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March 29, 2002

U.S. Nuclear Regulatory Commission
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Subject: Docket #50-184

Gentlemen:

Transmitted herewith is Operations Report No. 54 for the NBSR. The report covers the period January 1, 2001 to December 31, 2001.

Sincerely,

J. Michael Rowe
Director, NIST Center for Neutron Research

Enclosure

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NIST

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY REACTOR (NBSR)

Docket #50-184

Facility License No. TR-5

Operations Report

-- #54 --

January 1, 2001 - December 31, 2001

This report contains a summary of activities connected with the operations of the NBSR. It is submitted in fulfillment of section 7.8(3) of the NBSR Technical Specifications and covers the period from January 1, 2001 to December 31, 2001.

Section numbers in the report (such as 7.8(3)(a)) correspond to those used in the Technical Specifications.

March 29, 2002

J. Michael Rowe
Director, NIST Center for Neutron Research

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7.8(3)(a) Summary of Plant Operations

During the period January 1, 2001 through December 31, 2001 the reactor was critical for 4328 hours with an energy output of 86,430 MWH. Major activities during this period included the installation of an advanced cold neutron source; construction of a plume-abatement cooling tower; replacement of building electrical switchboards and transformers; repair and improvement of the Thermal Column Tank Cooling System and the Thermal Column cavity; cutting of fuel elements for long-term storage; and maintenance of the Thermal Shield Cooling System. While performing a routine latch check of a fuel element with a pickup tool, the tool fell into the vessel. The tool landed at the side of the vessel and had no effect upon the element or any other vessel component. The tool was recovered, re-installed, and the latch check was completed satisfactorily.

7.8(3)(b) Unscheduled Shutdowns

1. There were (4) scrams due to commercial power interruptions. After each scram, a return to 20 MW occurred within an hour.
2. There was (1) scram due to low flow after the loss of a main coolant pump. Flow was restored and a return to 20 MW occurred within an hour.
3. There was (1) shutdown due to regulating rod drive performance. A replacement of the drive was completed within 40 hours, followed by a restart to 20 MW.

7.8(3)(c) Tabulation of Major Items of Plant Maintenance

1. Replaced #2 and #4 Main D_2O pumps' pedestal bearings and seals, shaft sleeves, mechanical seals, and gaskets.
2. Repaired #1 cooling tower fan blade and replaced fan motor.
3. Placed blank flanges on Thermal Column Tank Cooling System piping in order to separate system from other heavy water systems.
4. Replaced Regulating Rod drive 'A' with drive 'B'.
5. Replaced starting batteries for diesel generators.
6. Installed separate power supply breakers for ventilation system sample blowers.
7. Installed new tritium recorder and control system.
8. Installed paperless radiation monitors' recorder.
9. Re-wired RM3-4 and RM3-5 power source.
10. Performed regularly scheduled Technical Specification Surveillance tests and plant preventative maintenance.

11. Instrument calibration surveillance tests were performed for the following:

Intermediate and Power Range Channels
Reactor Vessel Flow and Level Recorders and Indicators
Confinement Building Area Radiation Monitors
Fission Product and Secondary Cooling N16 Monitors
Confinement Building Effluent Monitors
Emergency Ventilation System Controllers

12. Nineteen instrument service requests (ISR) were completed, including:

ISR #	ACTION
1567	Repaired Area Radiation Monitor power supply card.
1570	Repaired BTUR , due to failed chart drive.
1571	Installed protective cover over AC power switch for RM3-4 and RM3-5.
1574	Replaced FIA-6 with Yokogawa flow transmitter.
1578	Replaced Area Radiation Monitor detector in Process Room.

7.8(3)(d) Tabulation of Major Changes in the Facility and Procedures, and the Test and Experiments, Carried Out Without Prior Approval by the NRC pursuant to 10 CFR 50.59.

The following facility change was completed this year. It did not require a license amendment or a change to the technical specifications, and it did not meet any of the criteria of 50.59(c)(2).

ECN 441 Rev. 1 — Rewire Rod Drop Test Circuit. This change allows all contacts in the startup prohibit circuit to be bypassed using the rod drop test keys. This provides for more efficient testing during reactor shutdown, while still permitting a startup only if the conditions of the startup circuit are satisfied.

7.8(3)(e) Summary of Radioactive Material Released and Results of Environmental Surveys Performed.

Gaseous releases consisted of 1197 curies of tritium, 881 curies of Argon-41, 0.071 curies of Cl-38, 0.048 curies of Br-82, and 8 microcuries of other beta-gamma emitters. There were 2.57 curies of tritium and 262 microcuries of other beta-gamma emitters released into the sanitary sewer. Environmental samples of the streams, vegetation, and/or soil, and air showed no significant changes.

7.8(3)(f) Summary of Significant Exposures Received by Facility Personnel and Visitors.

1. None to visitors.

2. Dosimetry results for this reporting period indicated that no facility personnel received significant exposures.