



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

June 6, 2011

Ms. Nancy Gregory
Acting CEO/Medical Center Director
Department of Veterans Affairs
Nebraska-Western Iowa Health Care System
4101 Woolworth Avenue
Omaha, NE 68105

SUBJECT: NRC INSPECTION REPORT 050-00131/11-001

Dear Ms. Gregory:

This refers to the inspection conducted on May 16-19, 2011, at the Alan J. Blotcky Reactor Facility located in Omaha, Nebraska. This inspection was an examination of activities conducted under your license for the permanently shut down research reactor as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas, the inspection consisted of selected examination of procedures and representative records, observations of activities, and interviews with personnel. The preliminary inspection results were presented to your staff at the conclusion of the onsite inspection on May 19, 2011. The enclosed report presents the results of this inspection.

Based on the results of this inspection, the NRC has determined that you were conducting activities in accordance with license and regulatory requirements.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, 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 document 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, proprietary, or safeguards information so that it can be made available to the Public without redaction.

Should you have any questions concerning this inspection, please contact Dr. Gerald Schlapper, Health Physicist, at (817) 860-8273 or the undersigned at (817) 860-8191.

Sincerely,

/RA/

D. Blair Spitzberg, PhD, Chief
Repository & Spent Fuel Safety Branch

Docket: 050-00131
License: R-57

Enclosure:

NRC Inspection Report 050-00131/11-001

cc w/Enclosure:

Mayor Jim Suttle
City of Omaha
Office of the Mayor
1819 Farnam Street
Suite 300
Omaha, NE 68183

Joseph M. Acierno, MD, JD
Deputy Chief Medical Officer
Nebraska Health Licensure and Investigations
Division of Public Health
P.O. Box 95026
Lincoln, NE 68509-5026

Matthew V. Verna
Management and Program Analyst
Department of Veterans Affairs
Office of Research and Development (ORD)
810 Vermont Avenue
Mail Code 125
Washington, DC 20420

Debra Romberger, MD
Associate Chief of Staff/Research
Department of Veterans Affairs
Nebraska-Western Iowa Health Care System
4101 Woolworth Avenue
Omaha, NE 68105

Gary E. Williams
National Health Physics Program
Department of Veterans Affairs
Mail Code 115 HP
2200 Fort Roots Drive
North Little Rock, AR 72114

bcc w/enclosure:

Roy Caniano, D:DNMS

Vivian Cambell, DD:DNMS

Blair Spitzberg, C:DNMS/RSFS

Ted Smith, FSME/DWMEP/DURLD

Gerald Schlapper, DNMS/RSFS

Robert Evans, DNMS/RSFS

Fee Coordinator, DRMA

DRAFT: S:\DNMS \!RSFS\GAS\VA1101.doc

FINAL: R:_DNMS

| | | | | |
|-----------------|---|--|--------------------|-----|
| ADAMS | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | <input checked="" type="checkbox"/> SUNSI Rev Complete | Reviewer Initials: | GAS |
| Publicly Avail. | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | Sensitive Value: | | |
| RIV:DNMS:RSFS | C:RSFS | | | |
| GASchlapper | DBSpitzberg | | | |
| <i>/RA/</i> | <i>/RA/</i> | | | |
| 06/02/2011 | 06/06/2011 | | | |

OFFICIAL RECORD COPY

T=Telephone

E=E-mail

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket: 050-00131

License: R-57

Report: 050-00131/11-001

Licensee: Department of Veterans Affairs

Location: Alan J. Blotcky Reactor Facility
Omaha, Nebraska

Dates: May 16-19, 2011

Inspector: Gerald Schlapper, PhD, CHP, Health Physicist
Repository & Spent Fuel Safety Branch

Approved by: D. Blair Spitzberg, PhD, Chief
Repository & Spent Fuel Safety Branch

Attachment: Supplemental Inspection Information

ENCLOSURE

EXECUTIVE SUMMARY

Department of Veterans Affairs
NRC Inspection Report 050-00131/11-0011

This inspection was a routine, announced inspection of licensed activities being conducted at the Alan J. Blotcky Reactor Facility. In summary, no significant health or safety issues were identified at the facility.

