


U.S. NUCLEAR REGULATORY COMMISSION
REGION I

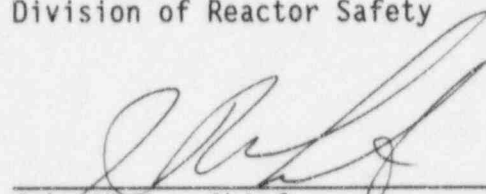
DOCKET NO.: 50-223
REPORT NO.: 50-223/96-01
LICENSEE: University of Massachusetts
FACILITY: Lowell University Research Reactor
LOCATION: 1 University Avenue
Lowell, Massachusetts
DATES: April 1-3, 1996

INSPECTOR:


Thomas Dragoun, Project Scientist
Radiation Safety Branch
Division of Reactor Safety

4/16/96
Date

APPROVED:


John White, Chief
Radiation Safety Branch
Division of Reactor Safety

4/16/96
Date

Executive Summary

Activities were conducted in a safe, well controlled manner using approved procedures. Improvements in the emergency plan and operating procedures was noted.

DETAILS

Summary of Plant Status

Tours for high school and university liberal arts students, including neutron activation demonstrations, were in progress. Routine reactor start-ups, shutdowns, and placement of experiment samples were conducted. Repair of an in-line trip switch in rabbit System No. 2 was initiated.

1.0 ORGANIZATION, LOGS, AND RECORDS (INSPECTION PROCEDURE 39745)

The inspector reviewed the organization with respect to requirements in TS 6.0. Annual personnel changes occur due to use of students as operators and staff. Reactor and health physics management positions were as required by TS and the manning of licensed operators on shift was verified to meet the requirements. However, the health physics technician position, which is described in Safety Analysis Report Section 8.3, is filled by part-time students. A March 1995 Radiation Safety Committee report concluded that the position should be filled by a full-time professional. This matter has concerned the NRC since 1990 and will be followed in separate correspondence with licensee upper management.

Operator logs were reviewed. Entries were clear and descriptive. Equipment malfunctions and repairs were properly documented. Trouble-shooting, repair, and operational checks for a defective trip switch in rabbit System No. 2 was well planned and coordinated.

2.0 OPERATOR LICENSES, REQUALIFICATION AND MEDICAL CERTIFICATION (INSPECTION PROCEDURE 41745)

By record review, the inspector verified that console manipulations and required training on facility equipment, procedure changes, and emergency response was being conducted to maintain license qualification for staff operators in accordance with the requalification plan and 10 CFR 55.53(e).

3.0 PROCEDURES (INSPECTION PROCEDURE 42745)

The inspector verified that approved procedures required by TS 6.3 were available in the control room and used by the operators during reactor startups, shutdowns, and equipment checks. The inspector noted that procedures changed since the last inspection were reviewed and approved by the Reactor Safety Subcommittee. Procedures and "standing orders" were generally clear with good technical quality.

4.0 REACTOR FUEL MOVEMENT (INSPECTION PROCEDURE 60745)

The inspector observed the movement of the core by several feet to reduce radiation levels in a radial beam tube during installation of an experiment. The oversight by licensed senior operators, adherence to procedures, communications with the control room, and attention to safety were very good.

5.0 SURVEILLANCE (INSPECTION PROCEDURE 61745)

The inspector reviewed the licensee's program for control and conduct of surveillance activities. The inspector observed the check of the motion sensors and the annual inventory of cobalt 60 sources possessed under license condition 2.B.3 and stored in the reactor pool. The inspector reviewed selected surveillance procedures and records and determined that equipment conditions were properly verified at the intervals specified in TS 4.0.

6.0 EXPERIMENTS (INSPECTION PROCEDURE 69745)

The inspector examined the control program for experiments. No new experiments requiring approval by the Reactor Safety Subcommittee have been introduced since 1991. The reactor supervisor and RSO approve each in-core experiment under existing protocols. The inspector observed the placement of an in-core sample, reviewed experiment control procedures (procedures RO-4, SP-25, and standing order SO-12) and the completed irradiation request forms. The inspector verified that TS 3.6 and 6.8 requirements were satisfied.

7.0 REVIEW, AUDIT, AND DESIGN CHANGE FUNCTIONS (INSPECTION PROCEDURES 40745)

The inspector reviewed the functions and membership of the Reactor Safety Subcommittee to verify compliance with TS requirements. Discussions with two members and review meeting minutes indicated that the committee was meeting with the required quorum, at the required frequency, and providing the required oversight of the reactor program.

8.0 EMERGENCY PREPAREDNESS (INSPECTION PROCEDURE 82745)

A revised emergency preparedness plan was put into effect in January 1995. The inspector verified that the plan was properly implemented through a review of revised emergency procedures, interviews with personnel, and review of training records. A complex drill, simulating sabotage by a disgruntled student HP technician, was conducted in December 1995, and confirmed the licensee's ability to respond to emergencies.

9.0 EXIT INTERVIEW (INSPECTION PROCEDURE 30703)

The inspector presented the inspection results to members of licensee management at the conclusion of the inspection on April 3, 1996. The licensee acknowledged the findings presented.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

L. Bettenhausen, Reactor Supervisor
W. Church, Radiation Safety Officer
G. Kegel, Director, Radiation Laboratory
S. Tripathy, Provost and Vice Chancellor for Academic Affairs

INSPECTION PROCEDURES USED

IP 39745: CLASS I NON-POWER REACTORS ORGANIZATION AND OPERATIONS AND
MAINTENANCE ACTIVITIES
IP 40745: CLASS I NON-POWER REACTOR REVIEW AND AUDIT AND DESIGN CHANGE
FUNCTIONS
IP 41745 CLASS I NON-POWER REACTOR OPERATOR LICENSES, REQUALIFICATION, AND
MEDICAL ACTIVITIES
IP 42745 CLASS I NON-POWER REACTOR PROCEDURES
IP 60745 CLASS I NON-POWER REACTOR FUEL MOVEMENT
IP 61745: CLASS I NON-POWER REACTOR SURVEILLANCE
IP 69745: CLASS I NON-POWER REACTOR EXPERIMENTS
IP 82745: CLASS I NON-POWER REACTOR EMERGENCY PREPAREDNESS

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

none

Closed

none

Discussed

50-223/94-01-01 Licensee to evaluate adequacy of health physics staffing

LIST OF ACRONYMS USED

CFR Code of Federal Regulations
HP Health Physics
NRC Nuclear Regulatory Commission
RSO Radiation Safety Officer
SAR Safety Analysis Report
TS Technical Specifications