

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-223/85-02

Docket No. 50-223

License No. R-125 Priority ---- Category F

Licensee: University of Lowell

1 University Avenue

Lowell, Massachusetts

Facility Name: University of Lowell Reactor

Inspection At: Lowell, Massachusetts

Inspection Conducted: August 5-7, 1985

Inspectors: *Kevin Holsopple* 8-27-85
K. Holsopple, Radiation Specialist date

Approved by: *W. Pasciak* 8/27/85
W. Pasciak, Chief, BWR Radiological date
Protection Section

Inspection Summary: Inspection on August 5-7, 1985 (Report No. 50-223/85-02)

Areas Inspected: Routine, announced inspection of the licensee's Health Physics and Radiological Controls programs. Areas inspected included posting and labeling, instrument and monitor calibration, surveys and sampling, dosimetry and exposure control, controls during experimentation, reports and audits, and personnel training. The inspection involved 11 hours onsite by one region-based inspector.

Results: No violations were identified.

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DETAILS

1.0 Persons Contacted

During the course of this routine inspection, the following licensee personnel were contacted or interviewed:

- *Dr. L. Beghian
- Mr. G. Chabot, Radiation Safety Officer
- *Mr. T. Wallace, Nuclear Reactor Supervisor
- *Mr. H. Jo, Health Physics Technician

Other licensee employees were also contacted or interviewed during this inspection.

Also, Dr. W. Pasciak*, Chief, BWR Radiological Protection Section accompanied the inspector and provided management supervision during the inspection.

*Attended exit interview on August 7, 1985

2.0 Purpose

The purpose of this routine inspection was to review the licensee's health physics and radiological controls programs with respect to the following elements:

- Status of Previously Identified Items
- Posting and Labeling
- Instrument and Monitor Calibration
- Surveys and Sampling
- Dosimetry and Exposure Control
- Controls during Experimentation
- Reports and Audits
- Personnel Training

3.0 Status of Previously Identified Items

3.1 (Closed) Inspector Follow-up Item (50-223/84-03-04):

Review implementation of improved radiation survey documentation. The inspector reviewed the licensee's radiation and contamination surveys (see Section 6.1 of this report) and determined the licensee has modified its radiation survey documentation. The contamination survey now includes individual contamination swipe count results and the radiation survey now provides the serial number of the survey meter as well as provides the proper units of the readings. The licensee's modifications to their survey program are consistent with ANSI-N13.6-1966.

4.0 Posting and Labeling

The inspectors toured the University of Lowell Reactor (ULR) following the entrance interview. Posting of the facility and labeling of radioactive materials were in accordance with 10 CFR 20.203 requirements.

5.0 Instrument and Monitor Calibration

The inspector evaluated the licensee's program for calibration of radiation detection instrumentation by the following methods:

- Review of calibration procedures and records for the radiation monitoring equipment included in the Technical Specifications.
- Review of the calibration procedure and records for the portable radiation survey instruments.
- Discussion with licensee personnel.

The inspector determined that the radiation monitoring equipment is being calibrated adequately and where applicable, in accordance with the Technical Specifications.

No violations were identified in this area.

6.0 Surveys and Sampling

6.1 Surveys

Routine and job-specific radiation and contamination surveys of the ULR facility are performed by the Health Physics staff. The inspector reviewed selected facility surveys performed during 1985 and found them to be adequate in scope and content to meet the requirements of 10 CFR 20.201.

6.2 Effluent Sampling

The inspector reviewed the licensee sampling methods for the waste storage tanks and the liquid release data for 1985. Samples are taken from the waste storage tanks and analyzed by the licensee to determine if the tank contents meet allowable limits for discharge to the sanitary system. The releases reviewed were below the 10 CFR 20.303 limits.

The inspector also reviewed the gaseous effluent release data and determined that the licensee was within the Technical Specification limit. However, the inspector noted that on two occasions, the strip chart obtained from the gaseous effluent monitor was illegible. The inspector stated that more attention should be given to the strip chart during surveillance of the gaseous effluent monitor

to ensure that legible gas effluent records are obtained.

This item will be reviewed during a subsequent inspection (50-223/85-02-01).

7.0 Dosimetry and Exposure Control

Film badges for personnel radiation monitoring are provided for the users of the ULR by the Health Physics Office. The University contracts with Landauer to provide film badge and badge processing services.

The inspector reviewed selected exposure records for users of the ULR from January 1985 through June 1985 and noted that the majority of personnel showed no detectable exposure and all individuals were within 10 CFR 20.101 limits.

The inspector also discussed the calibration of the licensee's self-reading dosimeters (SRD). The licensee indicated that no calibration procedures exist for the SRDs nor are they sent to an outside vendor for calibration. The inspector stated that the SRDs should be calibrated (preferably in accordance with ANSI N322-1977) so that confidence can be placed on the readings of the SRD and eliminate any false sense of security that could potentially arise. The inspector stated that this item will be reviewed in a subsequent inspection (50-223/85-02-02).

8.0 Controls During Experimentation

The inspector evaluated the licensee's implementation of radiological controls during the performance of irradiation experiments by review of the following:

- Procedure RO-4, Adding or Removal of Samples to the Core
- Procedure RO-11, Handling of Irradiated Fuel
- Procedure EO-1, Emergency Operating Procedures -Radiation
Emergency
- Standing Order 7, Sample Handling Procedures

Within the scope of the above review it was determined that the licensee is adequately controlling the performance of irradiation experiments.

9.0 Reports and Audits

The following reports were reviewed during the course of this inspection:

- Reactor Safety Subcommittee meeting minutes for the time period from March, 1984 to May, 1985.
- Annual Report for the time period from July 1, 1983 to June 30, 1985.

The inspector noted that the Reactor Safety Subcommittee was meeting at least quarterly which is in accordance with the Technical Specifications.

During the review of the Annual Report the inspector noted that the section which described the gaseous waste provided the total activity released for the reporting period but did not provide monthly summaries as required in the Technical Specifications. The licensee stated that they would provide monthly summaries for the gaseous waste releases in their annual report.

The inspector stated that this area will be reviewed in a subsequent inspection (50-223/85-02-03).

10. Personnel Training

The licensee does not have a formal training program for the personnel who are using the facility. Rather, for an individual to gain unescorted access to the facility the Radiation Safety Officer must sign on a form which indicates his approval that the individual is properly trained. All escorted personnel are accompanied by an individual who has gained unescorted access status. To evaluate the training program with respect to 10 CFR 19.12 requirements, the inspector interviewed a Reactor Operator Trainee who had unescorted access to the facility for approximately two months. The individual showed that he had a firm understanding of the radiation hazards associated with the facility and was educated in the precautions, procedures, and regulations in effect to protect personnel from radiation exposure. Based upon the individual's responses to the inspector's questions and discussions with the licensee, the inspector determined that the licensee's training program meets the requirements of 10 CFR 19.12.

11. Exit Interview

The inspector met with licensee personnel denoted in Section 1.0 at the conclusion of the inspection on August 7, 1985. The scope and findings of the inspection were discussed at that time. At no time during this inspection was written material provided to the licensee by the inspector.