



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
612 EAST LAMAR BLVD, SUITE 400
ARLINGTON, TEXAS 76011-4125

April 27, 2011

EA-11-022
NMED: 100595 and 110078

Pat Downey
Director of Montana Operations
Luzenac America, Inc.
767 Old Yellowstone Trail
Three Forks, Montana 59752

SUBJECT: NRC REACTIVE INSPECTION REPORT 99990001/2010-005 AND NOTICE OF VIOLATION

Dear Mr. Downey:

This letter refers to the reactive inspection conducted on December 3, 2010, at your facilities near Three Forks, Montana, with continued in-office review through March 24, 2011. The purpose of the inspection was to review the circumstances surrounding a fixed gauge that was discovered at a recycling center in Bozeman, Montana, and determined to be the property of Luzenac America, Inc. The preliminary findings were discussed with Mr. Ron Hyatte of your staff at the conclusion of the onsite portion of the inspection. You provided additional information regarding this event via emails dated December 14, 2010, (ML103550428), and February 7, 2011, (ML110390223). A final exit briefing was conducted telephonically with you and members of your staff on March 24, 2011. The enclosed report presents the results of this reactive inspection.

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 inadvertent transfer of a generally licensed fixed gauge containing radioactive material to a recycling center that was not authorized to receive it. Employees at the recycling center notified the NRC of the transfer when it was discovered in their scrap yard. The circumstances surrounding this apparent violation, the significance of the issue, and the need for lasting and effective corrective action was discussed with you and members of your staff during the inspection exit meeting on March 24, 2011. As a result, it may not be necessary to conduct a predecisional enforcement conference in order to enable the NRC to make an enforcement decision.

You should be aware that Section 2.3.4 of the NRC Enforcement Policy states that for violations involving the loss, abandonment, or improper transfer or disposal of a sealed source or device, the NRC should normally exercise discretion when proposing the imposition of a civil penalty of at least the base amount. Since the apparent violation involves the improper transfer of a fixed gauging device containing a nominal 50 millicuries of cesium-137, the NRC is considering

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proposing imposition of a civil monetary penalty. The base civil penalty amount is based on approximately three times the expected average cost of authorized disposal; however, the NRC may consider adjusting the civil penalty amount to a more appropriate base amount if you can demonstrate that three times the actual cost of disposal would be significantly less than the base amount. However, NRC will not normally decrease the civil penalty to an amount below the lowest base civil penalty for such cases, i.e., \$3,500.

Before the NRC makes its enforcement decision, we are providing you an opportunity to (1) respond to the apparent violation addressed in this inspection report within 30 days of the date of this letter, or (2) request a Pre-decisional Enforcement Conference (PEC). If a PEC is held, it will be open for public observation and the NRC will issue a press release to announce the time and date of the conference. If you decide to participate in a PEC, please contact Vivian Campbell at 817-860-8287 within 10 days of the date of this letter. A PEC should be held within 30 days of the date of this letter.

If you choose to provide a written response, it should be clearly marked as a "Response to An Apparent Violation in NRC Inspection Report 99990001/2010-005; EA-11-022" and should include for the apparent violation: (1) the reason for the apparent violation, or, if contested, the basis for disputing the apparent violation; (2) the corrective steps that have been taken and the results achieved; (3) the corrective steps that will be taken to avoid further violations; and (4) the date when full compliance will be achieved. Your response may reference or include previously docketed correspondence, if the correspondence adequately addresses the required response. If an adequate response is not received within the time specified or an extension of time has not been granted by the NRC, the NRC will proceed with its enforcement decision or schedule a predecisional enforcement conference.

If you choose to request a PEC, the conference will afford you the opportunity to provide your perspective on the apparent violation and any other information that you believe the NRC should take into consideration before making an enforcement decision. The topics discussed during the conference may include the following: 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 to be taken. 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 violation.

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

In addition to the apparent violation listed above, the NRC has determined that a Severity Level IV violation of NRC requirements occurred. The violation is cited in the enclosed Notice of Violation (Notice) and involved the improper disposal of seven tritium exit signs. It is being cited in the Notice because the NRC identified it.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. For your consideration and convenience, NRC Information Notice 96-28, "Suggested Guidance Relating to Development and Implementation of Corrective Action," is enclosed. If you have additional information that you believe the NRC

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should consider, you may provide it in your response to the Notice. The NRC review of your response to the Notice will also determine whether further enforcement action is necessary to ensure compliance with regulatory requirements.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosures, and your response, if you choose to provide one, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC's 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 Vivian Campbell of my staff at 817-860-8287.

