U. S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-225/93-02

Docket No. 50-225

License No. CX-22

Licensee: Rensselaer Polytechnic Institute
Department of Nuclear Engineering and Engineering Physics
Troy, New York 12180-3590

Facility: L. David Walthousen Critical Experiments Facility

Inspection at: Schenectady, New York and Troy, New York

Inspection Conducted: December 7-9, 1993

Inspector: W. Dragoun for 1/11/94
Stephen W. Holmes, Radiation Specialist, Effluents Radiation Protection Section (ERPS), Facilities Radiological Safety and Safeguards Branch (FRSSB) — Date

Approved By: Judith A. Joustra 1/11/94
Judith Joustra, Chief, ERPS, FRSSB, Division of Radiation Safety and Safeguards — Date

Areas Inspected: Implementation of the emergency plan, including procedures, required drills, facilities, and equipment. The reactor operations program including; organization and staffing, audits, logs, procedures, surveillances, and requalification training.

Results: The Emergency Plan was being implemented as required. The licensee was unaware that there was a formal NRC-Approved Requalification Program for reactor operators at the facility. They committed to acquiring a copy of the plan and formally implementing it. Two surveillances had not been performed as required by Technical Specifications. Based on their severity level and subsequent licensee corrective actions and performance, failure to perform these surveillances were documented as non-cited violations as authorized in 10 CFR 2, Appendix C. No safety concerns were identified.

Details

1.0 Individuals Contacted

*S. Bucher, Reactor Supervisor
B. Drobnicki, Director of Public Safety
*D. Harris, Director, Reactor Critical Facility
E. Muzzy, Associate Engineer
*B. Podowski, Head, Department of Nuclear Engineering and Engineering Physics
R. Ryan, Director, Office of Radiation and Nuclear Safety

*Attended the Exit Interview on December 8, 1993

2.0 Organization and Staffing

Although there has been no structural change in the organization since the last inspection, there have been personnel changes. A new Department Chairman, who also serves as the chairman of the Nuclear Safety Review Board (NSRB), had been appointed. The inspector reviewed his qualifications and determined they meet the requirements of the Technical Specifications (TS) for serving on the NSRB. As previously discussed (see report 50-225/90-03), the TS require the availability of two operators as a minimum for reactor operations. During this past year the Director of the Reactor Critical Facility (RCF) did not renew his license and two reactor operators left for other jobs or additional schooling. This leaves the RCF with two licensed senior reactor operators (SRO's): the Critical Facility Supervisor (CFS) and a consultant. During an interview with the CFS, he indicated that he was interviewing for other jobs and that he planned to leave his current position upon completion of his thesis early in 1994. Additionally, the individual who had been serving as a consultant and is a licensed SRO, had given notice of his resignation as of July 1994. Upon the loss of either of these remaining operators, training classes utilizing the reactor will not be able to be performed. The licensee stated that three trainees were scheduled to take their exams for SRO Licenses in January, 1994. Also, at least one individual will be staying to do graduate work and will take over as the reactor supervisor when the present supervisor leaves. The licensee stated that two operators would be available as required by TS 6.1.3 for any reactor operations. This will be reviewed in a future inspection (IFI 93-02-01). Within the scope of this inspection, no violations were noted.

3.0 Plant Tour

The inspector toured the facility. All fuel pins were removed from the reactor and stored in the special dry fuel vault. Housekeeping was adequate with little clutter noticeable. All monitors and portable meters checked were calibrated. Installed and portable monitors/meters were in-place or available to the staff as required by TS, procedures, or the emergency plan. No safety concerns or violations were noted.

4.0 Reactor Records

Reactor operating records are required by Section 6.6 of the TS. The inspector audited these records and interviewed operators. Records of power level, operating periods, experiment information, calibrations, surveillances and start-up and shut-down checks were being kept. However, some records were in the custody of those individuals performing the specific operations. This included some maintenance, calibration, and surveillance records. Nevertheless, the inspector was able to audit these records during the inspection. The reactor operating records and logs were being maintained as required by TS. Within the scope of this inspection, no safety concerns or violations were noted.

5.0 Surveillances

The inspector reviewed selected records and procedures for the conduct of surveillances required by TS Section 4.0. As a teaching facility, many of the TS-required surveillances are completed as student experiments, while others are performed by the staff or personnel from other departments. In the past this has caused the records of the surveillances to be scattered. As noted in a previous report, a new form to track and allow auditing by the NSRB had been approved. The inspector verified that, with two exceptions, the TS surveillances had been performed as required for the last three years.

Surveillances may be waived when the instrument, component, or system is not required to be operable, but the deferred operational surveillance must be performed prior to resuming operations. During the summer of 1992 the reactor was not run due to a required system not being functional. In the fall of 1992, when the faulty system was repaired and the reactor then operated, two tests were not performed prior to running the reactor. The rod drop and water dump times had not been measured and verified within the 7½ month time limit as required by TS 4.1.1, 4.1.2, and 4.1.6. Operability of the scram function, which initiates the rod drop and water dump, was verified during each reactor startup. Measurement of rod drop times and water dump times made prior to and just after this period demonstrated that the equipment was functioning within specifications. In response to a NSRB concern regarding surveillances, the operating staff instituted a consolidated tracking form for all surveillances and appointed a staff member to be responsible for insuring that all surveillance testing is performed as required by TS. Additionally, the inspector verified that all required surveillances for the past year and a half have been completed as required. The failure to perform the drop time surveillances constitutes an apparent violation of TS requirements. However, the NRC notes that: (1)It was not a violation that could reasonably have been expected to be prevented by the licensee's corrective action for a previous violation; (2) It was corrected in a reasonable time, and; (3)It was not a willful violation. Based on this, the failure to perform the required surveillances is being documented as a non-cited violation as

authorized in 10 CFR 2, Appendix C. Within the scope of this inspection no safety concerns were identified.