Decommissioning Inspection Procedure for Materials Licensees

- Since the previous inspection, the licensee revised the boundary of the reactor facility restricted area by returning the boundary to the original configuration. Controlled key access was established at doors defining the facility boundary. (Section 1.2.a)
- The licensee had staffed all positions. The licensee utilized the hospital radiation safety officer as needed to support compliance with the license. The licensee reported permanent changes in the facility organization involving Level 1 and 2 personnel to the NRC within 30 days. (Section 1.2.a)
- The licensee continued to monitor reactor pool water quality and to maintain pool water level in accordance with Technical Specification (TS) 4.3. The licensee established a computerized notification of the Radiation Safety Officer (RSO) and Reactor Director to ensure water samples were taken at required times. (Section 1.2.b)
- The licensee continued to conduct functional tests of the pool water level and ventilation system interlocks as required by TS 4.3 and TS 4.5. (Section 1.2.b)
- The restricted area was being controlled by the licensee. Ambient gamma radiation levels were low, equal to background in most areas and postings were correct. (Section 1.2.c)
- The licensee implemented its radiation protection program in accordance with TS 6.3 and 10 CFR Part 20 requirements. (Section 1.2.c)
- During the previous inspection, an Unresolved Item (URI 050-00131/0901-04) was opened because of the absence of documentation related to either the continued possession, or the transfer of polonium-beryllium source(s) once in the licensee's inventory. During this inspection, the inspector was able to verify the presence on-site of one polonium-beryllium sealed source. In addition, the inspector verified that the licensee had conducted a complete review of archived records to verify proper transfer or disposal of other sources. Based on this review, the inspector determined that all sources had been properly accounted for and the Unresolved Item can be closed. (Section 1.2.d)
- The licensee requested by letter dated January 14, 2010 an exemption from requirements for an emergency plan. However, as of the date of this inspection NRC had not approved this request. The licensee conducted emergency training and conducted a drill in December 2010. (Section 1.2.e)

- The licensee completed corrective actions associated with the Notice of Violation outlined in the previous inspection report (IR 050-00131/09-001). The inspector verified completion of corrective actions and noted that they had been effective in preventing further violations of the license and regulations. (Section 1.3)

Report Details

Site Status

Operating License R-57 was issued to the Department of Veterans Affairs during June 1959. At that time, the licensee was authorized to operate the TRIGA reactor at a power level not to exceed 10 kilowatts (thermal). The power level was subsequently increased to 18 kW(t) during 1963 and 20 kW(t) during 1991. The reactor was permanently shut down during November 2001. The reactor fuel and fission chambers were transferred offsite during 2002, and the start-up sources were transferred offsite during 2003.

By letter dated September 21, 2004, the licensee requested termination of the license as required by 10 CFR 50.82(b)(1). The licensee subsequently submitted a site radiological characterization report to the NRC by letter dated April 6, 2006. This report documented the results of a radiological survey that was completed during February 2003. Following its review of the licensee's documentation, the NRC requested additional information from the licensee by letter dated May 13, 2008. At the time of this inspection, the licensee was in the process of obtaining NRC requested information and rewriting the decommissioning plan for submittal to NRC. After the NRC approves the revised decommissioning plan, the licensee will be allowed to decommission the reactor facility.

The permanently shutdown reactor was located in a cylindrical pool. Support equipment still in service included the pool water cleanup system, the ventilation system, and an area radiation monitor. The control console and most reactor process control instrumentation had been permanently removed from service. The licensee continued to maintain an operable pool water level alarm at the medical center switchboard. The inspector observed a satisfactory test of this alarm during the inspection. Doors to the facility were secured, and keys were controlled by the licensee.

1 Decommissioning Inspection Procedure for Materials Licensees (87104)

1.1 Inspection Scope

The purpose of the inspection was to determine if site activities were being conducted in accordance with license and regulatory requirements.

1.2 Observations and Findings

a. Management Oversight of Licensed Activities

Technical Specification (TS) 6.2.1 states that the Reactor Safeguards Committee (RSC) shall function to provide independent review and audit of facility activities. The inspector reviewed the licensee's RSC records for 2010 and to date in 2011. The RSC met multiple times during this period, complying with the requirement to meet at least annually. A quorum was always present. Votes of RSC members were recorded in minutes of the meeting or via e-mail ballots.

Technical Specification 6.2.3 provides the RSC review functions. The RSC's review functions include determinations of whether proposed changes in the facility as

described in the Safety Analysis Report require a license amendment per 10 CFR 50.59(c)(2). As noted in the previous inspection, the licensee had modified the restricted area boundary by converting one area within the restricted area into an unrestricted laboratory space by installing a new boundary fence and gate. These modifications resulted in a change to the restricted area boundary without adequate review and approval, a violation of 10 CFR 50.59 requirements. As noted in the licensee's March 1, 2010 reply to Notice of Violation the reactor's restricted area boundary has been restored to its previous configuration as shown in Figure 3.2 of the Safety Analysis Report. In addition, the Reactor Safeguards Committee has reestablished the use of restricted access keys to the south entrance door of the facility and has reactivated the combination lock to the same entrance. These changes were verified by the inspector.

