National Bureau of Standards Reactor

Docket #50-184

Facility License No. TR-5

OPERATIONS REPORT

- - - #32 - - -

July, 1981 - December, 1981

This report contains a summary of activities connected with the operations of the NBSR. It is submitted in fulfillment of section 7.8d of the NBSR Technical Specifications and covers the period from July 1, 1981, to December 31, 1981.

Section numbers in this report (such as, 7.8d(1)) correspond to those used in the Technical Specifications.

March 30, 1982

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7.8d(1) Summary of Plant Operations

During the period July 1, 1981, through December 31, 1981, the reactor was critical for 2837 hours and the energy generated was 28062 MWH.

During this period two unusual occurrences took place. One dealing with the loss of primary D_2O level while the facility was unattended and the other dealt with the discovery of two unlatched elements. Both of these occurrences were covered by special reports previously transmitted to NRC. Procedural changes and other corrective actions described in the reports have been put in effect.

Certain improvements, minor changes and other activities of interest that were carried out during this period are listed below:

ECN-257 Installed switch on Reactor Console to control draining or filling of the inner water shutter on the CT-E&W beam tubes.

ECN-254 Installed a Small Angle Neutron Scattering (SANS) spectrometer at the CT-E beam port.

ECN-252 Replaced 42-volt D.C. Process Instrument power supply with new regulated 24-volt D.C. system.

ECN-260 Provided alarm to the NBS Security central console on Reactor Level and Tritium activity when the Reactor Building is unattended.

7.8d(2) Unscheduled Shutdowns

July 20: Reactor scram because of commercial electrical power interruption during thunderstorm. Returned to power promptly.

November 20: Period scram at low power because of NC-3 Period amplifier failure. Replaced amplifier and resumed operation.

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

1. Rebuilt regulators on the left and right bank of the Helium Sweep System.

2. Replaced bearings in #2 and #3 Primary System motors.

3. Installed new wear rings, bearings, shaft sleeves, and seals on #3 Secondary pump.

4. Replaced Storage Pool after-filters and pre-filters.

5. Rebuilt #2 Secondary Pump suction valve (SCV-20).

6. Replaced air operator on DWV-39.

7. Replaced RT-4 rabbit receiver.

8. Replaced Tritium Monitor blower.

9. Installed new Secondary System blowdown line.

10. Replaced operator and diaphragm on DWV-318.

11. Replaced breaker coil alignment spacer on #1 Primary pump breaker.

12. Replaced coupling on #1 Thermal Shield pump.

13. Replaced impeller nut washer #1 Primary System motor.

14. Repaired valve seats on TSV-138 and TSV-139.

15. Replaced Thermal Shield pre-filters and after-filters.

16. Changed IX resin in #1 Thermal Shield IX column.

17. Instrument Procedures performed:

FIA-40	Reactor Outlet Flow Alarm
LIA-40	Reactor Level Alarm
LRC-1	Reactor Level Alarm
NC-3	Intermediate Range Channel 3
NC-6	Power Range Channel 6
NC-9	Nuclear Safety System
PC-3	Normal Exhaust Sys. Press. Controller
PC-27	Process Room Press. Controller
SPC-150	Emergency Fan Controller
SPS-151	Vacuum Breaker Controller
RD3-2	Fission Products Monitor Alarm
RD3-5	Bldg. Exhaust High Activity Alarm
TIA-40B	Reactor Outlet ΔT Alarm

18. ECN-266 Replacement of force-balance type transmitter with strain gage type transmitter on LIA-3 D_2O Storage Tank Level.

19. Calibrated TRC-2 Reactor Outlet Temperature Channel.

20. Replaced NC-3 Period amplifier.

7.8d(4) Tabulation of Major Changes in the Facility and Procedures, and the Test and Experiments, Carried Out Without Prior Approval by the U. S. AEC (10 CFR 50.59)

ECN-256 Installed additional fuel racks in the fuel storage pool. The new racks are similar to the existing ones except that 1/8 inch stainless steel plates are used between the elements. The elements are spaced 5 inches center to center apart. The calculated K_{eff} for this array is less than 0.75 which is well below the 0.85 limit specified in the NBSR Technical Specifications.

7.8d(5) Summary of Radioactive Material Released and Results of Environmental Surveys Performed.

Two hundred ninety-six (296) curies of tritium and 205 curies of Argon-41 were released as gaseous waste, while 351 millicuries of tritium and 317 microcuries of other β-γ emitters were released into the sanitary sewer.

Environmental samples of the streams, wells, vegetation and/or soil, and air showed no significant changes.

7.8d(6) Summary of Significant Exposures Received by Facility Personnel and Visitors.

1. No significant exposures were received by any visitor.
2. Personnel dosimetry reports have not been received for facility personnel exposures at the time of this report.