U. S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-223/92-01

Docket No. 50-223

License No. R-125

Licensee: University of Massachusetts- Lowell
1 University Avenue
Lowell, Massachusetts 01854

Facility Name: Lowell University Research Reactor

Inspection At: Lowell, Massachusetts

Inspection Conducted: June 1-3, 1992

Inspectors: Thomas Dragoun 7/8/92
Thomas Dragoun, Project Scientist, Effluents Radiation Protection Section (ERPS), Facilities Radiological Safety and Safeguards Branch (FRSSB) — date

Stephen W Holmes 7/8/92
Stephen Holmes, Radiation Specialist, ERPS, FRSSB — date

Approved By: Robert J Bores 7/8/92
Robert Bores, Chief, ERPS, FRSSB, Division of Radiation Safety and Safeguards — date

Areas Inspected: Radiation protection program staffing, audits and oversight, monitoring equipment signs and postings, and implementation of the emergency plan.

Results: Excellent independent audits had been conducted. No safety concerns or violations of regulatory requirements were identified.

DETAILS

1.0 Persons Contacted

*G. Kegel, Director, Radiation Laboratory
*T. Wallace, Reactor Supervisor
*W. Church, Radiation Safety Officer
R. Burns, Radiochemist
D. Martineau, Chief Reactor Operator

*Attended the exit interview on June 3, 1992.

2.0 Radiation Protection Program

2.1 Staffing

This previously was an area of concern. Present staffing in the health physics program consists of the Radiation Safety Officer and a half-time technician . The technician position is sustained by grant money and is not a permanent state-funded, full-time position. It is, therefore, subject to being eliminated. Previous inspections noted that a full-time tech position was needed to satisfy the minimum HP staffing levels described in the Safety Analysis Report (SAR). The inspector stated that licensee management will need to justify a change to the SAR if the staffing does not include a permanent technician position. This matter will be reviewed in a future inspection.

Significant radioanalytical support for the HP program is provided by the Radiochemist along with operational survey support from the reactor staff. Some limited, student help is also available. The Radiation Safety Sub-Committee was reviewing the staffing situation. Staffing appears adequate for the present operational load. The licensee should continue to carefully monitor the HP program to assure safety and regulatory requirements are met should staffing or operational load change. This matter will be reviewed in a future inspection.

2.2 OVERSIGHT

Radiation subcommittee minutes for the past year, the two latest audits conducted by outside experts and the audit checklist were reviewed by the inspector. The radiation sub-committee quarterly meeting schedule and membership satisfy requirements provided by Technical Specification 6.2. Review of the minutes indicates the committee provides appropriate guidance, direction and oversight to the safety program and insures proper followup on audit recommendations. The audit checklist was performance oriented, comprehensive and covered safety as well as compliance items. Oversight by the Radiation Safety Sub-Committee appears to be good.

2.3 PORTABLE SURVEY EQUIPMENT

The inspector reviewed the use, stockage, and calibration of the portable survey equipment. Sufficient amounts and appropriate types of portable survey equipment were available in the reactor containment (a low range beta/gamma meter and a high range ion chamber on each floor). However, the availability of backup equipment and spares was limited. There was a large amount of out-of-commission equipment on hand that could be repaired to provide proper backup and spares. Calibration was being done periodically in compliance with license requirements using NIST-traceable sources or R-meters. Written procedures were being followed and the calibration records were in order. Portable survey equipment was being properly maintained and calibrated.

2.4. INPLACE RADIATION MONITORS

Technical Specifications require that the permanent radiation monitoring equipment be available and functioning for reactor operations. The availability, functionality, and calibration of the constant air monitors (CAMs), the area radiation monitors(ARMs), and the stack gas monitor(SGM) were evaluated. The CAMs, ARMs and the SGM were available and functional. Review of records indicated that acceptable calibration procedures were being followed and that the frequency met license requirements. To improve calibration of the fission product monitor a change in the calibration source was made. This change had not yet been reflected in the written procedure or the calibration record form. Discussion with the licensee indicated that the pen and ink change to the calibration would be made to the written procedure by June 15, 1992, pending formal approval by the Radiation Safety Sub-Committee. This will be reviewed in a future inspection. Within the scope of this review, no safety concerns were observed.

2.5 Radiation Surveys, Analyses, Signs, and Postings

The license is required by 10 CFR 20.201 and 20.203 to also perform routine surveys to evaluate the radiation hazards present and to properly post such areas with the required signs. The inspector conducted tours of the reactor controlled areas, observed an irradiated material removal operation, and examined procedures and records of routine radiation area, contamination , and air monitoring surveys. Additionally, reactor pool water, CAM and SGM filter, liquid effluent, radioactive waste, and smear analyses were reviewed by the inspector. The warning signs and postings properly reflected the radiological conditions in the facility. One concern was an unsecured High Radiation Area enclosure, adjacent to a beam access. However, since the enclosure was inside a barricaded area and access to the reactor containment is controlled by the operators, this was not a safety and health concern. The licensee stated that the area would be locked.

Written procedures were adequate. However, the Radiation Safety Guide, which provides the general HP program policies, did not adequately describe the routine activities in which the reactor operators conducted the surveys instead of the HP technician. The inspectors observed that the surveys performed by the operators were done correctly. The licensee stated that this matter would be reviewed and appropriate guidance provided. The inspector determined that the routine survey and analytical programs and postings were adequate.

2.6 Personnel Dosimetry

The licensee uses a NVLAP accredited vendor to process personnel TLD dosimetry each month. A review of records indicated that all exposures were within NRC limits with most showing no exposure above background. All records appeared to be in order and no safety concerns were noted.

3.0 Emergency Planning

The inspector reviewed elements of the licensee's emergency preparedness program that are required by the NRC approved Emergency Plan. A recent, independent audit of emergency planning had been conducted by the director of the research reactor at the University of Michigan. The audit report indicated that this review was comprehensive and excellent findings and recommendations were provided. The licensee was commended for this effort and was advised that the inspector would not need to re-examine the areas covered by this high quality report during the current inspection.

The latest annual emergency drill was a major fire in the reactor containment and involved full-scale participation by the city fire department. The inspector reviewed the preparation, conduct, and critique of the drill. Three improvement items had been identified during the critique. The inspector verified that action on these items was complete.

The Emergency Plan is supplemented by Emergency Operation Procedures EO-1 through EO-8 which provide guidance for reactor operator action to initiate and control emergency response. After this initial response, the Emergency Coordinator takes charge and implements the Emergency Plan. The inspector reviewed these procedures and found them to be adequately detailed.

Within the scope of this review, no safety concerns or deficiencies were identified.

4.0 Exit Interview

The inspector met with the licensee representatives indicated in Section 1.0 on June 3, 1992 and summarized the scope and findings of this inspection.