reviews to executive management. Instead the RSO reviewed his own performance in implementing the radiation protection program. Idaho State University's annual audit was inadequate in part, because of the issue described above, and because it did not identify any of the 11 Severity Level IV violations identified during this inspection.

The licensee's failure to periodically (at least annually) review the radiation protection program content and implementation, in accordance with its license was identified as a violation. (030-32322/2018-001-12)

### 3.1 Additional Inspection Information

The inspectors identified another problem on the license related to the authorized locations of use, in that one location of use had been decommissioned, but not removed from the license, one location had changed names without being updated on the license, and another facility had two different names listed on the license. The license also authorized higher activity amounts of unsealed transuranic isotopes which were not in use, ISU had no plans to use, and were concerning because controls over those types of isotopes required dedicated facilities and equipment that were not in place at ISU. After discussing these issues with the RSO during the inspection, he stated that the license needed to be reviewed and corrected in various areas.

In the cover letter to the license, the NRC states, "You should review this license carefully and be sure that you understand all conditions." The licensee's RSM states that the RSC will review all amendments and changes to the broadscope license and that the RSO will ensure compliance with applicable license conditions. The RSC may have expected that the RSO would review and correct the license if needed, as well as update it when facilities are no longer used, however neither the RSC nor the RSO

completed that review. The issue of correcting the license was viewed as a minor violation related to recordkeeping, and is not cited in the enclosed Notice even though it requires correction.

The Technical Safety Office keeps records related to physical inventories, RSC safety meetings, dosimetry, bioassays, leak testing of sealed sources, surveys made by the RSO or the environmental health and safety staff, equipment calibrations, annual audits, equipment maintenance, ordering, receiving, shipping, and disposing of materials, training certifications, materials in storage, decommissioning activities, active permits, and other radiation program documents. A partial review of these documents was performed during this inspection.

Decommissioning and release of the Airport facility, located at the Inspection Technology and Development Laboratory, in Pocatello, Idaho, was conducted by ISU since the previous routine inspection. The Airport facility was authorized as a receiving center for research materials used under the broadscope license, and used for accelerator research and industrial radiography. The inspectors reviewed the decommissioning procedures authorized by the broadscope license, and determined that ISU did not need a specific license amendment to conduct the decommissioning activities at the Airport Facility.

The inspectors reviewed the decommissioning report prepared by the licensee in regard to releasing the facility to the City of Pocatello, and did not identify any issues. The licensee performed and documented appropriate surveys and identified that all components from the accelerator research conducted at the Airport facility were transferred to the Idaho Accelerator Center.

All sources used at the Airport facility tested negative for removable contamination. A specific decommissioning plan that was different than what is authorized under the license was not needed, and residual radioactive contamination was not detected at the facility, therefore, screening values were not reached. The licensee's final report did not include a summary paragraph describing what decommissioning group the facility fell under, or an executive summary with the RSO's signature. The current RSO stated that ISU would add these items to future decommissioning reports.

### 3.2 Conclusions

The violations identified during this inspection and the previous inspections indicate that ISU is struggling to maintain positive controls over radioactive materials, and that there has been a significant breakdown of management controls over the broadscope program. Past corrective actions have not been effective in preventing similar issues of significance from occurring. The licensee has not placed appropriate resources into the RSO duties in order to effectively implement a successful radiation protection program.

Organizational changes in recognizing the RSO's responsibilities as a full time position and not a collateral duty and providing RSC oversight and evaluation to the RSO in addition to procedures for evaluating permittee performance would improve the licensee's program. Managing change within the university considering staff turnover, financial obligations and decommissioning requirements for radioactive materials should be a priority. Improving the radiation safety committee's oversight of the broadscope

license in addition to uniformly implementing similar requirements under the other three licenses held by ISU would lead to long-term program improvement.

#### **4 Corrective Actions**

Idaho State University began correcting many of the Severity Level IV violations shortly after the onsite inspection concluded, and has continued to make improvements as discussed during the exit meeting.

Regarding the apparent violation for the two portable gauges, the licensee immediately locked the gauges to the permanent shelving in the storage-room, and closed and locked the door to that room. Two barriers were then in place while the inspectors were present. The licensee had the door lock changed the next morning so that only the RSO could access the room, and moved the portable gauges to the Environmental Health and Safety vault in the physical sciences building a week later. The licensee is currently working to permanently transfer the sources out of ISU inventory. These corrective actions have been placed on the docket in ADAMS under Accession ML18292A693.

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

An exit meeting was held on December 19, 2018, where the significance of these issues were discussed with ISU's president, the RSC chairperson, RSO and other management representatives. The licensee did not dispute any of the violations and understood the options provided in the cover letter to this report.

## **SUPPLEMENTAL INSPECTION INFORMATION**

### **PARTIAL LIST OF PERSONS CONTACTED**

John Longley, Radiation Safety Officer  
Clark Weaver, Environmental Health and Safety Director  
John Stoner, Radiation Safety Committee Chairperson

### **INSPECTION PROCEDURES USED**

Inspection Procedure 87126: Industrial/Academic/Research Programs

Inspection Procedure 92722: Follow Up Inspection For Any Severity Level I or II Traditional Enforcement Violation or for Two or More Severity Level III Traditional Enforcement Violations in a 12 Month Period

### **ITEMS OPENED, CLOSED, AND DISCUSSED**

#### **Opened**

030-32322/2018-001-01	AV	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
030-32322/2018-001-02	VIO	Failure to properly labeling radioactive materials
030-32322/2018-001-03	VIO	Failure to perform physical inventory of sealed sources
030-32322/2018-001-04	VIO	Failure to control contamination area entry
030-32322/2018-001-05	VIO	Failure to following decommissioning procedures
030-32322/2018-001-06	VIO	Failure to obtain RSO authorization prior to transferring radioactive materials
030-32322/2018-001-07	VIO	Failure to post and area or room with a conspicuous sign indicating the presence of radioactive materials
030-32322/2018-001-08	VIO	Failure to prominently post an area to control the spread or accidental intake of radioactive materials as a contamination controlled area
030-32322/2018-001-09	VIO	Failure to conduct routine radiological surveys
030-32322/2018-001-10	VIO	Failure to conduct exposure evaluation surveys
030-32322/2018-001-11	VIO	Failure to test fume hoods at least annually

030-32322/2018-001-12      VIO

Failure to periodically, at least annually, review the radiation protection program content and implementation

Closed

None

Discussed

None

#### ACRONYMS USED

ADAMS - Agencywide Documents Access and Management System  
ADR - Alternative Dispute Resolution  
AV - Apparent Violation  
CFR - Code of Federal Regulations  
cm<sup>2</sup> - square centimeters  
dpm - Disintegrations per minute  
EN - Event Notification  
ISU - Idaho State University  
NMMSS - Nuclear Materials Management and Safeguards System  
NRC – U.S. Nuclear Regulatory Commission  
RSC - Radiation Safety Committee  
RSM - Radiation Safety Manual  
RSO - Radiation Safety Officer  
PEC - Predecisional Enforcement Conference  
SNM - Special Nuclear Materials