

U. S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-134/92-01

Docket No. 50-134

License No. R-61

Licensee: Worcester Polytechnic Institute
Worcester, Massachusetts

Facility Name: Nuclear Reactor Facility

Inspection At: Worcester, MA

Inspection Conducted: November 4-5, 1992

Inspector: *Stephen W. Holmes*
Stephen W. Holmes, Radiation Specialist
Effluents Radiation Protection Section (ERPS)
Facilities Radiological Safety
and Safeguards Branch (FRSSB)

Approved By: *Marie T. Miller*
Marie T. Miller, Chief, ERPS, FRSSB
Division of Radiation Safety and Safeguards

12/01/92
Date

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Areas Inspected: The areas examined included staffing, oversight, surveys, radiation monitoring equipment, signs and postings, procedures, training, and personnel monitoring.

Results: Staffing, committee oversight, postings, and personnel dosimetry were good. However, written procedures for some health physics operations were not formalized. The licensee agreed to review this matter and to follow up on an issue with potential safety significance related to the calibration of a neutron meter. No violations of regulatory requirements were identified.

DETAILS

1.0 Persons Contacted

*L. Bobek, Nuclear Reactor Facility Director
*K. Beagle, Assistant Radiation Safety Officer (ARSO)
*W. Hobey, Radiation Safety Officer (RSO)
J. Mayer, Jr., Director, Nuclear Engineering Program
Various reactor operators

* Present at exit briefing.

2.0 Status of Previously Identified Items

(Closed) **Follow-up Item** (134/90-02-01) Outside vendor calibrations on count per minute (cpm) meters used Mr/hr standards. No calibration procedure existed for the argon-41 monitor. The inspector verified that a calibration procedure is available for the argon-41 monitor and that cpm meters are properly calibrated in house. This item is closed.

3.0 Health Physics

3.1 Personnel Dosimetry

The inspector reviewed personnel radiation exposure records, dosimetry procedures, and Reactor, Health, and Safety Committee (RHSC) minutes.

The licensee uses a National Voluntary Laboratory Accreditation Program (NVLAP) accredited vendor to process personnel thermoluminescent dosimetry. The ARSO maintains both the records of the reactor facility staff and the campus staff receiving occupational exposure. A review of records indicated that all exposures were within NRC limits, with most showing no exposure above background. The vendor-supplied exposure reports are reviewed by the RHSC and the ARSO. The program includes action levels for investigation of elevated exposures and lost dosimetry badges. The recent RHSC minutes documented an investigation of a lost badge which followed the written procedure. All records appeared to be in order and no safety concerns were noted. The licensee has implemented an effective personnel monitoring program.

3.2 Instrument Calibration

The inspector reviewed the calibration records for both the area radiation monitors and the portable survey instruments. Calibrations were performed in-house by the licensee and off site by certified vendors, using National Institute of Science and Technology (NIST) traceable radiation sources and American National Standards Institute (ANSI) or manufacturer accepted techniques. All instruments checked were in calibration. The inspector noted the following weakness.

The neutron meter was calibrated by the vendor on only the middle two of its four ranges. As a minimum, the low scale needs to be calibrated, since it is the scale most likely to be needed at the facility during operation.

During the inspection the Facility Director made contact with the vendor, but was unable to resolve this issue. Because this matter has potential safety significance, it will be reviewed in a future inspection (Follow-up Item 134/92-01-01). No violations were identified.

3.3 Radiation Surveys

The ARSO performs semiannual wipe tests and radiation surveys at standardized locations in the facility and surrounding buildings. The surveys include a facility air sample. Additionally, a weekly Reactor Facility Inspection is completed by the ARSO. Results of the surveys and the inspection are reported to and reviewed by the RHSC. Anomalous findings are investigated. This frequency and type of monitoring is adequate for the facilities' low level of hazard. No safety concerns or violations were identified.

3.4 Postings

General housekeeping of the facility was good, with no unmarked or unsecured radioactive materials evident. The warning signs and postings properly reflected the radiological conditions in the facility. Radioactive material storage cabinets and the storage room for calibration sources were properly labeled. An NRC Form 3 was conspicuously posted on the bulletin board. The radiological posting program was adequate. No safety concerns or violations were identified.

3.5 Staffing

Present staffing consists of a full time facility director and a part time ARSO. The director has an advanced degree in radiological science in addition to four years experience as a Chief Reactor Operator at a non-power reactor. The ARSO has an associate degree in Nuclear Engineering Technology heavy in reactor engineering and nuclear science courses. Her practical experience consists of two summers at Millstone Unit 2 in plant equipment operations and over 160 hours of specialized in-house training by the previous RSO. The campus RSO provides oversight and direction to the ARSO. The staff is qualified and the staffing level is appropriate for this facility. No safety concerns or violations were identified.

3.6 Procedures and Policy

Calibration and the weekly reactor facility inspection procedures were good. Some survey and monitoring procedures had no formal written procedure, though the operations were being accomplished adequately. The licensee stated that the procedures would be reviewed to determine the need for formal documentation. This will be reviewed in a future inspection (Follow-up Item 134/92-01-02). The RHSC Radiation Regulations provide adequate guidance and instruction to radiation workers and, with the exception of a formal ALARA (As Low As Reasonably Achievable) statement, fulfills the requirements of an ALARA program. The licensee stated that a formal ALARA statement would be adopted and integrated into the regulation. This will be reviewed in a future inspection. The licensee's use of procedures and policies was determined to be adequate. No safety concerns or violations were identified.

3.7 Training

Based on the facility use and operational controls, only the reactor operators require instruction on occupational exposure outlined in 10 CFR 19. Review of training records and interviews with reactor staff verified that the training required by part 19 and the approved operator training plan had been met. No safety concerns or violations were identified.

3.8 Oversight

The inspector reviewed the Radiation, Health, and Safeguards Committee's minutes for the past two years. The committee's meeting schedule and membership satisfy technical specification requirements. Review of the minutes indicated the committee is active in providing appropriate guidance, direction and oversight to the safety program and ensures suitable use of the reactor. The committee performed its duties as required by license and Technical Specification requirements. The RHSC conducts an audit/walk-down of the facility on a quarterly basis and files a written report. Oversight by the committee is good.

4.0 Exit Interview

The inspectors met with the licensee representatives indicated in Section 1.0 on October 29, 1992 and summarized the scope and findings of this inspection.