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

Gentlemen:

Transmitted herewith is Operations Report No. 60 for the NBSR. The report covers the period January 1, 2007 to December 31, 2007.

Sincerely,

For Wade Richards

Patrick Gallagher
Director, NIST Center for Neutron Research

Enclosure

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NRR

**NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY REACTOR
(NBSR)**

Docket #50-184

Facility License No. TR-5

Operations Report

-- #60 --

January 1, 2007 - December 31, 2007

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, 2007 to December 31, 2007.

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

March 26, 2008



Patrick Gallagher

Director, NIST Center for Neutron Research

TABLE OF CONTENTS

- 7.8(3)(a) Summary of Plant Operations
- 7.8(3)(b) Unscheduled Shutdowns
- 7.8(3)(c) Tabulation of Major Items of Plant Maintenance
- 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
- 7.8(3)(e) Summary of Radioactive Material Released and Results of Environmental Surveys Performed
- 7.8(3)(f) Summary of Significant Exposures Received by Facility Personnel and Visitors

7.8(3)(a) Summary of Plant Operations

During the period January 1, 2007 through December 31, 2007 the reactor was critical for 6464 hours with an energy output of 128,876 MWH. Major activities during this period included: Control Room console wiring verification; building switchboards' replacement; cutting of 36 fuel elements; refurbishment of the fuel element cutting saw; installation and operation of thermal shield cooling system test device for operating cooling tubes with a negative pressure; and the licensing of one senior reactor operator. There was one reportable occurrence, the cause of which was failure of a shim arm to scram within the required time. This was discovered during routine reactor startup testing and replacement of the shim arm clutch assembly shortened the scram time to an acceptable value.

7.8(3)(b) Unscheduled Shutdowns

1. There was 1 scram due to commercial power interruptions. A return to 20 MW was made within an hour of one scram.

2. A major scram was caused by irradiated air high activity due to Argon-41 in helium discharged to the irradiated air system. A return to 20 MW was made within an hour of the scram and the configuration of the helium system was corrected to prevent another excessive helium discharge to the irradiated air system.

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

Note: Some of these items may be also listed as Engineering Change Notices (ECN).

1. Replaced MCC A7 and B8.
2. Rebuilt regulating rod drive "B".
3. Replaced BT-1 lower shield on shutter assembly.
4. Cut 36 spent fuel elements for eventual shipment.
5. Replaced fuel element saw blades, axle, spacers, couplings, and lower gearboxes.
6. Replaced two confinement building door seals.
7. Replaced shaft and seals for #4 main D₂O pump.

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

- Three Wide-range Nuclear Power Channels
- Reactor Vessel Flow and Level Recorders and Indicators
- Two Reactor Differential Temperature Channels
- Confinement Building Area Radiation Monitors
- Fission Product Monitor and Secondary Cooling N¹⁶ Monitors
- Three Confinement Building Effluent Monitors
- Emergency Ventilation System Controllers

9. Thirty-six instrument service requests (ISR) were completed, including:

ISR # ACTION

- 1773 Reprogrammed DWV-23 controller for D₂O flow to cryostat.
- 1774 Replaced Action Pack for NC-6.
- 1777 Repaired regulating rod upper control limit control and alarm on rod drive assembly.
- 1802 Replaced FIA-9 helium sweep flow transmitter.

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

The following facility changes were completed this year. None required a license amendment or a change to the technical specifications, and there were no changes made pursuant to the applicable criteria of 10 CFR 50.59.

ECN 491 / Modification to Fuel Element Transfer Head

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

Gaseous releases consisted of 657 curies of tritium, 1585 curies of Argon-41, and 0.075 curies of other beta-gamma emitters. There were 3.26 curies of tritium and 1.1 millicuries 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 any significant exposures.