

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-155/85005(DRP)

Docket No. 50-155

License No. DPR-6

Licensee: Consumers Power Company
212 West Michigan Avenue
Jackson, MI 49201

Facility Name: Big Rock Point Nuclear Plant

Inspection At: Charlevoix, MI 49720

Inspection Conducted: March 19, 1985 - April 29, 1985

Inspector: S. Guthrie

Approved By: *D.C. Boyd*
D.C. Boyd, Chief
Projects Section 1B

5-13-85
Date

Inspection Summary

Inspection on March 19, 1985 to April 29, 1985 (Report No. 50-155/85005(DRP))

Areas Inspected: Routine, unannounced inspection conducted by the Senior Resident Inspector of Licensee Actions on previous Inspection Findings, Operational Safety, Maintenance Operation, Surveillance Operation, Reactor Trips, Licensee Event Report Followup, Headquarters Requests, and Spent Fuel Pool Modifications. The inspection involved a total of 103 inspector-hours by one NRC inspector.

Results: Of the eight areas inspected, no items of noncompliance or deviations were identified.

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DETAILS

1. Persons Contacted

- *D. Hoffman, Plant Superintendent
- *G. Pettijean, Technical Superintendent
- *G. Withrow, Maintenance Superintendent
- *R. Alexander, Technical Engineer
- *A. Sevensen, Operations Superintendent
- *R. Abel, Operations and Maintenance Superintendent
- L. Monshor, Quality Assurance Superintendent
- R. Barnhart, Senior Quality Assurance Administrator
- P. Donnelly, Senior Review Supervisor, Nuclear Activities Dept.
- J. Lovell, Quality Control Supervisor
- E. McNamara, Shift Supervisor
- D. Swem, General Engineer
- G. Sonnenberg, Shift Supervisor
- D. Staton, Shift Supervisor
- *R. Krchmar, Quality Assurance
- *R. Burdette, Acting C/HP Superintendent
- M. Acker, General Engineer

The inspector also contacted other licensee personnel in the Operations, Maintenance, Radiation Protection and Technical Departments.

*Denotes those present at exit interview.

2. Licensee Action on Previous Inspection Findings

(Closed) Open Item (155/84017-04). This item tracked the licensee's corrective action in response to a January 7, 1985, scram on low steam drum level. Corrective actions are detailed in section 7.b of this report.

3. Operational Safety Verification

The inspector observed control room operations, reviewed applicable logs and conducted discussions with control room operators during the inspection period. The inspector verified the operability of selected emergency systems, reviewed tagout records and verified proper return to service of affected components. Tours of the containment sphere and turbine building were conducted to observe plant equipment conditions, including potential fire hazards, fluid leaks, and excessive vibrations and to verify that maintenance requests had been initiated for equipment in need of maintenance. The inspector by observation and direct interview verified that the physical security plan was being implemented in accordance with the station security plan.

The inspector observed plant housekeeping/cleanliness conditions and verified implementation of radiation protection controls. During the

inspection period, the inspector walked down the accessible portions of the Liquid Poison, Emergency Condenser, Reactor Depressurization Post Incident, Core Spray and Containment Spray systems to verify operability.

On April 6 the licensee observed damage done by severe weather and ice to the east wall of the screen house. The damaged area is in the concrete wall and is accessible by water via the discharge canal. Further evaluation by the licensee on April 7 led to a decision to post a security guard at the damaged location because of the remote potential for unauthorized access to the protected area. On April 9 the licensee welded a plate across the opening to prohibit access. The potential breach of security was reported to NRC Headquarters April 9, 1985.

No items of noncompliance or deviations were identified in this area.

4. Monthly Maintenance Observation

Station maintenance activities of safety-related systems and components listed below were observed/reviewed to ascertain that they were conducted in accordance with approved procedures, regulatory guides and industry codes or standards and in conformance with technical specifications.

The following items were considered during this review: the limiting conditions for operation were met while components or systems were removed from service; approvals were obtained prior to initiating the work; activities were accomplished using approved procedures and were inspected as applicable; functional testing and/or calibrations were performed prior to returning components or systems to service; quality control records were maintained; activities were accomplished by qualified personnel; parts and materials used were properly certified; radiological controls were implemented; and, fire prevention controls were implemented.

Work requests were reviewed to determine status of outstanding jobs and to assure that priority is assigned to safety related equipment maintenance which may affect system performance.

