

RI - DNMS Licensee Event Report Disposition

Licensee:	Walter Reed Army Medical Center		
Event Description:	Lost/Stolen LNM > 1000x		
License No:	08-01738-002	Event No:	0300137
Event Date:	W 14/08	Report Date:	4/19/08
		MLER-RI:	2008-026
		HQ Ops Event #:	1

1. REPORTING REQUIREMENT

<input type="checkbox"/> 10 CFR 20.1906 Package Contamination <input checked="" type="checkbox"/> 10 CFR 20.2201 Theft or Loss <input type="checkbox"/> 10 CFR 20.2203 30 Day Report <input type="checkbox"/> Other _____	<input type="checkbox"/> 10 CFR 30.50 Report <input type="checkbox"/> 10 CFR 35.3045 Medical Event <input type="checkbox"/> License Condition
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REGION I RESPONSE

<input type="checkbox"/> Immediate Site Inspection <input type="checkbox"/> Special Inspection <input type="checkbox"/> Telephone Inquiry <input type="checkbox"/> Preliminary Notification/Report <input checked="" type="checkbox"/> Information Entered in RI Log <input type="checkbox"/> Report Referred To: _____	<table style="width: 100%;"> <tr> <td style="width: 50%;">Inspector/Date</td> <td style="width: 50%;"></td> </tr> <tr> <td>Inspector/Date</td> <td></td> </tr> <tr> <td>Inspector/Date</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Daily Report</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Review at Next Inspection</td> <td></td> </tr> </table>	Inspector/Date		Inspector/Date		Inspector/Date		<input type="checkbox"/> Daily Report		<input type="checkbox"/> Review at Next Inspection	
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REPORT EVALUATION

<input checked="" type="checkbox"/> Description of Event <input checked="" type="checkbox"/> Levels of RAM Involved <input checked="" type="checkbox"/> Cause of Event	<input checked="" type="checkbox"/> Corrective Actions <input checked="" type="checkbox"/> Calculations Adequate <input checked="" type="checkbox"/> Additional Information Requested from Licensee
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4. MANAGEMENT DIRECTIVE 8.3 EVALUATION

<input type="checkbox"/> Release w/Exposure > Limits <input type="checkbox"/> Repeated Inadequate Control <input type="checkbox"/> Exposure 5x Limits <input type="checkbox"/> Potential Fatality <input checked="" type="checkbox"/> If any of the above are involved: <input checked="" type="checkbox"/> Considered Need for IIT Decision/Made By/Date: _____	<input type="checkbox"/> Deliberate Misuse w/Exposure > Limits <input type="checkbox"/> Pkging Failure > 10 rads/hr or Contamination > 1000x Limits <input type="checkbox"/> Large# Indivs w/Exp > Limits or Medical Deterministic Effects <input type="checkbox"/> Unique Circumstances or Safeguards Concerns <input checked="" type="checkbox"/> Considered Need for AIT
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5. MANAGEMENT DIRECTIVE 8.10 EVALUATION (additional evaluation for medical events only)

<input type="checkbox"/> Timeliness - Inspection Meets Requirements (5 days for overdose / 10 days for underdose) <input type="checkbox"/> Medical Consultant Used - Name of Consultant / Date of Report: _____ <input type="checkbox"/> Medical Consultant Determined Event Directly Contributed to Fatality <input checked="" type="checkbox"/> Device Failure with Possible Adverse Generic Implications <input checked="" type="checkbox"/> HQ or Contractor Support Required to Evaluate Consequences
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6. SPECIAL INSTRUCTIONS OR COMMENTS

none

<input type="checkbox"/> Non-Public <input checked="" type="checkbox"/> Public-SUNSI REVIEW COMPLETE	Inspector Signature: <u><i>Randy Cain</i></u> Branch Chief Initials: <u><i>James S. Myler</i></u>	Date: <u>3-29-09</u> Date: <u>3/30/01</u>
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Location of File: G:\Reference\Blank Forms\LER FORM.wpd Rev. 02/25/05

Licensee is investigating a potential fault in the switchyard.

The licensee will notify the NRC Resident Inspector.

Hospital	Event Number: 44667
Rep Org: WALTER REED ARMY MEDICAL CENTER Licensee: WATER REED ARMY MEDICAL CENTER Region: 1 City: WASHINGTON State: DC County: License #: 08-01738-02 Agreement: N Docket: NRC Notified By: COL. MARK MELANSON HQ OPS Officer: HOWIE CROUCH	Notification Date: 11/19/2008 Notification Time: 13:08 [ET] Event Date: 11/14/2008 Event Time: 09:00 [EST] Last Update Date: 11/19/2008
Emergency Class: NON EMERGENCY 10 CFR Section: 20.2201(a)(1)(i) - LOST/STOLEN LNM>1000X	Person (Organization): MARIE MILLER (R1) MICHELE BURGESS (FSME)

This material event contains a "Less than Cat 3" level of radioactive material.