Site staffing requirements are presented in TS Figure 6-1, "Facility Organization." Most positions continued to be filled by hospital staff, including all management level positions. The reactor operator positions were no longer staffed because the reactor was permanently shut down. The licensee ended the operator training and retraining programs because the licensee no longer maintained an operations staff. The radiation safety functions, as specified in TS 6.3, were being implemented by the hospital radiation safety officer and the reactor director/supervisor.

Section 6.7 of TS provides the reporting requirements. Section 6.7.2(2) states that a written report is required to be submitted to the NRC within 30 days for permanent changes in facility organization involving Level 1 or 2 personnel. The licensee made a change to Level 1 and 2 personnel staff and reported the change to the NRC. The staffing change addressed retirement of the Hospital CEO/Director and the naming of an interim Director until a permanent replacement is named.

The audit requirements are provided in Section 6.4.2 of the TS. The licensee utilized an independent auditor to conduct the annual program reviews. The inspector reviewed the last two annual audits and determined that the audits covered most functional areas. The licensee also submitted annual operating reports to the NRC in accordance with TS 6.7.1 requirements.

b. Operational Oversight of Reactor and its Support Systems

Technical Specification 3.1.4 requires the licensee to maintain a minimum height of water above the reactor core. This specification stipulates that a float alarm switch has to be operable with a visual and audible alarm at the medical center switchboard and a visual alarm on the reactor console. The licensee continued to maintain an alarm at the switchboard, although the licensee no longer maintained an alarm at the console. The licensee's failure to maintain an operable alarm at the console was not safety significant because the restricted area is no longer routinely staffed by licensee personnel. If the water level were to unexpectedly drop below the alarm set-point, the alarm would actuate at the switchboard, a position that is constantly staffed. The inspector noted that the licensee continued to test the functionality of the water level alarm on a routine basis and verified visual and audible indication operation at the medical center operator office. The licensee has requested by letter dated August 5, 2010, amendment to TS 3.1.4 to remove the requirement for the console alarm. The NRC has not approved this request.

The reactor pool water is required to be sampled for gross radioactivity on a monthly basis per TS 4.3.1. In addition, the licensee is required to sample the water for

identification of radioactive isotopes on a quarterly basis. The licensee's recent sample results indicate that the amount of radioactivity in the water was non-detectable. The licensee sampled the reactor water for gross activity on an average monthly basis during 2010 and to date in 2011. The inspector noted that the licensee had established a formal program for tracking and documenting the collection of water samples to limit the possibility of missed sampling events.

Technical Specification 4.3.2 states that the pool water will be sampled weekly for conductivity and monthly for pH. The licensee's records indicate that the licensee has collected and analyzed the required samples noting that while pH levels remain within allowed limits, conductivity of the pool water continues to be above allowable limits. Since the reactor was permanently shut down, the licensee was not required to take any particular action to bring conductivity down. Further, the conductivity limit was established to minimize fuel cladding corrosion and activation of impurities in the water. Since the reactor has been permanently shut down and the fuel has been permanently removed, high water conductivity is no longer a reactor safety issue.

Pool water level is required to be maintained a minimum distance above the reactor core per TS 3.3. At the time of the inspection, the inspector verified that the water level was above the minimum water level. Also, TS 4.3.3 states that a monthly channel test shall be performed to ensure that the water level alarm float switch specified in TS 3.1.4 is operable. The licensee had sufficient records to demonstrate that it had tested the float switch alarm system in recent months.

The ventilation system is required to be tested monthly per TS 4.5. This test includes the automatic absolute damper and associated alarm system. The licensee explained how this test was conducted during the site tour, and the licensee had sufficient records to demonstrate that this test had been conducted monthly as required during 2010 and 2011 to date.

Operational procedures were required to be implemented by TS 6.4. The inspector reviewed the licensee's procedures. The licensee revised the procedures to more clearly specify the operational requirements for shutdown conditions.

c. Site Tours

Technical Specification 5.1(1) specifies that the reactor laboratory basement room shall be considered a restricted area with locked doors and entrances controlled by reactor laboratory personnel. During the inspection, the licensee was noted to be maintaining control over the area with locked doors and entrances. The licensee continued to control public access to this space through the use of locked doors. The licensee supplied a list of individuals with keys to the restricted area and the inspector verified that keys had been issued only to those individuals who may have a need to access the restricted area.

