

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 85-01

Docket No. 50-225

License No. CX-22 Priority -- Category G

Licensee: Rensselaer Polytechnic Institute
Department of Nuclear Engineering and Science
Troy, New York 12181

Facility Name: Critical Experiment Facility

Inspection At: Schenectady, New York

Inspection Conducted: July 8-9, 1985

Inspectors: Kevin Holsapple for 8-26-85
B. H. Carson, Radiation Specialist date

Kevin Holsapple 8-26-85
K. L. Holsapple, Radiation Specialist date

Approved by: W. Pasciak 8/26/85
W. Pasciak, Chief, BWR Radiological date
Protection Section

Inspection Summary: Inspection on July 8-9, 1985 (Report No. 50-225/85-01)

Areas Inspected: Routine, announced inspection of the licensee's Radiation Protection Program. Areas inspected included Exposure Control, Instruments and Calibration, Experiments, Training, and Reports and Notifications. The inspection involved 20 hours onsite by two region-based inspectors.

Results: No violations were identified.

DETAILS

1.0 Persons Contacted

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

*F. Wicks, Supervisor, Critical Facility
*R. Ryan, Director, Office of Radiation and Nuclear Safety

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

*Attended exit interview on July 9, 1985.

2.0 Purpose

The purpose of this routine inspection was to review the licensee's radiation protection program with respect to the following elements:

- Status of Previously Identified Items
- Posting and Labeling
- Surveys
- Exposure Control
- Instruments and Calibration
- Experiments
- Training
- Reports and Notifications

3.0 Status of Previously Identified Items

- A. (Closed) Inspector Follow-up Item (50-225/83-03-01)
Licensee to rewrite procedure for analysis of radioactivity in moderator water. The inspectors reviewed the procedure entitled "Analysis for Moderator Water for Radioactivity" and determined that it adequately addressed analyzing the radioactivity present in the moderator water.

4.0 Posting and Labeling

The inspectors toured the Critical Experiment Facility (CEF) following the entrance interview. Posting of the facility and labeling of radioactive materials were in accordance with 10 CFR 20.203 requirements.

5.0 Surveys

Monthly radiation and contamination surveys of the CEF are performed by the staff of the Office of Radiation and Nuclear Safety. The inspectors

reviewed selected facility surveys for the past six months and found them to be adequate. It was noted that all of the surveys indicated that there was virtually no contamination present in the CEF. The licensee indicated that this was due to the design of the fuel used in the CEF.

Also, the licensee stated that during experiments the operator ensures that adequate radiation surveys are performed to ensure the safety of the students. The inspector suggested that radiation surveys should be taken at prescribed times during student experimentation to adequately measure and document radiation levels in the work area in order to minimize exposure.

Within the scope of this review, no items of noncompliance were noted.

6.0 Exposure Controls

A. External Exposure Control

The licensee's external exposure program was reviewed against criteria provided in 10 CFR 20.101, 20.202 and 20.203. The licensee's performance relative to these criteria was determined by survey information, direct observation and physical radiation measurements.

Within the scope of this review, no violations were noted.

B. Internal Exposure Control

The licensee's internal exposure control program was reviewed against criteria provided in 10 CFR 20.103(a)(1) and 20.103(b)(1). The licensee's performance relative to these criteria was determined by interviews with cognizant representatives of the health physics staff, air sampling information, and direct inspection.

The inspectors noted that there was virtually no airborne radioactivity and contamination in the CEF that would result in an internal exposure hazard. Again, this is due to the design of the fuel used in the CEF.

Within the scope of this review, no violations were noted.

7.0 Instrumentation and Calibration

The inspectors verified that the licensee's area gamma monitors, continuous air monitor, criticality detector, and portable detector were calibrated and operable. The inspectors noted that the instrument calibration data required by Technical Specifications was not readily retrievable and suggested that they would be more useful if centralized.

Within the scope of this review, no violations were noted.

8.0 Experiments

The inspectors evaluated the licensee's implementation of radiological controls during the performance of experiments by a review of the course manual. The inspectors noted that during the flux mapping experiment, the instructor should reinforce that specific dose rate readings of the fuel assembly should be made to assess the potential radiation hazard to the student during fuel handling and to evaluate the need for extremity dosimetry.

Within the scope of this review, no items of noncompliance were noted.

9.0 Training

The licensee's training program was reviewed against the criteria provided in 10 CFR 19.12, "Instructions to Workers." The licensee's performance relative to these criteria was determined by interviews with health physics and operations personnel. Examination of the course instruction material provided assurance that the requirements of the program were being fulfilled.

Within the scope of this review, no violations were noted.

10.0 Reports and Notifications

The licensee stated that there were no abnormal occurrences and that no reports and notifications were sent to the Commission since the last inspection.

11.0 Exit Interview

The inspector met with licensee personnel denoted in Section 1 at the conclusion of the inspection on July 9, 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.