U.S. NUCLEAR REGULATORY COMMISSION
REGION III

Report No. 50-182/84-02 (DRP)
Docket No. 50-182 License No. R-87

Licensee: Purdue University
West Lafayette, IN 47907

Facility Name: Purdue University Reactor

Inspector: K. R. Ridgway for 1-4-85
C. C. Thomas, Jr. Date
Los Alamos National Laboratory

Inspector: K. R. Ridgway 1/14/85
K. R. Ridgway Date
US Nuclear Regulatory Commission
Region III

Reviewed by: J E Hyder 1-4-85
J. E. Hyder Date
Los Alamos National Laboratory

Approved by: Edward R. Schweibinz 1-11-85
E. R. Schweibinz Date
Technical Support Section
Nuclear Regulatory Commission

Inspection Summary

Inspection on December 12-14, 1984 [Report No. 50-182/84-02 (DRP)] Areas Inspected: Routine, unannounced inspection of records, logs, and organization; review and audit functions; requalification training; procedures; surveillance activities; experiments; fuel-handling activities; radiation control practices; radwaste management program; emergency planning; transportation activities; and follow-up of a licensee event report. The inspection involved 20 inspector-hours onsite by one NRC contractor-inspector and 2 inspector-hours onsite by one NRC inspector, including 0 inspector-hours onsite during off-shifts.

Results: No items of noncompliance were identified in the areas inspected.

DETAILS

1. Persons Contacted

*Dr. F. M. Clikeman, Director, Nuclear Engineering Laboratory
*E. S. Stansberry, Reactor Supervisor
E. M. Merritt, Electronics Technician
Dr. G. L. Born, Radiological Control Officer
V. R. Morris, Assistant Radiological Control Officer
Dr. L. L. Ogborn, Department of Electrical Engineering

*Indicates those present at the exit interview.

2. General

This inspection, which began at 8:30 a.m. on December 12, 1984, was conducted to examine the overall program at the Purdue University Reactor. The facility was toured shortly after arrival. The conditions of the facility were found to be acceptable.

The licensee has received four license amendments since the last operational inspection [50-182/81-02 (DRPI)]. One of these (Amendment No. 5) deals with physical security and was not examined in this inspection. The inspector reviewed the other three amendments and verified that the licensee had taken any actions necessary to implement the amendments.

3. Organization, Logs, and Records

The facility organization was reviewed and verified to be consistent with the Technical Specifications. The minimum staffing requirements were verified to be present during reactor operation and fuel handling operations.

The reactor logs and records were reviewed to verify that

a. required entries were made,

b. significant problems or incidents were documented,

c. the facility has been maintained properly, and

d. records were available for inspection.

Radiological Control has been reorganized as Radiological and Chemical Control and reports to the Physical Plant Vice-President (K. Burn). Dr. G. L. Born continues as the Radiological Control Officer (RCO) with added responsibilites for chemical control and with an expanded staff and budget.

No items of noncompliance or deviations were identified.

4. Reviews and Audits

The licensee's review and audit program records were examined by the inspector to verify the following.

a. Reviews of facility changes, operating and maintenance procedures, design changes, and unreviewed experiments had been conducted by a safety review committee as required by the Technical Specifications.

b. The review committee and/or subcommittees were composed of qualified members, and quorum and frequency of meeting requirements had been met.

c. Required safety audits had been conducted in accordance with Technical Specifications requirements, and any identified problems were resolved.

The inspector determined by review of the minutes of the Committee on Reactor Operations (CORO) and its subcommittee that meetings of the CORO or its subcommittee had been held quarterly and that the CORO had met semi-annually as required by the Technical Specifications.* This closes a nonconformance [Violation 81-02-01 (1)] cited in Inspection Report 50-182/81-02 (DRPI).

The inspector determined by review of Inspection Reports 50-182/82-01 (DRMSP) and 50-182/82-02 (DETP) that audits for the period May 13, 1980, to May 12, 1982 had been conducted as required by the Technical Specifications. The inspector determined by discussions with licensee personnel and the CORO-designated auditor that the 1983 and 1984 audits had been performed in August/September 1983 and October 1984, respectively, but had not yet been documented. However, the inspector was able to review a draft of the 1984 audit report and the notes for the 1983 report. In addition, the auditor assured the inspector that formal copies of both reports would be submitted to the CORO at the meeting scheduled for December 19, 1984. This closes the item of nonconformance [Violation 81-02-1(2)] cited in Inspection Report 50-182/81-02 (DRPI).

The inspector noted that Radiological and Chemical Control has committed to performing annual audits of all NRC licenses held by Purdue University starting in calendar year 1985. The audit of license R-87 has been scheduled for late spring or summer 1985. This should help eliminate the delay in issuance of formal audit reports that occurred in the past 2 yr.

No items of noncompliance or deviations were identified in this section of the inspection.

*Amendment 8 to the Technical Specifications dated April 11, 1983, defines the intervals to be "quarterly at intervals not to exceed 4 months" and "semiannually at intervals not to exceed 7 1/2 months."