The inspector conducted radiological surveys of the restricted areas using a Ludlum Model 2401-EC2 survey meter (NRC 21116G, with calibration due date of 12/06/11). The area radiation levels were less than 1 millirem per hour in all areas. Radiological postings were in place and updated to reflect current conditions. Faded signs had been replaced.

At the time of the inspection, the reactor pool water level was approximately 8 inches from the top of the pool. This level is considered normal by the licensee. The licensee stated that water had to be added to the pool as necessary due to evaporation. The most recent water radioactivity sample results were below the detection limit of the measuring equipment.

d. Implementation of Radiation Protection Program

The inspector conducted a review of the licensee's radiation protection program. The licensee has suspended the occupational monitoring, bioassay, and whole-body counting programs that were specific to the reactor facility. The licensee suspended the programs, as allowed by 10 CFR 20.1502, due to the lack of work involving radioactive materials in the reactor facility. The reactor director continues to be occupationally monitored due to his activities related to the broad scope license of the medical facility

At the time of the inspection, the licensee used five dosimeters to monitor area ambient gamma radiation levels. The dosimeter records for 2010 were reviewed. The radiation levels varied from 8 millirems per year in the ventilation flow path to 19 millirems per year in the area adjacent to the reactor pool. These annual dose rates were well below the 100 millirems per year dose limit as specified in 10 CFR 20.1301 for individual members of the public.

Technical Specifications Section 4.6 states that all radiation monitors listed in TS 3.6.1 shall be calibrated annually and after maintenance. In accordance with TS 3.6.1, the licensee utilized two radiation monitors—an area radiation monitor and a continuous air monitor. The area radiation monitor was being calibrated annually and provided continuous monitoring of gamma radiation emanating from the pool. The licensee discontinued maintaining the continuous air monitor during January 2006. The continuous air monitor was originally used to detect fission product gases emanating from the reactor fuel. Since the fuel has been permanently removed from the reactor, the licensee concluded that the continuous air monitor was no longer necessary based on current plant conditions. If needed, the licensee had access to calibrated survey meters from its 10 CFR Part 30 broad-scope medical license/permit.

The licensee's radiation protection program procedure required monthly wipe tests in the reactor laboratory room. To monitor for contamination, the licensee conducted monthly swipe samples at a minimum of four randomly selected locations in the reactor room. These samples were analyzed via liquid scintillation. The licensee's auditor identified a contaminated 'hot' particle during the February 2009 survey. The particle was recovered and was being stored in a plastic bag in the restricted area. The licensee analyzed the particle by gamma spectroscopy for identification of the radionuclide content and noted presence of Cobalt-60 at very low levels. Also, the auditor noted two locations with elevated fixed contamination—the drain inside a vent hood and an activated wire behind lead bricks. These areas were properly posted and controlled by the licensee. The licensee cut small samples of the activated wire and forwarded to a laboratory for further analysis. The licensee placed the remainder of the activated wire and the hot particle in a waste container and will dispose of these wastes during future decommissioning activities.

Amendment 11 to NRC License R-57 allowed the licensee to possess up to 8 curies of polonium-beryllium in the form of sealed sources. The inspector determined through

visual verification and serial number check that the licensee did possess one sealed polonium-beryllium source with an activity of essentially zero. The licensee had also conducted a review of archived records to verify proper transfer or disposal of other sources. The licensee by memo of March 1, 2010, updated its September 21, 2004, letter to the NRC clarifying the actual number and type of sources currently possessed on-site. Based on this information, the number and location of all polonium-beryllium sources had been accounted for.

e. Emergency Preparedness

Regulation 10 CFR 50.54(q) states, in part, that licensees authorized to possess and/or operate a research reactor shall follow and maintain in effect emergency plans which meet the requirements provided in Appendix E to 10 CFR Part 50. According to Appendix E, the emergency plan training program must provide for: (a) the training of employees and exercising, by periodic drills, of radiation emergency plans to ensure that employees of the licensee are familiar with their specific emergency response duties, and (b) the participation in the training and drills by other persons whose assistance may be needed in the event of a radiation emergency. This shall include a description of specialized initial training and periodic retraining programs to be provided to emergency personnel. Each licensee is also required to conduct an exercise of its emergency plan every 2 years.