Sincerely,

/RA Charles L. Cain for/

Roy Caniano,
Director, Division of Nuclear Materials Safety

Docket: 99990001
License: General Licensee

Enclosures:

1. Notice of Violation
2. Inspection Report 99990001/2010-005
w/Attachment
3. NRC Information Notice 96-28

cc w/ Enclosures 1 and 2:
Montana Radiation Control Program Director

Rob VanAusdol, Manager
Pacific Steel & Recycling
315 West Griffin Drive
Bozeman, Montana 59715

Luzenac America, Inc.
EA-11-022

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NOTICE OF VIOLATION

Luzenac America, Inc.
Montana Operations
Three Forks, Montana

Docket: 99990001
License: General Licensee

During an NRC reactive inspection conducted from December 3, 2010, through March 24, 2011, a violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the violation is listed below:

10 CFR 31.5(c)(8)(i) states that any person who acquires, receives, possesses, uses or transfers byproduct material in a device pursuant to the general license in paragraph (a) of this section shall transfer or dispose of the device containing byproduct material only by export as provided by paragraph (c)(7) of this section, by transfer to another general licensee as authorized in paragraph (c)(9) of this section, or to a person authorized to receive the device by a specific license issued under parts 30 and 32 of this chapter, or part 30 of this chapter that authorizes waste collection, or equivalent regulations of an Agreement State, or as otherwise approved under paragraph (c)(8)(iii) of this section.

Contrary to the above, between February 15, 1988, and February 7, 2011, pursuant to the general license in paragraph (a) of this section, the general licensee failed to transfer or dispose of the device containing byproduct material only by export as provided by paragraph (c)(7) of this section, by transfer to another general licensee as authorized in paragraph (c)(9) of this section, or to a person authorized to receive the device by a specific license issued under parts 30 and 32 of this chapter, or part 30 of this chapter that authorizes waste collection, or equivalent regulations of an Agreement State, or as otherwise approved under paragraph (c)(8)(iii) of this section. Specifically, the general licensee disposed of seven tritium exit signs that were located at the Yellowstone Mine near Ennis, Montana, and did not use one of the approved methods in 10 CFR 31.5(c)(8)(i).

This is a Severity Level IV violation (Section 6.7).

Pursuant to the provisions of 10 CFR 2.201, Luzenac America, Inc. 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, 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-11-022" and should include for the 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 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.

Because your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC's Web site at <http://www.nrc.gov/reading-rm/adams.html> to the extent possible, it should not include any personal privacy, proprietary, or safeguards 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 two working days of receipt.

Dated this 27th day of April 2011.

U.S. Nuclear Regulatory Commission
Region IV

Docket: 99990001
License: General Licensee
Report No.: 99990001/2010-005
EA: 11-022
General Licensee: Luzenac America, Inc.
Location: Bozeman and Three Forks, Montana
Dates: December 3, 2010, through March 24, 2011
Inspector: Jason Razo, Health Physicist
Nuclear Materials Safety Branch A
Approved By: Vivian Campbell, Chief
Nuclear Materials Safety Branch A
Attachment: Supplemental Inspection Information

EXECUTIVE SUMMARY

Luzenac America, Inc.
NRC Inspection Report 99990001/2010-005

This was a reactive inspection to review the circumstances surrounding the improper transfer of a fixed gauge to an unauthorized recipient and the improper disposal of tritium exit signs. The inspection included surveys and interviews at a steel recycling center in Bozeman, Montana. In addition, the inspection included record reviews and interviews with Luzenac America, Inc. staff in Three Forks, Montana. This report describes the findings of the inspection.

Background

In 1984, Cyprus Industrial Minerals purchased four generally licensed fixed gauges containing radioactive sealed sources of cesium-137 and seven generally licensed exit signs containing radioactive hydrogen-3 (tritium) for use at Yellowstone Mine near Ennis, Montana. In 1992, Luzenac America Inc., a subsidiary of Rio Tinto, purchased Yellowstone Mine from Cyprus Industrial Minerals. The purchase included the generally licensed devices. In 1995, three of the four cesium-137 fixed gauges were transferred to Amersham Corporation, an authorized recipient. (Section 2)

Inspection Findings Considered for Escalated Enforcement

Luzenac America, Inc. inadvertently transferred a generally licensed fixed gauge containing cesium-137 to a recycling center, along with other scrap metal, in June 2010, from the Yellowstone Mine. This improper transfer was identified as an apparent violation of 10 CFR 31.5(c)(8)(i). (Section 6)

