

RI - DNMS Licensee Event Report Disposition

Licensee:	Varian Medical Systems				
Event Description:	HDR Source Stuck Out Event at Southeastern Missouri Hospital				
License No:	45-30957-01	Docket No:	03036666	MLER-RI:	2010-009
Event Date:	09/20/10	Report Date:	09/21/10	HQ Ops Event #:	

1. REPORTING REQUIREMENT

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

2. REGION I RESPONSE

<input type="checkbox"/> Immediate Site Inspection	Inspector/Date
<input checked="" type="checkbox"/> Special Inspection	Inspector/Date <u>Branch 4 (moder) 4/2011</u>
<input type="checkbox"/> Telephone Inquiry	Inspector/Date
<input type="checkbox"/> Preliminary Notification/Report	Daily Report
<input checked="" type="checkbox"/> Information Entered in RI Log	<u>HTW</u> Review at Next Inspection
<input type="checkbox"/> Report Referred To:	

3. REPORT EVALUATION

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

4. MANAGEMENT DIRECTIVE 8.3 EVALUATION

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

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)
Medical Consultant Used-Name of Consultant/Date of Report: _____
<input type="checkbox"/> Medical Consultant Determined Event Directly Contributed to Fatality
<input type="checkbox"/> Device Failure with Possible Adverse Generic Implications
<input type="checkbox"/> HQ or Contractor Support Required to Evaluate Consequences

6. SPECIAL INSTRUCTIONS OR COMMENTS

Non-Public Inspector Signature: *Andreas Moder* Date: 10-4-2010
 Public-SUNSI REVIEW COMPLETE Branch Chief Initials: *J.A. Jones* Date: 10/12/10

Redacted RNRK 10/26/10

no contamination at their facility.

QSA plans on disposing of the source.

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General Information or Other	Event Number: 46257
Rep Org: NV DIV OF RAD HEALTH Licensee: GRANITE CONSTRUCTION COMPANY, INC. Region: 4 City: PATRICK State: NV County: License #: 00-11-0198-01 Agreement: Y Docket: NRC Notified By: ERIC MATUS HQ OPS Officer: DONALD NORWOOD	Notification Date: 09/17/2010 Notification Time: 18:23 [ET] Event Date: 09/16/2010 Event Time: [PDT] Last Update Date: 09/17/2010
Emergency Class: NON EMERGENCY 10 CFR Section: AGREEMENT STATE	Person (Organization): JEFF CLARK (R4DO) GREG SUBER (FSME)

Event Text

<p>AGREEMENT STATE REPORT - NUCLEAR DENSITY GAUGE DAMAGED WHEN STRUCK BY VEHICLE</p> <p>The following information was received via facsimile:</p> <p>"A nuclear gauge, Troxler Laboratories 4640 Thin Lift density gauge, Serial No. 1997, Nuclide CS-137, GBq 0.296, mCi 8, was damaged in a construction zone hit-and-run accident. The RSO for a construction company was carrying the thin lift gauge to his truck when he was struck by a female driver in a grey sedan. The RSO, who was approximately 10 feet inside the coned area of the construction control zone, was able to move his body at the last minute and did not sustain major injuries. The gauge was destroyed but the source remained intact in the damaged housing. The RSO and the Nevada Highway Patrol [NHP] conducted radiation surveys.</p> <p>"NHP contacted Radiation Control Program 30 minutes after notified. The licensee reported to RCP within 3 hours.</p> <p>"The damaged gauge has been leak tested and is stored at the licensee's facility pending instruction from Troxler on shipping for disposal."</p> <p>The State of Nevada has not yet assigned a state event number.</p>

TOP

Hospital	Event Number: 46264
Rep Org: SOUTHEAST MISSOURI HOSPITAL Licensee: SOUTHEAST MISSOURI HOSPITAL Region: 3 City: CAPE GIRARDEAU State: MO County: License #: 24-00128-03 Agreement: N Docket: NRC Notified By: SAM HANCOCK HQ OPS Officer: DONALD NORWOOD	Notification Date: 09/21/2010 Notification Time: 18:22 [ET] Event Date: 09/20/2010 Event Time: 21:00 [CDT] Last Update Date: 09/21/2010
Emergency Class: NON EMERGENCY 10 CFR Section: 30.50(b)(2) - SAFETY EQUIPMENT FAILURE	Person (Organization): RICHARD SKOKOWSKI (R3DO) DUNCAN WHITE (FSME)

Event Text

HIGH DOSE RATE AFTERLOADER STUCK / EXPOSED SOURCE

On 9/20/10, the licensee was having scheduled maintenance work performed on a Varian High Dose Rate (HDR) afterloader. A source exchange was also scheduled to be performed. During the source exchange, the source became "stuck, partially exposed, not fully shielded in the shield" of the HDR machine and became inoperable. The licensee believes this to be due to personnel error on the part of the service technician. The service technician then vacated the room.