There were four accident scenarios still applicable to the facility—fire, natural phenomena, security, and loss of reactor pool water. A loss of pool water would result in a loss of shielding and possible increase in ambient gamma radiation levels. The licensee conducted a drill involving a loss of pool water in December 2010. The inspector reviewed documentation of the hot wash conducted following this drill and noted that parties to the drill had performed satisfactorily.

In addition to the scenario drills, the inspector conducted a review of the licensee's training requirements as listed in the emergency plan. The inspector concluded that the licensee was implementing the training requirements specified in Appendix E to 10 CFR Part 50. The licensee tested the adequacy of timing and content of implementing procedures and methods, testing emergency equipment and communications networks, testing the public notification system, and ensuring that emergency organization personnel were familiar with their duties as required by 10 CFR Part 50, Appendix E requirements.

1.3 Follow-up on Traditional Enforcement Actions (92702)

The inspector reviewed the licensee's corrective actions implemented in response to the Notice of Violation issued February 5, 2010 (050-00131-09-001). Follow-up items connected to the corrective actions are discussed in Section 1.2 of this report. The inspector determined that all corrective actions identified to the NRC were completed as described in the licensee's letter dated March 10, 2010. These corrective actions are considered closed. The inspector also reviewed the licensee's actions as described in the licensee's letter dated April 12, 2010 and these actions are considered closed.

1.4 Conclusions

Since the previous inspection, the licensee revised the boundary of the reactor facility returning it to the configuration detailed in the Safety Analysis Report, Figure 3.2. The licensee had staffed all positions. The licensee utilized the hospital radiation safety officer as needed to support compliance with the license. The licensee reported permanent changes in the facility organization involving Level 1 and 2 personnel to the NRC within 30 days as required by TS 6.7.2(2). The licensee conducted routine audits of the license as required by TS 6.2.

The licensee continued to monitor reactor pool water quality and to maintain pool water level in accordance with TS 4.3. The licensee continued to conduct functional tests of the pool water level and ventilation system interlocks as required by TS 4.3 and TS 4.5.

The restricted area was being controlled by the licensee. Ambient gamma radiation levels were low, essentially at the level of background and postings were compliant.

The licensee implemented its radiation protection program in accordance with TS 6.3 and 10 CFR Part 20 requirements. The inspector was able to verify that one polonium-beryllium sealed source was possessed by the licensee. This source has decayed such that there is no activity present and the source has been placed in storage with other waste for disposal during final decommissioning.

The licensee by letter dated January 14, 2010 has requested exemption from requirements for an emergency plan. The NRC has not approved this request. The licensee did conduct training of personnel followed by a reactor related emergency drill in December 2010 to ensure compliance with 10 CFR 50.54 requirements.

2 **Exit Meeting**

The inspector reviewed the scope and findings of the inspection during an exit meeting that was conducted at the conclusion of the onsite inspection on May 20, 2011. The licensee did not identify as proprietary any information provided to, or reviewed by, the inspector.

SUPPLEMENTAL INSPECTION INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Mike Christensen, Radiation Safety Officer (broad-scope license)
Edward Fennel, Member, RSC
Fredrick Hamel, Deputy Associate Chief of Staff/Research
Chris Higgins, On-site supervisor, AECOM
Dan McVicker, Reactor Director/Supervisor
Debra Romberger, Associate Chief of Staff/Research and Co-chair, RSC

INSPECTION PROCEDURES USED

IP 87104 Decommissioning Inspection Procedure for Materials Licensees

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

| | | |
|-------------------|-----|---|
| 050-00131/0901-01 | VIO | Failure of RSC to review changes to Safety Analysis Report |
| 050-00131/0901-02 | VIO | Failure to report changes in facility organization to NRC |
| 050-00131/0901-03 | VIO | Failure to collect two monthly water samples |
| 050-00131/0901-04 | URI | Unknown status of polonium-beryllium sources |
| 050-00131/0901-05 | VIO | Failure to submit revised emergency plans to NRC within 30 days and failure obtain NRC approval before reducing effectiveness of emergency plan |

LIST OF ACRONYMS

| | |
|-------|-------------------------------|
| CFR | Code of Federal Regulations |
| IFI | NRC Inspection Follow-up Item |
| IP | NRC Inspection Procedure |
| kW(t) | kilowatts (thermal) |
| RSC | Reactor Safeguards Committee |
| TS | Technical Specifications |
| URI | NRC Unresolved Item |
| VIO | NRC Violation |