- a. On March 25-26 the inspector observed the modification to the interior and exterior lever arm bolts controlling the mechanical interlock in the containment sphere personnel air lock. Bolts which had sheared and rendered the interlock inoperable were replaced by larger bolts of a different material. The modification was the corrective action for the loss of containment integrity event of July 31, 1984, the subject of LER 84011.
- b. During the outage the licensee performed extensive repairs on Reactor Depressurization System (RDS) valves. Working with a vendor representative, the licensee lapped all seats on the upstream isolation valves and machined the discs to provide for a more uniform seating surface across the entire area of the disc face. The licensee identified one cracked disc, and turned that cracked face toward the higher pressure (reactor) side of the

valve during reassembly. A replacement disc is on order for another cracked disc previously identified, and repairs to the newly discovered cracked disc are being evaluated.

The Target Rock depressurization valves received lapping work on the main seats and newly rebuilt top assemblies on all four valves. Three of the four tops had received the modification to the flow path to the pilot valve that smoothed the passage and removed a ledge where rust particles accumulate. The fourth top assembly did not receive the modification because of parts availability problems and is installed on the "D" train. A crack was discovered on the main seat of the "C" depressurization valve and an evaluation is underway.

The startup on April 18 was the first with the procedure modified to keep CV-4184, RDS Bypass Valve, closed until plant pressure reached 1100 psi. The opening of CV-4184 is timed slowly to admit pressure through the RDS-101 valves to the spoolpiece between the upstream isolation valves and the depressurization valves. This change was intended to prevent accumulation of grit in the pilot valve during the slow plant pressure buildup typical of a startup. Up to 1100 psi the upstream isolation valves held pressure. After opening CV-4184 at 1100 psi the pilot valves showed no evidence of leakage. At the close of the inspection period the RDS system was operating with all 101 valves open and no indicated pilot valve leakage. The licensee continues to evaluate other long term actions, including new tops of corrosion resistant material, different methods of full stroke valve testing or bench testing, and reduced test frequency.

- c. During the outage the licensee reset the Limitorque switch settings on MO-7066, Fire Main Water to Core Spray Heat exchangers, to values provided by the vendor. The torque switch settings provided by the vendor differed from the settings observed, giving the licensee reason to believe the settings were in error even though no operational problems had been evident. The licensee was inspecting MO-7066 and other valves as part of a program to verify correct torque switch settings on Limitorque actuators after incorrect switch settings were discovered in MO-7050, Main Steam Isolation Valve, and MO-7067, Turbine Bypass Isolation Valve.

Following the MO-7066 switch resetting the valve was test operated, but tripped the breaker on thermal overload before the torque switches activated. While investigating the licensee identified differences between the vendor's definition of "recommended setting" and "maximum setting" and the licensee's understanding of the two terms. The vendor definition of "maximum setting" is the point where the metal limiter plate is installed on the actuator device and represents the maximum torque allowed without damaging the actuator. The actuator vendor provides the valve manufacturer with "recommended settings" for switch positions designed to correspond to the opening and closing torque requirements for the individual valve application. While no upward adjustment is permitted with the "maximum" setting, the "recommended" setting is adjustable to provide for changes in

torque requirements resulting from valve age, packing adjustment, or other variable parameters. In the case of MO-7066, the licensee had used the maximum setting as the recommended setting. The MO-7066 switches were returned to their original settings. The licensee had also reset to the maximum setting the switches on MO-7053 and MO-7063, Emergency Condenser Outlet Valves, but returned them to their original setting upon discovery of the problem with MO-7066.

The licensee determined that the torque switches found mispositioned on MO-7050 and MO-7067 were actually incorrectly set and were not involved in the confusion over definitions that affected MO-7066, MO-7053, and MO-7063. The licensee is working with the actuator vendor and valve manufacturers to compile an accurate list of torque settings. The licensee remains committed to verification of the accuracy of torque switch settings on all 18 valves considered to have safety significance or frequent operation by the end of the 1985 refueling outage.

No items of noncompliance or deviations were identified in this this area.

5. Surveillance Observation

- a. On April 2 the inspector observed the performance of T7-18, Bypass Valve Test, with emphasis on the licensee's actions on concerns presented in section 5.b of Inspection Report No. 155/85002 (DRP) that the characteristics of the bypass valve controller deviation alarm were such that the bypass valve could be inoperable without the operator's knowledge. The licensee has initiated repair activities to the controllers to be completed during an upcoming outage period. A licensee investigation of deviation alarm circuitry indicated that during normal plant operation the deviation alarm is fully operable at an acceptable tolerance for controller failures in the open valve direction. However, during normal conditions it is not within the range of the electronic circuitry to produce the deviation alarm for controller failures in the close valve direction. The operational consideration imposed by the limitations of the electronic circuitry is offset by the weekly test which verifies the operability of each controller. The licensee is revising ALP 1.5, Annunciator No. 50, to provide operators with a deviation alarm setpoint in pounds rather than percent. The licensee's determination that operators do not have the deviation alarm available during all plant conditions is to be incorporated into the training program and circulated as a memorandum to operators.
- b. On April 2 the inspector observed the performance of Surveillance T30-27, Shift Fire Drill, in the station power room. Fire brigade response was orderly and prompt.
- c. On April 2 the inspector observed portions of Surveillance T30-01, Reactor Protection System monthly check. The test was conducted in accordance with procedural requirements.

