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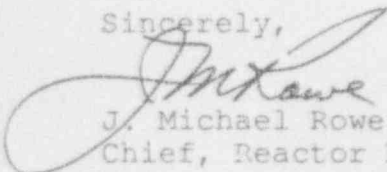
U.S. Nuclear Regulatory Commission
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Subject: Docket #50-184

Gentlemen:

Transmitted herewith is Operations Report No.45 for the NBSR. The report covers the period January 1, 1992 to December 31, 1992.

Sincerely,


J. Michael Rowe
Chief, Reactor Radiation Division

Enclosure

cc: Project Scientist
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NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY REACTOR
(NBSR)

Docket #50-184

Facility License No. TR-5

Operations Report

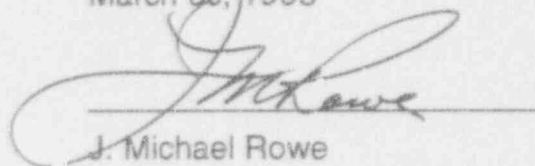
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January 1, 1992 - December 31, 1992

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, 1992 to December 31, 1992.

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

March 30, 1993

A handwritten signature in dark ink, appearing to read "J. Michael Rowe", is written over a horizontal line.

J. Michael Rowe

Chief, Reactor Radiation Division

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7.8(3)(a) Summary of Plant Operations

During the calendar year 1992, the reactor was critical for 6169 hours and the energy generated was 92440 MWH. This year was one of the better operating years and essentially uneventful.

Maintenance, such as repair of the Thermal Shield cooling system described in past reports, continued. One of the two main heat exchangers continued to be kept out of service with the reactor operating with a single heat exchanger at 15 MW. Fabrication of new heat exchangers will be completed in about a year with installation currently scheduled during the following year.

7.8(3)(b) Unscheduled Shutdowns

1. There were seven (7) scrams due to a commercial power dip. The reactor returned to power.
2. There was a scram due to loss 10 volt power supply while the Instrument Section was repairing the Auto Control circuit. The reactor was shutdown for instrument repairs and then returned to power.
3. The reactor was shutdown in order to recover a stuck rabbit. It was returned to power the next day after the rabbit was recovered.
4. There was a scram due to the loss of the Static Inverter when a fuse blew after the failure of one of the two cooling fans. Repairs were made by replacing the fan and fuse and the reactor was returned to power.
5. The reactor was shutdown to replace the clutch output card for Shim No.3, checked for proper operation, and then returned to power.

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

1. Replaced diaphragm of PWV-9 (potable water to emergency cooling)
2. Overhauled #2 Thermal Shield pump

3. Replaced discharge valve of RD 3-4, 3-5 blower (ECN- 342)
4. Repaired air leak on SCV-3 (air diaphragm)
5. Replaced MOTOR bearings of #1, #2, & #3 Secondary pumps
6. Replaced time delay element in #1 Cooling Tower fan motor circuit
7. Changed pre and after filters of Storage pool , Thermal shield, and primary purification system three times.
8. Changed after filters of experimental demin system
9. Removed Battery cell #21, 23, 25, & 28 from Station battery bank and installed new cells at locations # 16, 17, 18, & 19
10. Repaired 2 leaking valves in Bi-tip cooling system- (DWV-223 and lead/Bi-tip proportioning valve)
11. Outside contractor overhauled building 235 Elevator
12. Repaired CO₂ leak for RT-3 rabbit tip above subpile room
13. Replaced faulty Fire detectors in the process room
14. Replaced control air valve (CAV) that supplies air to the guide tube isolation valves
15. Repaired #1 sump float assembly and temporarily patched discharge piping of sump pump #1A
16. Replaced universal joint between damper D-3 and air motor for EF-3
17. Replaced TSV-4 solenoid (#1 T.S. IX inlet)
18. Replaced caustic mixing tank on Demin water station
19. Regenerated IX column of Demin water station
20. Replaced oil sightglass on #1 Cooling Tower fan gearbox
21. Plugged 4 tubes in the Exp Demin heat exchanger
22. Repaired D₂O leak in #2 Main D₂O pump by cutting small groove into shaft sleeve to accommodate rubber "O" ring
23. Replaced shaft seal of #1 Thermal Shield pump
24. Cleaned leads, reconnected, and checked resistance of #1 D₂O Storage tank pump
25. Completed certification test of new Static Inverter
26. Replaced diaphragm of WTV-97 (Storage Pool manual fill valve)
27. Replaced time delay relay in #2 Main D₂O pump motor controller
28. Disassembled, cleaned, and assembled HCSC (helium compressor secondary cooling) heat exchanger
29. Changed resin in both the Thermal Shield and Storage Pool IX columns
30. Continued treating leaking Thermal Shield tubes as necessary