Varian was called and said they would dispatch personnel to the hospital on 9/21/10. Security was notified of the radiation safety problem. The door to the room was secured. The door to the room was posted with hazard warning tape, with a do not enter sign, and with a high radiation area sign. The department was also locked down.

Varian personnel arrived on-site on 9/21/10. Varian service personnel secured the source back in the machine. Radiation levels in the room then returned to normal background readings. The source wire was found kinked and shipped out today. The hospital is scheduled to receive a new source and have it installed tomorrow.

Service personnel were wearing "active monitors" and received only a few milli-rem during the repair operation. It is not known at this time how much dose the first service technician received.

Power Reactor	Event Number: 46265
Facility: TURKEY POINT Region: 2 State: FL Unit: [] [4] [] RX Type: [3] W-3-LP,[4] W-3-LP NRC Notified By: ROGER MONTGOMERY HQ OPS Officer: VINCE KLCO	Notification Date: 09/21/2010 Notification Time: 22:28 [ET] Event Date: 09/21/2010 Event Time: 20:17 [EDT] Last Update Date: 09/21/2010
Emergency Class: NON-EMERGENCY 10 CFR Section: 50.72(b)(2)(iv)(B) - RPS ACTUATION - CRITICAL 50.72(b)(3)(iv)(A) - VALID SPECIF SYS ACTUATION	Person (Organization): GEORGE HOPPER (R2DO)

Unit	SCRAM Code	RX CRIT	Initial PWR	Initial RX Mode	Current PWR	Current RX Mode
4	A/R	Y	100	Power Operation	0	Hot Standby

Event Text

AUTOMATIC REACTOR TRIP

"At 2017 [EDT] on 9/21/10, Turkey Point Unit 4 spuriously tripped. The cause of the reactor trip is currently under investigation.

"At the time of the trip, reactor power was 100%. Auxiliary feedwater [AFW] was automatically initiated when steam generator levels lowered below the actuation setpoint. Steam generator levels are now stable at their normal Mode 3 band and auxiliary feedwater is secured.

"Unit 4 has been stabilized in Mode 3 on normal off-site power.

"This event is reportable per 10 CFR 50.72(b)(2)(iv)(B) - actuation of the reactor protection system with the reactor critical and 10 CFR 50.72(b)(3)(iv)(A) - valid actuation of an ESF system (AFW)."

All control rods inserted into the core. Decay heat is being removed through the steam dumps to atmosphere. There was no activation of PORVs or SRVs. The reactor is at shutdown NOP and NOT. The reactor trip response was



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September 30, 2010

Ms. Kathy Modes
U.S. NRC Region I
475 Allendale Road
King of Prussia PA 19406

Re: HDR Source stuck out event at Southeast Missouri Hospital, Cape Girardeau, MO

Dear Ms. Modes:

Enclosed is Varian's report on the above captioned event.

- Varian Medical Systems, Inc. NRC License No. 45-30957-01
- Docket number 030-36666
- Event No. 46264
- Date of event: September 20, 2010, 2100 hrs
- NRC notified: September 21, 2010

Please contact me directly at (434) 951-8675 with any questions.

Very truly yours,

A handwritten signature in black ink that reads "Richard G. Piccolo". The signature is written in a cursive style with a large, sweeping initial "R".

Richard G. Piccolo, CHP
Varian BrachyTherapy RSO

Encl: Report on Event 46264



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Report on Event 46264

Event: Ir-192 HDR source dislodged from tungsten safe

Location: Southeast Missouri Hospital
Cape Girardeau, MO
NRC License No. 24-00128-03

Date of event: September 20, 2010

Date of report: September 30, 2010

Date NRC notified of event: September 21, 2010

Submitted by: Richard G. Piccolo, RSO
Varian Medical Systems, Inc.
Charlottesville VA
NRC License No. 45-30957-01

A. Specifics of the event

a. Event description

Monday, September 20, 2010, approximately 2100 hours.

During the completion of a source exchange and 2-year preventive maintenance service the field engineer (FE-A) improperly removed a snap ring that holds a source guide tube fixture in place. The active source cable runs through this fixture. When the snap ring was removed the fixture separated from chassis of the HDR unit and pulled the tail of the source away from the park switch. The HDR unit drive motor activated to move the source cable to re-engage the park switch. When this happened the source was pulled from the center of the unit's tungsten

safe and caused the field engineer's survey meter audible alarm rate to increase. The field engineer immediately turned the emergency handle approximately one-half turn to determine if that would correct the problem. It did not correct the situation and the field engineer immediately left the shielded vault. His pocket digital dosimeter indicated a dose of approximately 0.2 mrem at this time.