Event Text

BRACHYTHERAPY SEEDS TEMPORARILY LOST AND UNACCOUNTED FOR

"On 10 NOV 08, a patient was admitted for a brachytherapy treatment. The patient received 77.8 mCi of Ir-192 in the form of eight nylon ribbons, each ribbon containing 7 seeds, for a total of 56 seeds (each seed containing 1.39 mC of iridium-192).

"The initial dose rate was 50 cGy/hour with a prescribed dose of 4500 cGy to be delivered over a 90 hour treatment time.

"On 14 NOV 08 at 0900, when the sources were scheduled to be removed, it was discovered that three ribbons (containing 29.2 mCi of Ir-192) were missing. It was later learned that the ribbons were improperly removed from the room when a physician improperly changed the bandage on the patient (the ribbons were stuck to the bandage with tape).

"A search was made of the trash compactor located on the back loading dock. The compactor had just been unloaded at 0600 hours on 14 NOV 08. A survey of the trash compactor discovered the sources (all three ribbons with all 21 seeds) at 1210 [hrs.] on 14 NOV 08. Hence, the sources were placed in the compactor between 0600 and 0900 on 14 NOV 08.

"Verification of the sources was visually made by the therapy physicist (the sources did not have serial numbers or other identifying markings). As a precaution, leak tests were performed on the previously missing sources and the results did not indicate any detectable activity.

"Based upon interviews of the medical and the housekeeping staff, the following events occurred:

"a. The physician improperly removed the bandage (and the sources stuck to the bandage with tape) and threw it in the trash can located within the room..

"b. The housekeeping staff improperly entered the patient's room and removed the trash from the trash can, placing it in a larger barrel. The barrel was then taken to the loading dock and emptied into the trash compactor. All of this occurred between 0600 and 0900. The compactor is situated in an unoccupied area of the back loading dock (no break areas or smoking areas).

"c. The maximally exposed individual in this scenario was the housekeeping worker who removed the trash and took it to the compactor on the loading dock:

- i. The dose rate at one meter from the sources was measured as 13 mR/h.
- ii. The sources were assumed to be 0.5 meters from the custodial worker.
- iii. The transit time from the room to the compactor was 20 minutes (based upon interview with the custodial worker).
- iv. The estimated dose to the worker is 17.3 mRem [based on a provided calculation].

"A complete investigation is being made of the incident and will be reported at the next scheduled meeting of the Walter Reed Army Medical Center Radiation Safety Committee currently scheduled for 4 DEC 08."

Sources that are "Less than IAEA Category 3 sources," are either sources that are very unlikely to cause permanent injury to individuals or contain a very small amount of radioactive material that would not cause any permanent injury. Some of these sources, such as moisture density gauges or thickness gauges that are Category 4, the amount of unshielded radioactive material, if not safely managed or securely protected, could possibly - although it is unlikely - temporarily injure someone who handled it or were otherwise in contact with it, or who were close to it for a period of many weeks.

Fuel Cycle Facility	(Event Number: 44668)
Facility: WESTINGHOUSE HEMATITE RX Type: URANIUM FUEL FABRICATION Comments: LEU CONVERSION (UF6 to UO2) COMMERCIAL LWR FUEL Region: 3 City: HEMATITE State: MO County: JEFFERSON License #: SNM-33 Agreement: N Docket: 07000036 NRC Notified By: GERRY COUTURE HQ OPS Officer: MARK ABRAMOVITZ	Notification Date: 11/19/2008 Notification Time: 21:04 [ET] Event Date: 11/19/2008 Event Time: 16:00 [CST] Last Update Date: 11/19/2008
Emergency Class: NON EMERGENCY 10 CFR Section: PART 70 APP A (b)(1) - UNANALYZED CONDITION	Person (Organization): KENNETH O'BRIEN (R3) BRIAN SMITH (NMSS)

Event Text

RADIOACTIVE CONTAMINATION GREATER THAN EXPECTED

"10CFR70, Appendix A: A condition that results in the facility being in a state that was not analyzed, was improperly analyzed, or is different from that analyzed.

"The residual radioactivity contained within these buildings is primarily in the form of surface contamination. The results of previous characterization data indicate that the residual mass was approximately 250 grams of U-235. However, the preliminary results of more recent characterization surveys and sampling have provided information that suggests the inventory of residual mass may be higher than previously estimated.