31. Performed regularly scheduled Tech Specs and plant PM's
32. Replaced period rod stop card on NC-3.
33. Repaired annunciator AN-1.
34. Repaired HV supply on Area Monitors.
35. Replaced GM tube on Liquid Waste Monitor.
36. Repaired power supply in Reg Rod Controller.
37. Replaced NC-4 Scram card (# 07-28).
38. Replaced NC-3 Log-N Amplifier card.
39. Repaired BTUR Recorder.
40. Replaced servo motor on Area Radiation Recorder RR-1.
41. Replaced Outer Plenum Flow Recorder FRC-3.
42. Replaced digital readout module for #2 Shim Position indicator.
43. Replaced take-up motor on Wind Direction recorder at Emergency Control Station.
44. Replaced amplifier card on delta-T recorder.
45. Replaced servo motor on BTUR recorder.
46. Repaired Mag Amp on NC-6 input unit card (07-31).
47. Corrected servo motor ground wiring in BTUR recorder.
48. The following instrument calibration surveillance tests were performed:

Channel	Title
NC-2	Nuclear Source Range Start Up
NC-1	Nuclear Source Range Start Up
BTUR	Reactor Thermal Power
RM4-3	Liquid Waste Monitor
RM3-4	Irradiated Air Monitor
SS-K103	Relay Scram Safety System
BT-4A&B	BT4 Area Monitor
NC-4	Reactor Intermediate Power Range
NC-7	Nuclear Power Range
NC-8	Nuclear Power Range
FCA-7	Thermal Column Flow Indicator Control
RM1-1 -10	Reactor Building Area Monitors
NC-3	Reactor Intermediate Power Range (partial)
RM4-1	Stack Monitor
FRC-3	Reactor Inner Plenum Flow

FRC-4	Reactor Outer Plenum Flow
FIA-15	Thermal Shield Flow
RM4-4N	Criticality Monitor
RM4-4S	Criticality Monitor
TIA-17	Thermal Shield HE Secondary Outlet Temperature Indicator
PC-27	Process Room Air Exhaust Pressure Controller
PC-3	Normal Air Exhaust Pressure Controller
SPC-150	Emergency Fan Controller
SPS-150	Emergency Standby Fan Controller
SPS-151	Vacuum Breaker Controller
LRC-1	Reactor Vessel Level
NC-3	Reactor Intermediate Power Range
TI-22	Thermal Shield Storage Tank Inlet Temperature Indicator
PIC-11	Building Leak Check Press/Vacuum Controller
TIA-40A	Reactor Delta-T
TIA-40B	Reactor Delta-T
RD3-5	Building Exhaust High Activity Alarm
NC-5A	Linear Power Range and Regulating Rod Controller
NC-6	Nuclear Power Range
NC-9	Nuclear Safety System
TRA-2	Reactor Outlet Temperature
RM1-15	C001 Rabbit Lab Radiation Area Monitor
FIA-40	Reactor Flow
RM3-1	Secondary Cooling N-16 Monitor
RM3-2	Fission Product Monitor
RM3-3	Secondary Cooling N-16 Monitor

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.

There were none this reporting period.

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

The gaseous waste released was 351 curies of tritium and 665 curies of Argon-41. There were 1.5 curies of tritium and 0.4 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 significant exposures.