The service engineer called his immediate management to report the event and then called the site's physicist/RSO to advise him of the situation. Varian's RSO was notified immediately thereafter.

At approximately 2230, a conference was held among Varian's service management and RSO to discuss the situation. It was decided that the RSO and another service engineer would travel to Southeast Missouri Hospital the next day to recover the source.

Tuesday, September 21, 2010, approximately 1300 hours

Varian's RSO and a second field engineer (FE-B) met with FE-A and the site's physicist/RSO. A 10' extendable probe on a high range survey meter was used to survey around the HDR unit. The dose rate at 30-50 cm from the surface of the HDR unit, in line with the source location, averaged 165 mR/hr.

The treatment room's cameras were used to inspect the HDR unit and determine the exact configuration of the source cable. The configuration of the source was discussed with Varian Engineering and a test unit was set up in Charlottesville VA mirroring the configuration of the unit at Southeast Missouri Hospital. A recovery plan was determined using this mock-up where the motor gear would be manually turned to drive the source back into the sweet spot of the tungsten safe.

The first entry involved turning off the HDR unit's battery power and then wall power was shut off at the circuit breaker. This ensured that the HDR unit's automatic and logic driven functions were completely off. A portable lead shield (one inch of lead) was then positioned behind the HDR unit. This additional shielding lowered the dose rate to less than 15 mR/hr.

After the shield was in place, FE-B entered the room, placed a survey meter with an audible alarm directly behind the source location and manually turned the HDR drive motor gear approximately $\frac{3}{4}$ of a revolution. The meter count rate dropped immediately as the source was driven into the center of the safe.

Source recovery

The source was now in a proper configuration in the HDR unit. It was determined that the source would be removed from the HDR unit and put into the shielded shipping container for inspection of the source cable. The inspection found a bend at the tail piece of the source and it was determined that a new source would be installed the next day. The bend in the tail was likely an artifact of the source recovery as all sources are inspected during the source exchange procedure. This is in addition to inspections that are performed at the time of manufacture. A new source was installed the next day without any problems.

Personnel exposure

The initial room entry was at 1350 hrs and the source was secured in the safe at 1405 hrs. Cumulative dose to all participants as determined by pocket digital dosimeter was less than 15 mrem. Whole body badges, (OSL by Landauer), will be sent to the processor during the first week of October 2010.

b. Report identification number – Event 46264

c. Event date and notification date

Initiated September 20 2010, approximately 2100 hrs

Notification time stamped on September 21, 2010, 1822 hrs. The hospital's RSO notified NRC Region 3 sometime earlier in the day.

d. Licensee/reporting party information (name, license number, and address) –

Reported to the NRC by Samuel S. Hancock, Ph.D, RSO, Southeast Missouri Hospital, Cape Girardeau, MO, NRC License No. 24-00128-03

e. Location of event – Southeast Missouri Hospital, Cape Girardeau, MO

f. NRC reportability and the applicable reporting requirement

Reported by the hospital under 10 CFR 30.50(b)(2)

g. Cause and corrective actions

Cause

The importance of not removing the snap ring was not properly addressed during the training of the engineer involved in the event.

Corrective Actions

1. Either service procedures or a radiation safety procedure will be implemented to specifically state that the snap ring shall not be removed while an active source is installed in the HDR unit.
2. Training for new service engineers will include a specific item in the training agenda which states that the snap ring shall not be removed when an active source is installed in the HDR unit.
3. All service engineers will receive specific training that states the snap ring shall not be removed when an active source is installed in the HDR unit.
4. During the third week of October 2010 all service engineering hires within the past 2 years will attend a meeting in Charlottesville VA. There will be a training module dedicated to this event to discuss and review the cause, corrective actions and lessons learned.
5. In addition to new hires, four senior service managers will take part in the training stated in item #4.
6. This event will be reviewed and discussed in detail with all field engineers in May 2011 during a multi-day training seminar.

- h. Notifications: local police, FBI, and other States, as needed**

No local notifications were made.

- i. Possible generic safety concerns/potential for others to experience the same event**

No generic issues.

B. Source/Radioactive Material:

- a. Isotope and activity – Ir-192, approximately [REDACTED]**

- b. Manufacturer – Alpha Omega Services, Inc.**

- c. Source - model and serial number**

Model GammaMed 232

Serial number -- 24-01-0438-001-090210-10877-74

- d. Leak test results, if applicable**

Leak tested at the time of manufacture, results less than 185 Bq

C. Device/Associated Equipment:

- a. Device manufacturer**

Varian Medical Systems, Inc.

- b. Model and serial number**

GammaMedplus iX, serial number H64E146

- c. Description of any equipment problems**

All related equipment functioned properly