6.0 Operating Procedures

Written reactor operations procedures are required by Section 6.5.1 of the TS, and are required to be reviewed and approved by the NSRB prior to implementation of new or revised procedures. The inspector reviewed the operational procedures and interviewed staff members. Within the scope of this inspection, written procedures were available for those activities required by TS. They had been reviewed and approved by the NSRB as required. The procedures were maintained in sets for each operator along with one in the RCF control room. The procedures reviewed by the inspector were concise and well structured. Overall, the licensee maintained acceptable written procedures. Within the scope of this inspection no safety concerns or violations were noted.

7.0 Oversight

The NSRB holds alternate meetings in the RCF building to provide the members with an opportunity to tour and audit the facility. The inspector reviewed the board minutes for the last two and a half years. Meetings were held semiannually, consisted of at least a quorum, and minutes were kept as required by TS. The NSRB approved procedures, TS changes, and new experiments as required. Within the scope of this inspection the NSRB was providing adequate oversight of the RCF. No safety concerns or violations were noted.

8.0 Operator Requalification Program

The TS Section 6.1.4 requires selection, training, and requalification of operations personnel to meet or exceed the requirements of ANSI/ANS standard 15.4 - 1977, Sections 4-6. Although the licensee had an informal continuing training program, they were unaware of the formal NRC-Approved Requalification Program for the facility. The inspector reviewed individuals' records, log entrees, class/laboratory records, and reactor training program records to determine if the present informal training program met the requirements of 10 CFR 55.59, Requalification, from which the ANSI/ANS Standard was extracted. Further, the inspector subsequently obtained a copy of the NRC-Approved Requalification Program for the RCF. The above referenced records verified that, during classes and laboratories given on the reactor, all reactor operators performed reactor manipulations, taught/participated in lectures, and received on-the-job training as required by the requalification program. Biennial written, oral, and operations exams are required by the program. With the exception of the consultant, the graduate student operators leave before these exams would be required. Since the consultant provided the formal training for the Senior Reactor

Operator trainees, he would, as the person who provided the training and testing, have been exempted from all portions of the program. The licensee stated that they would obtain a copy of the approved program and insure that it is fully implemented and documented as required. These action will be reviewed in a future inspection (IFI 93-02-02).

9.0 Emergency Plan

9.1 Changes

The inspector confirmed that there had been no changes to the Emergency Plan (EP) or any offsite support agreements since the last inspection. The EP and procedures had been reviewed biennially by the NSRB as required by the plan.

9.2 Emergency Response Organization

The responsibilities and authorities of the organizations that would respond to emergencies are specified in the Emergency Plan. As noted in a previous report, 50-225/91-02 dated November 6, 1991, the Plan states that the "senior staff member" at the facility will coordinate all initial response, including fire fighting, until relieved by a "competent authority". Since the Critical Facility Supervisor and licensed senior reactor operators are generally graduate students, the "senior staff member" is likely to be a student. According to the emergency procedures, Public Safety personnel will respond to the site and become the "competent authority" who will coordinate the emergency response with the local ambulance service, police, and fire fighters. Since the campus is approximately 35 miles from the facility, Public Safety personnel response may be delayed. Additionally, Public Safety representatives still do not have the same legal status as the local police or fire fighters and may experience difficulty establishing a command authority at the scene. The licensee acknowledged these concerns and stated that they are still in the process of acquiring such legal enforcement status. This matter is still a concern and will be reviewed in a future inspection.

9.3 Implementing Procedures

The inspector reviewed the emergency procedures, dated March 1987, that provided detailed instructions for emergency response. The inspector noted that the Emergency procedures were revised in March 1987 to correspond with the low enriched fuel now being used. The procedures were current, approved and were readily available in the emergency response facilities for use by response personnel. Additionally, they are part of the procedures book provided to the reactor operators as noted in Section 6.0 above. They

adequately addressed classification, notification, and protective actions required by the EP during an emergency to protect the health and safety of the public. Implementing procedures were consistent with the EP requirements. Emergency phone and on-call lists were also readily available and up to date. Within the scope of this review, no safety concerns or violations were noted.

9.4 Drills

The RCF Director stated that the last drill involved a simulated injury to a staff member. The individual was transported to the hospital by a private vehicle as part of the drill. Public Safety was not involved with this drill. Documentation was minimal, with only a one line note in the NSRB minutes indicating a drill was conducted. In discussions with the inspector, the RCF Director and the Director of Public Safety stated that future drills will include participation by Public Safety personnel and that the scope of the drills will be broadened.

9.5 Emergency Equipment

The inspector toured the laboratory to inspect the emergency facilities. The installed area survey and airborne particulate monitors, portable survey instruments, first aid kit, and fire extinguisher were on hand and adequately maintained. Communication consisted of installed phones, an intercom, and a new cellular phone. The emergency response facilities, equipment, and supplies were readily available and maintained as required by the EP.

9.6 Offsite Support

Written agreements with local hospitals, police, and fire-fighters are maintained by the Public Safety Department. The inspector reviewed the current support agreements. Two had been renewed since the last inspection and the hospital was a continuing arrangement. Activation of emergency support for the Critical Facility is done by Public Safety on receipt of a call from the reactor staff. The reactor staff is responsible for proper classification of the emergency. Offsite support was being implemented as required by the Emergency Plan.

10.0 Exit Interview

The inspector met with the licensee representatives indicated in Section 1.0 on March 26, 1992 and summarized the scope and findings of this inspection. The licensee acknowledged the inspection findings.