6. Reactor Trips

On April 14, while the reactor was shutdown with all rods inserted, a Reactor Protection System (RPS) Upscale/Downscale trip occurred. The trip signal resulted from the susceptibility of the picoammeter to electrical noise at low neutron flux levels, a known operating characteristic of the equipment. A spurious trip signal of this type has no impact on plant safety.

No items of non compliance or deviations were identified in this area.

7. Licensee Event Reports Followup

Through direct observations, discussions with licensee personnel, and review of records, the following event reports were reviewed to determine that reportability requirements were fulfilled, immediate corrective action was accomplished, and corrective action to prevent recurrence had been accomplished in accordance with technical specifications.

(Closed) LER 84011, "Loss of Containment Integrity Through the Personnel Lock." This event resulted from a sheared bolt in one of two interior lever arms controlling the mechanical interlock for the personnel air lock. Corrective action included replacement with a larger bolt of a different material.

(Closed) LER 85002, "Manual Reactor Scram, Steam Drum Low Level." This LER reported a reactor scram on January 27, 1985, resulting from failure to reset the feedwater regulating valve after air had been secured to the valve, causing the valve to fail in the as-is position. The scram is detailed in section 6.b of I.R. No. 84017(DRP). The licensee issued a memorandum to operators describing the circumstances, and took other corrective action directed at correcting a procedural inadequacy. System Operating Procedure (SOP) 27, "Instrument and Service Air System," was changed to require the reset function when returning the air header to service. SOP 16, "Feedwater System," was changed to require visual verification of stem movement as a test of valve operability prior to needing a feed pump during startup. The Master Check-Off Sheet, O-TGS-1, was revised to reflect the new SOP 16 requirement.

(Closed) LER 85001 and 85001, Revision 1, "Reactor Trip, Upscale/Downscale." This LER reported a reactor trip on January 1, 1985, resulting from a picoammeter circuit failure described in IR No. 84017(DRP). Revision 1 corrected an error in the original submittal that incorrectly identified Channel two as having upscaled rather than the correct Channel one.

(Closed) LER 81016, "Containment Pressurization." This LER addressed an August 1981 event where reactor containment was pressurized while containment isolation valves were closed for maintenance and testing. The source of pressure was determined to be use and leakage of air from the instrument and/or service air systems. Operator action for any future occurrences of containment pressurization includes isolating air to the sphere. In the past isolating air to the sphere would result

in operation of the Reactor Depressurization System (RDS) isolation valves which fail open on loss of air. A nitrogen backup system to provide pressure to the RDS isolation valves on loss of air was installed in January 1985. The licensee is factoring the new nitrogen backup system into the Big Rock Probabilistic Risk Assessment (PRA).

(Closed) LER 85003, "Reactor Trip - Upscale/Downscale." This LER documents a Reactor Protection System (RPS) actuation on April 14, 1985.

No control rod movement occurred since the reactor was shutdown with all rods fully inserted at the time of the event. The trip signal is attributed to the susceptibility of the picoammeters to electrical noise at low neutron flux levels. This type of spurious trip has no impact on plant safety.

8. Headquarters Requests

- a. At the request of NRR the inspector reviewed Facility Change No. 573, which bypassed thermal overload protection on six motor operated valves. This modification was in response to Topic III - 10.A of the Integrated Plant Safety Assessment Report (IPSAR), NUREG-0828. The modification was completed during the 1984 refueling outage.
- b. On April 4 the inspector evaluated the licensee's request to NRR to modify section 6.4.3.(f) of Technical Specifications to require calibration of high range gamma instruments every six months for scales greater than 20 R/hr. The licensee's operating experience indicates that because of instrument drift the present three month calibration frequency is appropriate. The inspector reported to NRR that there was no apparent justification for changing the calibration frequency from three to six months.

9. Spent Fuel Pool Modification

At the close of the inspection period the licensee had installed all but one rack. The project has been delayed while the licensee obtains new materials to use as pads beneath the rack to prevent galvanic corrosion. The licensee has taken steps to process the five leaker cans which could not be decontaminated to less than 100 mr/hr.

10. Open Items

Open items are matters which have been discussed with the licensee, which will be reviewed further by the inspector, and which involve some action on the part of the NRC or Licensee or both. No new open items disclosed during the inspection.

11. Exit Interview

The inspector met with licensee representatives (denoted in Paragraph 1) throughout the month and at the conclusion of the inspection period and

summarized the scope and findings of the inspection activities. The licensee acknowledged these findings. The inspector also discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspector during the inspection. The licensee did not identify any such documents or processes as proprietary.