Inspection Findings Considered for Non-Escalated Enforcement

In February 2011, Luzenac America, Inc. reported that seven tritium exit signs could not be located. Luzenac America, Inc. stated that the signs likely were used in a backfilled section of the mine that was no longer accessible. This improper disposal was identified as a Severity Level IV violation of 10 CFR 31.5(c)(8)(i). (Section 7)

Selected Corrective Actions

- On December 8, 2010, Luzenac America, Inc. contracted with a gauge servicing company to take possession of the gauge at the recycling center, and conducted a search for seven tritium exit signs that had been in its possession. (Section 5)
- Luzenac America, Inc.'s longer-term corrective actions included activities to control licensed material, to train its staff to identify markings on gauges, and to develop a program to survey outgoing scrap metal shipments for radiation. (Section 5)

Report Details

1 Inspection Overview (87103)

1.1 Inspection Scope

This reactive inspection reviewed the circumstances surrounding the improper transfer of a fixed gauge from Luzenac America, Inc. to Pacific Steel & Recycling (PS&R) (EN46466). In addition, the inspection reviewed the circumstances surrounding the improper disposal of tritium exit signs that were in the possession of Luzenac America, Inc. (EN46596).

1.2 Observations and Findings

The inspector reviewed photographs provided by PS&R personnel, performed radiation surveys of the fixed gauge, and evaluated the security of the gauge at PS&R. The inspector interviewed the staff at PS&R and discussed their activities related to the discovery and handling of the gauge.

The inspector reviewed historical radiation safety program documents with the Safety and Health Manager at Luzenac America, Inc. The inspector reviewed and evaluated emails and reports submitted by Luzenac America, Inc. The inspector reviewed historical information on the docket in NRC's Agencywide Document Access and Management System (ADAMS) and in the NRC's General Licensee Tracking System (GLTS). The NRC contacted Thermo Fisher Scientific to gather details on the transactions involving the fixed gauge. The NRC contacted Isolite, the tritium exit sign manufacturer, to attempt to gather details on any transactions involving the tritium exit signs. Collectively, the documents reviewed, the personnel interviewed, and the observations made by the inspector represented the facts used in this report.

2 Background and Event Chronology (87103)

2.1 Inspection Scope

The inspector discussed historical radioactive material use with the Safety and Health Manager of Luzenac America, Inc. and reviewed documents associated with radioactive material purchases and disposition. In addition, the inspector researched reporting records located in NRC's ADAMS and GLTS.

2.2 Acquisition and Use

Cyprus Industrial Minerals had been a mining and milling company with operations at Yellowstone Mine near Ennis, Montana, and at Three Fork Mill in Three Forks, Montana. In 1984, the company purchased four Kay-Ray/Sensall, Inc. model 7062B fixed gauges, serial numbers 15146, 17238, 17572, and 17573. Two of the fixed gauges each contained a nominal 100 mCi sealed source of radioactive cesium-137, the other two contained sources with activities of 50 mCi of cesium-137. The fixed gauges were used at Yellowstone Mine until a new ore sorting device became operational in 1988.

In 1992, Luzenac America Inc., purchased the operations of Yellowstone Mine and Three Forks Mill, among other assets. Included in the acquisition was the transfer of the

fixed gauges containing radioactive material. Licensee documents showed that in 1995, Luzenac America transferred three of the four fixed gauges to an authorized recipient, Amersham Corporation (serial numbers 15146, 17238, and 17572). The fourth fixed gauge (serial number 17573) later was discovered at PS&R on December 1, 2010. The current Safety and Health Manager was unable to determine where this gauge had been stored between the time it was taken out of service and the time it was discovered at PS&R.

In addition to the four fixed gauges discussed above, in 1988 Cyprus Industrial Minerals purchased seven generally licensed exit signs that contained 25 Ci of tritium each from Self-Powered Lighting, Inc. The tritium exit signs were used at Yellowstone Mine.

2.3 Conclusions

Cyprus Industrial Minerals, and subsequently Luzenac America, Inc., possessed four fixed gauges and seven tritium exit signs. Three of the four fixed gauges were returned to an authorized fixed gauge recipient in 1995.

3 **Onsite Inspection Findings (87103)**

3.1 Inspection Scope

The inspector reviewed the circumstances leading to the arrival, discovery, and identification of the fixed gauge at PS&R. The inspector reviewed the safety and security of the fixed gauge at PS&R. The inspector interviewed staff and reviewed records at Luzenac America, Inc. facilities in Three Forks, Montana, to evaluate compliance with 10 CFR 31.5(8)(i).

