

APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Inspection Report: 50-131/93-01

License: R-57

Licensee: Omaha Veterans Administration
Medical Center
4101 Woolworth Avenue
Omaha, Nebraska 68105

Facility Name: TRIGA Mark I Nuclear Reactor

Inspection At: Omaha Veterans Administration Medical Center

Inspection Conducted: December 6-8, 1993

Inspectors: L. T. Ricketson, P.E., Senior Radiation Specialist
Facilities Inspection Programs Section

A. D. Gaines, Radiation Specialist
Facilities Inspection Programs Section

Approved:

B. Murray
B. Murray, Chief, Facilities Inspection
Programs Section

12/16/93
Date

Inspection Summary

Areas Inspected: Routine, announced inspection of organization and staffing, operations, procedures, requalification training, surveillances, experiments, radiological controls, design changes, committee audits, emergency planning, maintenance, fuel handling, security, material control, and transportation.

Results:

- There were no organization changes (Section 1.1).
- The reactor was used steadily, and there were no major mechanical problems (Section 1.2).
- The Operator Requalification Training Program was properly implemented (Section 1.4).
- Technical specification surveillances were completed as required, with one isolated exception (Section 1.5).

- No new experiments were performed (Section 1.6).
- The health physics program was well implemented (Section 1.7).
- There were no facility or reactor design changes (Section 1.8).
- Committee audits and reviews were performed as required (Section 1.9).
- Emergency planning and exercises were good (Section 1.10).
- Emergency responders were knowledgeable of their responsibilities (Section 1.10).
- The security plan was implemented as required (Section 2.0).
- All special nuclear material was accounted for and controlled (Section 3.0).
- There were no transportation activities involving radioactive material (Section 4.0).

Attachment:

- Attachment - Persons Contacted and Exit Meeting

DETAILS

1 CLASS II NON-POWER REACTORS (40750)

The inspectors reviewed the licensee's programs to determine compliance with the conditions of License No. R-57 (through Amendment 9), including Technical Specifications, and 10 CFR Parts 19, 20, 30, 50, and 71.

1.1 Organization and Staffing

The inspectors reviewed the licensee's organization and determined that no changes had been made in the structure of the organization, and it continued to be as described in Technical Specification 6.2. Since the previous inspection, the only personnel change involved the selection of a new hospital director. The licensee had two senior reactor operators, one of whom was the reactor supervisor. There were no reactor operators.

1.2 Operational Logs and Records

The inspectors reviewed reactor logs, records, and reports and determined:

- The reactor operated at a steady-state power level of approximately 18 kilowatts (even though the allowable power level was raised to 20 kilowatts by License Amendment 9). The energy generated by the reactor was 8816.8 kW-hours in 1991 and 8104.7 kW-hours in 1992.
- The licensee had experienced approximately eight unplanned scrams in the 1992/1993 period for various reasons. There were no major problems with the reactor, and the only major maintenance performed involved the pneumatic sample transfer system.
- No safety limits or limiting conditions for operation of the reactor had been exceeded.

1.3 Procedures

The inspectors reviewed standard operating procedures and noted the addition of two procedures since the previous inspection. These were:

- Procedure 14, "Administrative Controls of Operation and Maintenance"
- Procedure 15, "Filling Reactor Tank With Makeup Water"

The two procedures were reviewed by the appropriate licensee personnel prior to becoming effective. The licensee maintained standard operating procedures in compliance with Technical Specification 6.7. All standard operating procedures were reviewed on an annual basis to determine the need for revision.

1.4 Requalification Training

The inspectors reviewed the licensee's operator requalification program to determine compliance with the NRC-approved, "Requalification Program for Licensed Reactor Operators," dated May 6, 1974. The inspectors reviewed training records and examinations given to the licensed senior reactor operator. The inspectors noted that the training was appropriate, and the examinations had been given at the proper frequency. The inspectors reviewed records of observations of the senior reactor operator and determined that the reactor supervisor had performed the observations at the required frequency. The inspectors determined that the operator requalification training program had been conducted in accordance with the approved program.

