U. S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-225/90-03

Docket No. 50-225

License No. CX-22

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

Facility: L. David Walthousen Critical Experiments Facility

Inspection at: Schenectady, New York

Inspection Conducted: October 29-31, 1990

Inspector: Thomas F. Dragoun 12/4/90
Thomas F. Dragoun, Project Scientist, Effluents Radiation Protection Section (ERPS), Facilities Radiological Safety and Safeguards Branch (FRSSB) — Date

Approved By: for T. T. Kotton 12-7-90
Robert J. Bores, Chief, ERPS, FRSSB, Division of Radiation Safety and Safeguards — Date

Inspection Summary: Inspection on October 29-31, 1990 Inspection Report No. 50-225/90-03

Areas Inspected: Routine safety inspection of the operational program including organization and staffing, audits, log keeping, procedures, surveillance, and status of previously identified items.

Results: No violations were identified, however, additional action is required to resolve previously identified violations. A concern relative to maintaining sufficient reactor operators was also identified (Section 4.0).

Details

1.0 Individuals Contacted

*G. Judd, Vice Provost for Academic Affairs
*R. Block, Chairman, Department of Nuclear Engineering
*D. Harris, Director, Reactor Critical Facility
*R. Kyan, Director, Office of Radiation and Nuclear Safety
P. Angelo, Supervisor, Reactor Critical Facility
E. Muzzy, Associate Engineer

*Attended the Exit Interview on October 31, 1990

2.0 Purpose

The purpose of this routine, announced inspection was to determine if following aspects of the operations program were in compliance with regulatory requirements.

-Organization and staffing
-Audits
-Log keeping
-Procedures
-Surveillances
-Status of Previously Identified Items

3.0 Status of Previously Identified Items

3.1 (Item 88-04-B) Violation (Open). The Nuclear Safety Review Board needs to review and approve the surveillance and start-up procedures for the new core. Some procedures remain to be developed and/or approved. This matter is discussed in Sections 6.0 and 7.0.

3.2 (Item 88-04-C) Violation (Closed). The Nuclear Safety Review Board (NSRB) did not meet at least semi-annually as required by the Technical Specifications. A review of minutes of meeting for 1989 and 1990 indicates that the NSRB is now meeting as required. Licensee action described in a letter dated August 22, 1988 is complete and satisfactory.

3.3 (Item 88-04-D) Violation (Open). Inadequate audits by the NSRB did not identify missing surveillance records and unreviewed procedures. The licensee has been conducting alternate NSRB meetings at the Critical Facility to allow for an audit after the meeting. However, additional action is required as discussed in Section 6.0.

3.4 (Item 88-04-01) Unresolved (Closed). Extraneous wiring and electrical components inside the control benchboard cabinet. The extra material was removed and the remaining wiring was bundled and secured. However, many

unterminated wires are still visible. The licensee stated that modifications performed over the years were not documented and only a complete and very expensive rewiring of the cabinet could resolve this problem. However, all required instrumentation was functional. This matter is resolved.

4.0 Organization and Staffing

During an interview with the Critical Facility Supervisor, he indicated that he had accepted a different job and that he planned to leave his current position upon completion of his doctoral thesis in a few weeks. In addition, both reactor operators being trained had recently resigned. A highly experienced retired scientist was hired as a consultant and has been licensed as a Senior Reactor Operator at the Critical Facility. The Director of the Reactor Critical Facility is now the only other licensed operator. The Technical Specification (TS) requiring the availability of two operators was discussed. The inspector stated that the TS requirement that a second operator be 'on call' means that the individual is capable of getting to the reactor facility within 30 minutes as described in ANSI/ANS-15.1. The loss of either operator would prevent student training on the reactor as scheduled for the Spring of 1991. The licensee stated that recruitment efforts have located good candidates for the operator positions. The licensee will ensure that the TS requirements are met in the interim. This situation will be reviewed in a future inspection. (225/90-03-01)

5.0 Plant Tour

The inspector toured the facility on October 29, 1990. All fuel pins were removed from the reactor and stored in the special dry fuel vault. Housekeeping was adequate with no debris on the floors or on equipment. The maintenance of the older electrical and mechanical hardware, such as the control rod drives and the strip chart recorders, has been dependent on the ingenuity of the Associate Engineer. The Department Chairman stated that management has recognized the extra efforts required for maintenance and that other staff personnel could be made available if needed. In addition, all maintenance performed in the future will be documented in the operating log by the Associate Engineer. This matter will be reviewed in a future inspection. (225/90-03-02)

6.0 Audits

In May and July of 1989 the consultant issued a "Proposed NSRB Audit Procedure" that contained excellent recommendations. However, the NSRB has not acted on this proposal as of the September 1990 meeting. The NSRB held alternate meetings in

the Critical Facility building to provide the members with an opportunity to tour and audit the facility. Although the NSRB Chairman stated that audits were conducted and met the TS requirements, there was no formal report or entries in the operations log book giving the findings of these audits. The inspector also could not locate the information in the operations log required to be kept by TS Section 6.6 Operating Records. The Chairman stated that the following changes will be made to the audits and recordkeeping.

1) A new form will be issued for use by the operators to document performance and results of surveillances and tests required by the TS. This will be forwarded to the NSRB for review.
2) Operators will be instructed on the requirements to maintain written logs required by TS 6.6.
3) NSRB members will document their review of the logs by initialing and dating the log.
4) The NSRB will formally accept or reject the consultant's proposals regarding audits at the next meeting.

The inspector also noted that the Reactor Critical Facility Director issued a draft "Structure and Function of the Nuclear Safety Review Board" in late 1988. This document summarized all of the TS requirements relating to the NSRB but was not formally adopted. These activities indicate that the licensee has initiated corrective action for violations 88-04-B and 88-04-D, but that further action is required. This matter will be reviewed in future inspections.

7.0 Procedures

The inspector reviewed selected procedures for reactor operation, surveillance, and equipment calibration. The NSRB had completed a review of new operating procedures required by the refueling with low enriched uranium fuel (LEU), after the contractor made minor revisions. The licensee stated that the revised procedures would be issued for use after appropriate training prior to the next reactor criticality.

The inspector noted that the calibration of the Keithly chart recorders appeared to be a "channel check" rather "calibration" as defined in TS Sections 1.0.A and 1.0.B. A calibrated current was fed to the recorders with the in-core detectors disconnected. No correlation was made between reactor power level and current flow from the detectors to the chart recorders. The Associate Engineer acknowledged this concern and stated that the matter would be reviewed. This unresolved matter will be reviewed in future inspections (225/90-03-03).

Some surveillance tests were changed to improve the results. For instance, the rod drop time is now tested using a storage oscilloscope connected to a audio-frequency oscillator. However, the procedure is only in draft form and was not formally reviewed by the NSRB. The inspector concluded that although the techniques used were technically sound, the need for additional licensee action on violation 88-04-B to control procedures is required.

8.0 Exit Interview

The inspector met with the personnel denoted in Section 1.0 at the conclusion of this inspection on October 31, 1990. The scope and findings of the inspection were presented at that time.