3.2 Observations and Findings

Pacific Steel & Recycling

On December 1, 2010, a radiation detector, Ludlum model 3500-1000, identified radiation levels greater than background levels when a truck transporting a load of scrap metal to a smelter passed through PS&R's portal radiation detector.

Following PS&R's procedure, the truck returned all of its contents to the main scrap area at the rear of PS&R's facility. Using a large, cab-operated magnetic metal handling machine, PS&R workers separated the returned scrap load. One of the workers identified the fixed gauge by the yellow radiation symbol and with a handheld portable radiation detection instrument. The instrument was a Ludlum Model 192 meter, which detected radiation rates in the microR per hour range with a calibration due date of March 29, 2011.

After discussions with the PS&R management, the workers were instructed to locate any identifiable information on the fixed gauge and to contact the NRC. On December 2, 2010, a representative of PS&R briefed the NRC by telephone. Information provided to the NRC included the radiation levels around the fixed gauge, model and serial number, and status of the fixed gauge. The trained worker measured radiation levels of up to 4 mR per hour on contact with the exterior of the fixed gauge. This measurement indicated that the shielding around the radioactive source inside the fixed gauge was

intact. The label on the fixed gauge indicated that it was a Kay-Ray/Sensall model 7062B, and the serial number was 17573. The representative also stated that the gauge was placed in a metal cylinder and locked in a standalone shed at the rear of the facility.

The NRC used two separate internal data management systems to attempt to locate the origin of the fixed gauge. Eventually, the NRC verified the relationship between Cyprus Industrial Minerals and Luzenac America, Inc. The NRC then contacted the Safety and Health Manager at Luzenac America, Inc. about the gauge.

On December 3, 2010, the NRC inspector arrived onsite at PS&R. The inspector verified the radiation dose rates using a Thermo Electron Model RAD EYE G gamma radiation survey instrument, NRC serial number 086965, with a calibration due date of June 2, 2011. The basic shape of the fixed gauge was cylindrical with a diameter of six inches and a height of ten inches. The inspector measured radiation exposure rates of 4 mR per hour on contact with the shielded sides of the fixed gauge. In the direction of the exit port at one end of the cylinder with the shutter in place, the maximum radiation exposure rate was 109 mR per hour on contact.

The metal container, in which PS&R workers placed the fixed gauge while in storage, provided additional shielding that decreased the external radiation exposure rates. The inspector measured background radiation levels at the exterior of the shed. As a result, the inspector concluded that workers at PS&R would not be exposed to excess radiation while the fixed gauge was stored in this configuration.

Luzenac America, Inc. - Three Forks and Sappington

The inspector reviewed Luzenac America, Inc.'s compliance with 10 CFR 31.5(8)(i). This regulation outlines acceptable methods for transferring generally licensed fixed gauges of this type. Those methods include, in part: (1) by export, (2) by transfer to another general licensee, and (3) by transfer to a person authorized to receive the device under a specific license.

Prior to arriving at Luzenac America, Inc.'s Three Forks Mill in Three Forks, Montana, the NRC had contacted the Safety and Health Manager for Luzenac America, Inc. and briefed him on the findings from NRC's database. The findings indicated that Luzenac America, Inc. owned the fixed gauge located at PS&R, and that Luzenac America, Inc. was in possession of seven tritium exit signs. Later on December 3, after completing the reviews at PS&R, the inspector traveled to Luzenac America, Inc.'s Three Forks Mill where he discussed his findings at PS&R with the Luzenac America, Inc. Safety and Health Manager. The Safety and Health Manager reaffirmed the relationship between the current and previous mine and mill owners, and stated that his predecessor last had contact with the NRC in 2001.

The Safety and Health Manager and the inspector researched historical files for information on the fixed gauges and exit signs. The purchase records at Luzenac America, Inc. showed that four fixed gauges had been purchased, and that three of the four fixed gauges had been transferred to an authorized recipient in 1995. This meant that the only radioactive material unaccounted for was the tritium exit signs, since the fourth fixed gauge had been recently discovered.

