

U. S. NUCLEAR REGULATORY COMMISSION
REGION 1

Report No.: 50-184/91-02
Docket No.: 50-184
License No.: TR-5
Licensee: U. S. Department of Commerce
National Institute of Standards and Technology
Gaithersburg, Maryland 20899
Facility Name: National Bureau of Standards Reactor (NBSR)
Inspection At: Gaithersburg, Maryland
Inspection Conducted: August 20-23, 1991

Inspector:

Thomas Dragoun
Thomas Dragoun, Project Scientist, Effluents
Radiation Protection Section (ERPS), Facilities
Radiological Safety and Safeguards Branch (FRSSB)

9/4/91
date

Approved By:

Robert J. Boreas
Robert J. Boreas, Chief, ERPS, FRSSB,
Division of Radiation Safety and Safeguards

9-6-91
date

Inspection Summary: Inspection on August 20-23, 1991 (Report No. 50-184/91-02)

Areas Inspected: Reactor operations program including: organization and staffing, audits, operator requalification, and surveillances.

Results: There were no safety concerns and the no observed violations of NRC requirements.

Details

1.0 Individuals Contacted

*J.M.Rowe, Chief, Reactor Radiation Division
*T.Haby, Chief, Reactor Operations
J. Torrence, Deputy Chief, Reactor Operations
R.Conway, Supervisor, Test and Calibration

*Attended the Exit Interview on August 23, 1991.
Other personnel were also contacted or interviewed during this inspection.

2.0 Purpose

The purpose of this routine, announced inspection was to review the following elements of the reactor operations program:

- Organization and Staffing
- Audits
- Operator Requalification
- Surveillances

3.0 Reactor Operations

The NBSR design uses heavy water as the moderator and reflector and is based on that of the Argonne National Laboratory CP-5 reactor. The inspector observed two reactor startups and changes in power level performed in accordance with Operations Instruction 1.1, "Reactor Startup". Although the reactor had been shut down for a few days, the startup was made easier by a substantial photo-neutron flux on the source range nuclear instrumentation caused by the heavy water. The operators complied with procedural requirements during the startups.

The inspector noted that many of the precritical checks of safety related equipment were completed the previous day. There were no procedural or administrative limits placed on the time elapsed between completion of the checklist and the startup of the reactor. The licensee stated that the current practice of using a 24-hour time limit will be incorporated into the startup procedure.

The inspector viewed a videotape of the retrieval of a fuel element that was dropped during the June refueling outage. The licensee made effective use of special tools and a periscope to remove the element without further incident.

4.0 Organization and Staffing

The operating staff consists of 10 Senior Reactor Operators (SROs) and 7 Shift Supervisors, also qualified as SROs. The large staff size allows the licensee to easily meet Technical Specification (TS) staffing

requirements for around-the-clock, seven days per week operations. The experience level of the staff, including management, is high, which results from a very low turnover rate of personnel. The management structure met TS requirements although the position titles were changed. No weaknesses were observed by the inspector.

5.0 Review and Audit

The inspector reviewed the membership of the Safety Evaluation Committee (SEC), interviewed the SEC Chairman, reviewed the SEC minutes of meetings, reviewed a program audit by the Safety Audit Committee, and followup of audit findings. The SEC is required to have 4 members by TS 7.2 but actually has 7 members with various technical expertise. Each has an alternate so that all meetings exceed the quorum requirement. Meetings are required semiannually, but actually occur more frequently. The minutes of meetings indicated that appropriate reviews were performed. The inspector concluded that the SEC was very effective.

The Safety Audit Committee consists of three senior personnel from off-site organizations (Brookhaven National Laboratory, Argonne National Laboratory, Iowa State University). The annual audit required by TS 7.3 is conducted by this Committee in areas specifically requested by the SEC. The 1990 audit results were provided to the Chief, Reactor Radiation Division, who responded in writing to each finding. This is a good practice. No weakness in the audit program were noted.

6.0 Operator Regualification

The inspector reviewed the status of the licensee's program for the requalification training of operators through a review of records, written examinations, and discussions with reactor operators. The comprehensive written examination consisted of multiple choice questions covering all of the training categories. The exam appeared to be challenging. The inspector concluded that the licensee's program was effective.

7.0 Surveillances

The performance of surveillances required by TS 5.0 was determined from a review of schedules, surveillance procedures, and data records. Within the scope of this review, all surveillances were found to be complete as required with several performed more frequently than the minimum specified in the TS. Management oversight and coordination of surveillance activities were good. There was a procedure and formal data record for all surveillances reviewed except for the control blade worth calculation. In that case, the procedure described the data taking but not the method of data reduction to determine the blade worth. The Facility Director stated that, due to the complexity of the problem, he does the calculations personally or delegates responsibility to one of the shift supervisors that has been specifically trained. He also stated that the

procedure will be expanded in the future to document the calculation technique and all special precautions.

The inspector was favorably impressed by the quality of the procedures and data records used by the technicians who performed equipment calibrations. Each procedure followed the same format and included detailed instructions and safety precautions. No violations or deviations were noted.

8.0 Exit Interview

The inspector met with the licensee representatives indicated in Section 1.0 on August 23, 1991 and summarized the scope and findings of this inspection.