"Based on the results of recent radiological surveys performed within the process buildings, small quantities of uranium contamination have been identified in partially dismantled piping and ventilation filter housings. The potential for exposure to workers and to members of the public is minimal since the uranium is present in the form of contamination fixed to interior surfaces of the building, piping and interiors of equipment that remains within the building.

"Recent radiological surveys performed within the process buildings have revealed the potential for small quantities of uranium contamination in partially dismantled piping and ventilation filter housings. These radiological surveys were performed to gather additional information to support work planning associated with building demolition. This condition does not represent degradation or failure of structures, systems, equipment, components, or activities of personnel



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
WALTER REED ARMY MEDICAL CENTER
6900 GEORGIA AVE NW
WASHINGTON DC 20307-5001



December 11, 2008

Health Physics Office

Administrator
Attn: Ms. Pamela Henderson
United States Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, PA 19406-1415

SUBJECT: Radiation Safety Officer Report: Temporary Loss of Iridium-192 Brachytherapy Seeds and Subsequent Recovery, (Event Notification # 444667 @ 13:08 EST 19 NOV 08)

Dear Ms. Henderson:

On November 10, 2008, a patient was admitted for a brachytherapy treatment. The patient received 77.8 mCi of Ir-192 in the form of eight nylon ribbons, each ribbon containing 7 seeds, for a total of 56 seeds (each seed containing 1.39 mCi of iridium-192).

The initial dose rate was 50 cGy/hour with a prescribed dose of 4500 cGy to be delivered over a 90 hour treatment time.

On November 14, 2008 at 9:00 am, when the sources were scheduled to be removed, it was discovered that three ribbons (containing 29.2 mCi of Ir-192) were missing. It was later learned that the ribbons were improperly removed from the room when a medical student improperly changed the bandage on the patient (the ribbons were stuck to the bandage with tape). A timeline of the events is included as Enclosure 1.

A search was made of the trash compactor located on the back loading dock. The compactor had just been unloaded at 6:00 am on November 14, 2008. A survey of the trash compactor discovered the sources (all three ribbons with all 21 seeds) at 12:10 pm on November 14, 2008. Hence, the sources were placed in the compactor around 9:00 am on November 14, 2008.

Verification of the sources was visually made by the therapy physicist (the sources did not have serial numbers or other identifying markings). As a precaution, leak tests were performed on the previously missing sources and the results did not indicate any detectable activity.

Based upon interviews of the medical and the housekeeping staff, the following events occurred:

- a. The medical student improperly removed the bandage (and the sources stuck to the bandage with tape) and threw it in the trash can located within the room between 6:30 am and 7:00 am.
- b. The housekeeping staff improperly entered the patient's room and removed the trash

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from the trash can, placing it in a larger barrel. The barrel was then taken to the trash room (6Z52) at 7:30 am. The trash containing the sources was then taken from the trash room to the compactor at 9:00 am.

c. The maximally exposed individual in this scenario was the housekeeping worker who removed the trash from the trash room and took it to the compactor on the loading dock:

(1) The dose rate at one meter from the sources was measured as 13 mR/h.

(2) The sources were assumed to be 0.5 meters from the custodial worker.

(3) The transit time from the room to the compactor was 20 minutes (based upon interview with the custodial worker).

(4) The estimated dose to the worker is:

$$13 \text{ mR/h @ 1 meter} \times (1 \text{ m}/0.5 \text{ m})^2 \times (113 \text{ hours}) = 17.3 \text{ mrem}$$

In order to ensure regulatory compliance, the undersigned telephonically notified the Nuclear Regulatory Commission Emergency Operations Center at 1:00 pm on November 19, 2008, IAW 10 CFR Part 20 and a brief preliminary summary was faxed. (Enclosure 2).

After a complete investigation of the incident, the following observations were made:

a. Due to an error in interpreting the regulations, immediate notification of the loss of the sources was not made IAW 10 CFR Part 20 on November 14, 2008.

b. There was insufficient controls to prevent unauthorized entry into the patient's room. The medical student, attending physician, and housekeeping all entered the room.

c. Improperly trained medical staff removed the patient's bandages and did not survey the bandages to check for sources. This was the direct cause of this incident.

d. Trash was not properly screened with a survey meter to be sure there were no seeds in the trash. This was a significant contributing factor to this incident.

The following actions were taken:

a. The issue was fully discussed at the WRAMC Radiation Safety Committee Meeting on December 4, 2008.

b. All Health Physics staff will be trained by the RSO as to the notification requirements for the Nuclear Regulatory Commission; the first training session was held on December 11, 2008.

c. Entry to brachytherapy patient rooms needs to be better controlled so that only authorized

personnel enter these controlled areas. Health Physics will develop a better "Do Not Enter" sign and awareness training for medical staff may be required.

d. Only radiation oncologists and properly trained attending physicians will be authorized to remove brachytherapy patient bandages. At that time, the radiation oncologist can visually check the presence and properly location of all brachtherapy sources. Health Physics personnel will directly support this by surveying all bandages and dressing and reconfirming patient exposure levels at one meter.

e. Housekeeping will be prevented from removing trash from any inpatient radiation therapy patient. Health Physics personnel will survey all trash coming out of these patients' rooms.