1.5 Surveillances and Limiting Conditions for Operation

The inspectors reviewed the licensee's records of surveillance testing results and determined:

- The reactivity worth of each control rod and the shutdown margin was determined annually, in accordance with Technical Specification 4.2.1(1).
- The control rods were visually inspected for deterioration annually, in accordance with Technical Specification 4.2.1(3), and no problems were identified.
- Channel tests before each day's operation were performed, and the pool level channel was tested monthly, in accordance with Technical Specification 4.2.2(2).
- The scram time was measured annually and found not to exceed the requirements of Technical Specification 4.2.2(1). Power level calibrations were performed annually, as required by Technical Specification 4.2.2(3).
- The radiation monitoring system and the continuous air monitoring system were calibrated annually, as required by Technical Specification 4.2.3.
- The ventilation system was determined to be operable, in accordance with Technical Specification 4.2.4.
- Four reactor fuel elements were inspected each quarter, in accordance with Technical Specification 4.2.5. No problems were identified. The inspectors identified that the inspection interval in one instance did exceed the technical specification limit of quarterly, not to exceed 4 months. Fuel elements were inspected September 25, 1992. The surveillance was not performed again until February 3, 1993. Because this was an isolated example and had not reoccurred, it was not identified as a violation as allowed in the NRC Enforcement Policy.
- The conductivity and pH of the coolant were measured, in accordance with Technical Specification 4.4 before each startup.

1.6 Experiments

All experiments had been reviewed and approved by the Reactor Safeguards Committee, in accordance with Technical Specification 6.8. Only one experiment had been approved since the previous inspection. It was never performed. Experiments were repetitious, and the reactivity worth of the experiment was known, in accordance with Technical Specification 4.2.1(2). The reactivity did not exceed the limit of Technical Specification 3.6. Samples which were irradiated met the requirements of Technical Specification 3.7. No unreviewed safety questions were identified.

1.7 Health Physics

The inspectors reviewed the licensee's health physics program to determine compliance with 10 CFR Parts 20 and 30, as required by License Condition 2.C.

The inspectors reviewed personnel monitoring records for the period January 1992 through September 1993. The senior reactor operators used external dosimetry that was sensitive to beta, gamma, and neutron radiation. Extremity monitoring devices were also used. Most dosimetry results were minimal. 10 CFR 20.101 limits were not exceeded.

The inspectors performed area radiation surveys and confirmed that radiation levels did not exceed the limits of 10 CFR 20.105 while the reactor was operating at a power level of 18 kW. The licensee had survey records or area dosimetry monitoring results as documentation of its radiation measurements. Restricted areas were posted in accordance with 10 CFR 20.203. The licensee also performed general area contamination monitoring weekly. The inspectors noted that radiation surveys were performed when parts of the pneumatic sample transfer tube were removed from the pool for maintenance. A survey instrument mounted at the top of the reactor pool provided radiation measurements during sample retrieval.

Calibrations of the instruments used to perform radiation surveys were performed with radioactive sources traceable to national standards. The inspectors reviewed the calibration records of selected instruments to verify that calibration intervals were maintained. The calibrations were performed under the facility's broad scope byproduct materials license. Licensee representatives determined that neutron survey instruments were unnecessary and no longer maintained one in calibration.

The inspectors confirmed that workers were provided radiation safety instruction by the reactor supervisor in accordance with 10 CFR 19.12.

1.8 Design Changes

There were no design changes since the previous inspection concerning the reactor.

1.9 Committees, Audits, and Reviews

The inspectors reviewed the qualifications of the licensee's Reactor Safeguards Committee and the audits and reviews conducted by the committee to determine compliance with Technical Specifications. The inspectors verified the licensee's review and audit program implemented by the Reactor Safeguards Committee included approval for facility changes, operating and maintenance procedures, and design changes as required by Technical Specifications.

The Reactor Safeguards Committee met on a quarterly basis, as required by Technical Specifications, for the period October 1991 to September 1993. Annual audits were conducted on June 29, 1992, and June 16, 1993, by a Reactor Safeguards Committee member who was not part of the reactor staff. The audits reviewed the areas specified in the Technical Specifications. Biennial reviews of the emergency plan and the security plan were conducted on June 29, 1992, and May 24, 1993, respectively.

1.10 Emergency Planning

The inspectors reviewed the licensee's emergency plan program to determine compliance with the emergency plan approved by NRC on December 12, 1988.

The inspectors reviewed the letters of agreement from local offsite support organizations which the licensee had on file. The inspectors noted the agreements were renewed biennially and were due to be resubmitted within the next 2 months.