The licensee began its search for the tritium exit signs on December 6, 2010, the first available opportunity that the Yellowstone Mine was open. Luzenac America, Inc. was not able to locate the exact location where the tritium exit signs had been used in the mine. The licensee believed that the signs were in use in a part of the mine that is no longer active and has been backfilled. The licensee reported these signs missing, by telephone, on February 7, 2011. As a result, the licensee's failure to dispose of the generally licensed tritium exit signs in accordance with NRC regulations was identified as a violation of violation of 10 CFR 31.5(c)(8)(i). (99990001/2010-005-02)

A summary timeline is provided below.

Timeline

- 1984 Four Cs-137 generally licensed fixed gauges purchased and received by Cyprus Industrial Minerals for use at Yellowstone Mine near Ennis, Montana.
- 1988 The four units removed from service due to line upgrades.
- 1988 Seven tritium exit signs purchased for use at the mine.
- 1992 Luzenac purchased Cyprus Industrial Minerals.
- 1995 Three of four fixed gauges containing Cs-137 were transferred to Amersham.
- 2001 Last Cs-137 device reported as "whereabouts unknown" on a NRC General Licensee Registration questionnaire.
- 2010 Yellowstone Mine underwent extensive clean-up during the summer. Scrap metal was consolidated for recycling.
- 2010 Load of scrap metal delivered to Pacific Steel from Yellowstone Mine, late summer.
- 2010 December 1, Cs-137 device tripped exit portal monitors at Pacific Steel in Bozeman, Montana. The gauge was found and NRC is notified on December 2.
- 2010 December 3, inspector arrived onsite to verify radiation levels and security.
- 2010 December 14, Thermo Fisher Scientific took custody of fixed gauge, and returned to Texas.
- 2011 Luzenac America, Inc. declared the tritium exit signs missing.

Luzenac America, Inc. provided status updates to the NRC by email dated December 14, 2010, (ML103550428), and by letter dated February 7, 2011, (ML110390223) The licensee could not determine where the fourth gauge had been

stored prior to its discovery at PS&R, but believed it remained at the Yellowstone mine. However, Luzenac America, Inc.'s inadvertent transfer of a generally licensed fixed gauge containing a sealed source with cesium-137 to a scrap yard controlled by PS&R, an entity not authorized to receive the device, was identified as an apparent violation of 10 CFR 31.5(c)(8)(i). (99990001/2010-005-01) This apparent violation is being considered for escalated enforcement.

3.3 Conclusions

The inspector identified an apparent violation of 10 CFR 31.5(c)(8)(i) involving the transfer of a fixed gauge containing cesium-137 to PS&R, an entity not authorized to receive the licensed material. In addition, the inspector identified a violation of 10 CFR 31.5(c)(8)(i) for disposing of tritium exit signs in a manner not authorized by NRC regulations.

4 **Radiation Dose Assessment**

4.1 Inspection Scope

The inspector interviewed the workers at PS&R. The inspector reviewed independent radiation surveys of the fixed gauge at PS&R. The inspector discussed the operations at Yellowstone Mine with the Safety and Health Manager, and the inspector reviewed the 30-Day Report submitted by Luzenac America, Inc. dated February 7, 2011 (ML110390223).

4.2 Observations and Findings

Various PS&R employees were near the fixed gauge after it was discovered at the scrap yard. However, they followed the radiation principles of time, distance, and shielding in order to minimize their radiation exposure and keep doses as low as reasonably achievable. The inspector asked each individual to estimate his time near the fixed gauge and at approximately what distance from the fixed gauge that the time was spent. When the cylindrical fixed gauge was vertically oriented, like a coffee can, radiation dose rates were indistinguishable from background levels at approximately 15 feet from the fixed gauge. The workers confirmed that when handling or moving the fixed gauge, it was kept in this vertical orientation.

The dose reconstruction and estimate was focused on the individual that spent the most time handling the fixed gauge. Through interviews and recreations, one individual estimated that he spent a maximum of 20 minutes within 15 feet of the gauge from December 1 through December 3, 2010. Of the 20 minutes, two minutes were spent directly handling the device while placing it in and out of storage, reading the labels, and setting it on a forklift for transport. The remaining minutes were spent at distances of four feet or more from the fixed gauge. Based on these estimates, and adding a conservative margin, the NRC determined that the dose to the most exposed individual did not exceed 0.01 rem. The NRC determined that selected other individuals at PS&R received doses between 0 and 0.01 rem. This exposure is well below the NRC's annual limit of 0.1 rem to a member of the public.