Point of contact for this matter is the undersigned at (202)-356-0060.



MARK A. MELANSON, Ph.D., CHP
Colonel, U.S. Army
Radiation Safety Officer
Chief, Health Physics Office

Enclosures

14 NOVEMBER 2008

- 6:00am Trash Compactor Emptied and Replaced
- 6:30–7:00am Medical Student changes dressing and puts bandage/seeds in trash.
- 7:30am Trash removed from PNT's room and transferred to Trash Room (6252)
- 8:00am Attending physician removes new dressing
- 9:00am Trash containing the seeds is taken from Trash Room (6252) to trash compactor
- 9:00am Rad Oncology Staff discovers sources are missing
- 9:00am Room, to include trash, surveyed by health physics personnel
- 12:10pm Sources discovered in compactor and immediately returned to Radiation Oncology by health physics personnel



REPLY TO
ATTENTION OF

MCHL-HP

DEPARTMENT OF THE ARMY
WALTER REED ARMY MEDICAL CENTER
6900 GEORGIA AVE NW
WASHINGTON DC 20307-5001



19 November 2008

MEMORANDUM FOR RECORD

SUBJECT: Temporary Loss of Iridium-192 Brachytherapy Seeds and Subsequent Recovery,
(Event Notification # 444667 @ 13:08 EST 19 NOV 08)

1. On 10 NOV 08, a patient was admitted for a brachytherapy treatment. The patient received 77.8 mCi of Ir-192 in the form of eight nylon ribbons, each ribbon containing 7 seeds, for a total of 56 seeds (each seed containing 1.39 mCi of iridium-192).
2. The initial dose rate was 50 cGy/hour with a prescribed dose of 4500 cGy to be delivered over a 90 hour treatment time.
3. On 14 NOV 08 at 0900, when the sources were scheduled to be removed, it was discovered that three ribbons (containing 29.2 mCi of Ir-192) were missing. It was later learned that the ribbons were improperly removed from the room when a physician improperly changed the bandage on the patient (the ribbons were stuck to the bandage with tape).
4. A search was made of the trash compactor located on the back loading dock. The compactor had just been unloaded at 0600 hours on 14 NOV 08. A survey of the trash compactor discovered the sources (all three ribbons with all 21 seeds) at 1210 on 14 NOV 08. Hence, the sources were placed in the compactor between 0600 and 0900 on 14 NOV 08.
5. Verification of the sources was visually made by the therapy physicist (the sources did not have serial numbers or other indentifying markings). As a precaution, leak tests were performed on the previously missing sources and the results did not indicate any detectable activity.
6. Based upon interviews of the medical and the housekeeping staff, the following events occurred:
 - a. The physician improperly removed the bandage (and the sources stuck to the bandage with tape) and threw it in the trash can located within the room.
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MCHL-HP

19 November 2008

SUBJECT: Temporary Loss of Iridium-192 Brachytherapy Seeds and Subsequent Recovery
(Event Notification # 444667 @ 13:08 EST 19 NOV 08)

- c. The maximally exposed individual in this scenario was the housekeeping worker who removed the trash and took it to the compactor on the loading dock:
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 - ii. The sources were assumed to be 0.5 meters from the custodial worker.
 - iii. The transit time from the room to the compactor was 20 minutes (based upon interview with the custodial worker).
 - iv. The estimated dose to the worker is:

$$(13 \text{ mR/h @ 1 meter}) \times (1 \text{ m} / 0.5 \text{ m})^2 \times (1/3 \text{ hours}) = 17.3 \text{ mrem}$$

7. In order to ensure regulatory compliance, the undersigned telephonically notified the Nuclear Regulatory Commission Emergency Operations Center at 1300 on 19 NOV 08 IAW 10 CFR Part 20. Mr. Howie Crouch of the NRC requested that a brief summary report be faxed to them for their records. This MFR will serve that purposrr.
8. A complete investigation is being made of the incident and will be reported at the next scheduled meeting of the Walter Reed Army Medical Center Radiation Safety Committee currently scheduled for 4 DEC 08.
9. Point of contact for this matter is the undersigned at (202)-356-0060.



MARK A. MEIANSON, Ph.D., CHP
COL, MS
Radiation Safety Officer
Chief, Health Physics Office