The inspectors verified that emergency call out lists were accurate and provided in the proper places. Inventories were performed at the proper frequency of the emergency equipment located on the licensee's emergency cart.

Appropriate orientation and training were provided to onsite and offsite emergency response personnel in accordance with the emergency plan. The inspectors reviewed the emergency plan exercises and noted that they had been conducted annually as required on November 12, 1992, and November 30, 1993.

On December 8, 1993, the inspectors conducted a discussion with representatives of various offsite and onsite response organizations, as well as the reactor operations staff, concerning emergency response. (See Attachment 1 to this report for attendance.) The inspectors proposed hypothetical situations requiring emergency response, and the representatives discussed their probable responses to the situations. Licensee representatives were familiar with their responsibilities as outlined by the emergency plan and knew the proper classifications of the events. Responders were familiar with the facility and their responsibilities. No weaknesses or misunderstandings were identified. The reactor supervisor stated that he would include a discussion of the facility's ventilation controls in the annual training and site orientation presented to the fire department.

1.11 Maintenance Logs and Records

There was no major maintenance on the reactor since the previous inspection, other than repairs to the pneumatic sample transfer system. Minor maintenance items were recorded in the reactor log. Inspections required by technical specifications were discussed in Section 1.5.

1.12 Fuel Handling Logs and Records

The only time the fuel was handled was during the quarterly fuel inspection discussed in Section 1.5.

2 FIXED SITE PHYSICAL PROTECTION OF SPECIAL NUCLEAR MATERIAL OF LOW STRATEGIC SIGNIFICANCE (81431); PLANS, PROCEDURES, AND REVIEWS (81401); REPORTS OF SAFEGUARDS EVENTS (81402); AND PROTECTION OF SAFEGUARDS INFORMATION (81810)

The inspectors reviewed the licensee's physical protection program to determine compliance with the Physical Security Plan and 10 CFR Part 73.

The inspectors verified that the site and facilities were as described in the security plan. There had been no revisions to the security plan since the previous inspection. The licensee stored and used material only within the controlled access area. Through interviews with licensee personnel and reviews of logs, the inspectors determined that security for the facility was implemented as specified in the security plan. There had been no security problems or safeguards events since the previous inspection.

3 MATERIAL CONTROL AND ACCOUNTING (85102)

The inspectors reviewed the licensee's program of material control and accountability to determine compliance with license conditions and 10 CFR Part 70.

The inspectors reviewed material balance and inventory records and determined that the records were properly maintained and that the licensee did not exceed the uranium-235 possession limits of License Condition 2.B.(2). There had been no receipts or transfers since the previous inspection. The material was stored as indicated. During fuel inspection, inventories were performed every quarter.

4 TRANSPORTATION OF RADIOACTIVE MATERIALS (86740)

The inspectors determined that the licensee had not transported radioactive materials since the previous inspection.

5 CONCLUSIONS

There were no changes to the structure of the organization or to the operational staff. The reactor was used steadily, and there were no major mechanical problems. Requalification training was good and performed as required. Technical specification surveillances were completed as required, with one isolated exception. No new experiments were performed. The health

physics program was well implemented. There were no design changes. Committee audits were performed at the proper frequency. Emergency planning and exercises were good. Emergency responders were knowledgeable of their responsibilities.

The security plan was implemented, as required. All special nuclear material was accounted for and controlled. There were no transportation activities involving radioactive material.

ATTACHMENT

1 PERSONS CONTACTED

R. Barnes, Police Supervisor, Veterans Administration Medical Center
*A. Blotcky, Senior Reactor Operator and Reactor Supervisor
*J. Claassen, Senior Reactor Operator
F. Fleming, Battalion Chief, Omaha Fire Department
T. Graeve, Assistant Fire Chief, Omaha Fire Department
*J. Phillips, Director, Veterans Administration Medical Center
M. Swartz, M.D., Clinical Physician, Veterans Administration Medical Center
J. Vallery, Industrial Hygienist, Veterans Administration Medical Center

*Denotes personnel that attended the exit meeting. In addition to the personnel listed, the inspector contacted other personnel during this inspection period.

2 EXIT MEETING

An exit meeting was conducted on December 8, 1993. During this meeting, the inspector reviewed the scope and findings of the report. The licensee did not express a position on the inspection findings documented in this report. The licensee did not identify as proprietary, any information provided to, or reviewed by the inspector.