Luzenac America, Inc. also performed an assessment of the potential doses its workers might have received due to the storage of the fixed gauge. Due to the nature of the work

at Yellowstone Mine and the typical job locations and times, the licensee determined that it was unlikely any workers received radiation doses in excess of the regulatory limits. This assessment was based on the potential locations that the fixed gauge could have been stored, and how frequently workers were in or near those areas. However, the staff at Luzenac America, Inc. was not able to identify the exact location of the fixed gauge between 1988 and summer 2010 at Yellowstone Mine.

4.3 Conclusions

Independent NRC dose analysis conservatively estimated that the most exposed individual at PS&R received an exposure of 0.01 rem, which is well below the NRC's annual limit of 0.1 rem for members of the public. The NRC concluded that Luzenac America, Inc.'s conclusion was reasonable and that radiation exposures to mine workers were unlikely.

5 **Corrective Actions (87103)**

5.1 Inspection Scope

The NRC reviewed the immediate and long-term corrective actions associated with the temporary transfer of the fixed gauge and disposal of the tritium exit signs by Luzenac America, Inc. The inspector gathered information through interviews with Luzenac America, Inc. staff on December 3, 2010, and reviewed information submitted by Luzenac America, Inc. on December 14, 2010 (ML103550428), and February 7, 2011 (ML110390223).

5.2 Observations and Findings

Immediate

On December 3, 2010, once informed by the NRC that a fixed gauge previously in the possession of Luzenac America, Inc. had been found at PS&R's recycling yard, the licensee began a search of its records and began the search for an authorized fixed gauge service provider who could take possession of the gauge. In addition, the Luzenac America, Inc. Safety and Health Manager began a search for the seven tritium exit signs. The exit signs were believed to have been used at Yellowstone Mine, and the mine was closed from Friday through Sunday. As a result, the search for the exit signs began on Monday December 6, 2010, when the mine opened.

On December 8, 2010, Luzenac America, Inc. contracted with Thermo Fisher Scientific, an authorized fixed gauge service provider, to take custody of the fixed gauge from PS&R. The licensee's contractor retrieved the gauge on December 14, 2010, and took possession of the gauge. The fixed gauge remained isolated and secured at PS&R in the interim.

Long-Term

As longer term corrective actions, Rio Tinto informed the inspector that it would include in its Environmental Aspects and Impact List and Risk Register any devices or equipment containing radioactive materials obtained by Luzenac America, Inc. This action would ensure that there is a responsible party for the acquired radioactive item and that the

item would be tracked. In addition, Luzenac America, Inc. planned to train employees on identification of radioactive materials.

Luzenac America, Inc. also stated its intent to implement a radioactive material sampling procedure for outgoing scrap metal shipments, which meant that Luzenac America, Inc. planned to acquire a radiation survey meter.

5.3 Conclusions

Luzenac America, Inc. personnel began corrective actions as soon as the inspector informed the licensee that the fixed gauge containing cesium-137 had been found at PS&R in Bozeman, Montana. Luzenac America, Inc. also developed a plan for long-term corrective actions to minimize the chance of inadvertently transferring or disposing of licensed material again.

8 **Exit Meeting Summary**

A preliminary exit briefing was conducted at the conclusion of the onsite inspection with Mr. Ron Hyatte on December 3, 2010. A final telephonic exit briefing was conducted with Mr. Pat Downey and other members of Luzenac America, Inc. management on March 24, 2011, to review the inspection findings as presented in this report. Mr. Downey acknowledged the inspector's findings. No proprietary information was identified in this report.

PARTIAL LIST OF PERSONS CONTACTED

Luzenac America, Inc.

P. Downey, Director of Montana Operations
J. Errett, Mine Manager
J. Stokke, Mill Manager
R. Hyatte, Safety and Health Manager

Pacific Steel & Recycling

R. VanAusdol, Bozeman Manager

INSPECTION PROCEDURES USED

87103 Inspection of Materials Licensees Involved in an Incident or
Bankruptcy Filing

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

99990001/2010-005-01	AV	An apparent violation involving the failure to transfer a generally licensed fixed gauge to an authorized recipient.
99990001/2010-005-02	VIO	A violation involving the failure to dispose of generally licensed tritium exit signs according to NRC regulations.

Closed

NMED: 100595 and 110078

Discussed

None

LIST OF ACRONYMS USED

ADAMS	Agencywide Document Access and Management System
CFR	Code of Federal Regulations
Ci	Curie
EA	Enforcement Action
EN	Event Notification
GLTS	General Licensee Tracking System
mCi	millicurie
mR	milliRoentgen
mrem	millirem
NMED	Nuclear Material Events Database
NRC	Nuclear Regulatory Commission
PS&R	Pacific Steel & Recycling