5. Requalification Training

The inspector reviewed procedures, logs, and training records and interviewed personnel to verify that the requalification training program was being carried out in conformance with the facility's approved plan and NRC regulations.

The licensee has been excused from annual requalification examinations because the operating staff consists of only two senior operators who are both active in teaching courses in reactor operations. The inspector determined by review of records and logs that both senior operators had complied with the requirements of reactivity manipulations every 4 months and annual proficiency evaluations.

No items of noncompliance or deviations were found in this section of the inspection.

6. Procedures

The inspector reviewed the licensee's procedures to determine if procedures were issued, reviewed, changed or updated, and approved in accordance with Technical Specifications requirements.

This review also verified that

a. the procedure content was adequate to safely operate, refuel, and maintain the facility;

b. the responsibilities were clearly defined; and

c. the required checklists and forms were used.

The inspector determined that the required procedures were available and that the contents of the procedures were adequate.

The inspector reviewed a procedure for "Removal and Installation of Fuel Assemblies" (Procedure 68) that was approved at the November 23, 1982, CORO meeting. The procedure was found to be written clearly and adequate for its expressed purpose.

No items of noncompliance or deviations were identified in this section of the inspection.

7. Surveillance Activities

The inspector reviewed procedures, surveillance test schedules, and test records and discussed the surveillance program with responsible personnel to verify that:

a. when necessary, procedures were available and adequate to perform the tests,

b. tests were completed within the required time schedule, and

c. test records were available.

No items of noncompliance or deviations were identified.

8. Experiments

The inspector verified the following by reviewing experiment records and other reactor logs.

a. Experiments were conducted using approved procedures and under approved reactor conditions.

b. New experiments or changes in experiments were reviewed properly and approved.

c. The experiments did not involve any unreviewed safety questions.

d. Experiments involving potential hazards or reactivity changes were identified in the procedures.

e. Reactivity limits were not or could not have been exceeded during the experiments.

No items of noncompliance or deviations were identified.

9. Fuel Handling Activities

The facility refueling (fuel handling) program was reviewed by the inspector. The review included the verification of approved procedures for fuel handling and their technical adequacy in the areas of radiation protection, criticality safety, Technical Specifications, and security plan requirements. The inspector determined by a review of records and discussions with personnel that fuel-handling operations and startup tests were carried out in conformance with the licensee's procedures.

No items of noncompliance or deviations were identified.

10. Transportation

No radioactive material has been shipped since the last inspection [Report No. 50-182/83-01 (DRMSP)].

11. Radiation Control

The inspector reviewed records, interviewed personnel, and made observations to verify that radiation controls were being carried out in accordance with the license and NRC regulations. The areas covered were:

a. posting and labeling of areas and radioactive materials,

b. control of irradiated samples,

c. calibration of radiation-detection instruments,

d. required periodic dose and contamination surveys,

e. exposure records of personnel,

f. posted areas of the facility,

g. personnel training, and

h. independent surveys.

The inspector noted during the facility tour that the calibration labels indicated that the remote area monitors had been calibrated on January 31, 1984, and were due to be recalibrated in January 1985. This is contrary to the Technical Specifications, which require recalibration semi-annually at intervals not to exceed 7-1/2 months. Review of the operations log and Radiological and Chemical Control records showed that the units had been calibrated on August 28, 1984, indicating that the calibration labels were incorrect. The licensee corrected the calibration labels during the inspection, thereby closing this potential item.

No items of noncompliance or deviations were identified.

12. Radwaste Management

No liquid or gaseous radioactive wastes are generated at the reactor. Small quantities of contaminated and potentially contaminated solid waste are collected by the Radiological and Chemical Control staff and packaged for offsite burial under the licensee's by-product materials license.

13. Licensee Event Report Followup

The discussion of event report 81-01 in Inspection Report 50-182/82-02 (DETP) indicated that the licensee had prepared a Technical Specification change to increase the rod drop time specification to 1 s to allow for the difference in the "slow" and "fast" scram release times. This change had been recommended by the NRR Project Manager as an acceptable limit. The inspector determined by review of Amendment No. 6 to the facility license dated September 17, 1982, that the rod drop time Technical Specification had been changed to 1 s. This closes event 81-01.

14. Emergency Planning

The licensee's emergency plan was approved on November 4, 1984, and currently is being implemented. Radiological and Chemical Control is in the process of developing training programs for nonreactor personnel who will be involved in the emergency plan.

15. Review of Periodic and Special Reports

The inspector reviewed the following reports for timeliness of submittal and adequency of information supplied

a. Report on Reactor Operations for 1981, dated March 1982.
b. Report on Reactor Operations for 1982, dated March 1983.

No items of nonconformance or deviations were identified.

16. Exit Interview

The inspection was conducted primarily by the NRC contractor-inspector, who was joined by the NRC inspector for the exit interview. The inspectors met with the license's representatives (denoted in Paragraph 1) at the conclusion of the inspection on December 14, 1984. The inspectors summarized the scope and findings of the inspection indicated in the previous paragraphs. The inspectors complimented the licensee on the overall aspects of the facility operation and its conformance with regulatory requirements and procedural commitments.