

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-155/93021(DRP)

Docket No. 50-155

License No. DPR-6

Licensee: Consumers Power Company  
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Jackson, MI 49201

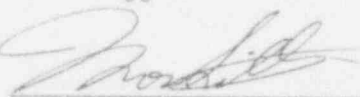
Facility Name: Big Rock Point Nuclear Plant

Inspection At: Charlevoix, Michigan

Inspection Conducted: December 15, 1993, through February 1, 1994

Inspector: R. J. Leemon  
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Approved By:



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Reactor Projects Section 2B

2/15/94  
Date

Inspection Summary

Inspection on December 15, 1993 - February 1, 1994  
(Report No. 50-155/93021 (DRP))

Areas Inspected: Routine, unannounced inspection by the resident inspectors and others of operational safety verification, engineered safety feature system walkdown, maintenance and surveillance, engineering and technical support, and plant support activities.

Results: Within the areas inspected, one violation was identified (paragraph 2.d). The following is a summary of the licensee's performance during this inspection period:

Plant Operations: The licensee started to develop an activity planning and control system. However, while continuing to operate the plant well, the licensee was ineffective in ensuring that known deficient conditions on the stack gas heating system were corrected before the onset of severe freezing weather. This resulted in the stack gas monitoring system becoming inoperable and placed the licensee in a 72-hour LCO. Additionally, Procedure O-VAS-1 was not followed and is the subject of a violation (paragraph 2.d).

Maintenance Workers continued to demonstrate a good knowledge of requirements and attention to detail in their day-to-day activities.

Engineering The licensee completed the complex assessment of critical safety components preventive maintenance (PM) as scheduled. Additionally, the roving engineers continued to demonstrate good involvement in the day-to-day activities at the site.

Plant Support Performance in the ALARA (as low as reasonably achievable) program continued to be excellent.

## DETAILS

### 1. Persons Contacted

#### Consumers Power Company

- \*P. Donnelly, Plant Manager
- \*E. Bogue, Chemistry/Health Physics Manager
- \*G. Boss, Systems and Project Engineering Manager
- \*M. Bourassa, Senior Licensing Technologist
- D. Hughes, Executive Engineer
- \*R. Scheels, Planning and Scheduling Administrator
- W. Trubilowicz, Operations Manager
- \*D. Turner, Maintenance Manager
- \*G. Withrow, Plant Safety and Licensing Director

The inspectors also contacted other licensee employees including members of the technical and engineering staffs, and the reactor and auxiliary operators.

\*Denotes those attending the exit meeting on February 1, 1994.

### 2. Plant Operations

The licensee continued to operate the plant routinely at the full released power level with no challenges to safety throughout the assessment period. The power generated, for December 1993 and January 1994 combined, was the highest for any 2 month period in the 32 year history of the plant. Additionally, January 1994 was the third best month ever for power generation. Water usage remained at a very low level.

However, plant management was ineffective in ensuring known needed repairs to the stack gas heating system were completed until being forced to do so when the stack gas monitoring system became inoperable during severe freezing weather conditions. The inoperability of the stack gas monitoring system initially placed the licensee in a 72 hour LCO. The licensee needed about one day to assess this inoperability and make the decision to exit the LCO by shutting the containment ventilation isolation valves.

#### a. Operational Safety Verification (71707)

The inspectors verified that the facility was being operated in conformance with the license and regulatory requirements and that the licensee's management was effectively carrying out its responsibilities for safe operation of the facility.

The inspectors verified proper control room staffing and coordination of plant activities, verified operator adherence to procedures and technical specifications (TS), monitored the

control room for abnormalities, verified that electrical power was available, observed shift turnovers, and monitored the frequency of plant and control room visits by station management.

The inspectors reviewed various records, such as Caution-Tag books, switching- and tagging-order files, shift logs and surveillances, daily orders, and maintenance work orders. Except as noted below, the inspectors determined that all observed activities were acceptable.

b. Plant Review Committee (PRC) (40500)

The inspectors observed the performance of the members of the PRC. The required members were present and there was good interaction among the members. The chairman kept the discussions on track and ensured that commitments for action were attained and acknowledged, with due dates, before the meetings were adjourned. Additionally, after one meeting, the chairman led the PRC on a tour of the containment.

c. Plant Tours

The inspectors performed tours of the plant to verify system line-ups and to ascertain that the systems were operable. During the tours, housekeeping and the material condition of valves, pumps, supports, labeling, and major system components were assessed and items needing attention were communicated to the licensee.

Housekeeping -- The inspectors noted extensive management tours inside the containment. Subsequently, excellent improvements were noted in plant cleanliness. In particular, the areas within the designed floodable volume of the containment were markedly improved. Excess materials were removed and the importance of continuing cleanliness was stressed to all personnel by the Plant Manager.

d. Cold Weather Preparations (71714)

Inadequately Heated Stack Gas Monitoring Sample Lines - The inspectors determined that licensee personnel failed to fully implement procedure O-VAS-1, "Cold/Warm Weather Checklists," Revision 10. Although Step 6 of the procedure specified that the corrective actions necessary to complete this procedure be listed, an outstanding work request (NWO 12301946), that had been entered into the planning system on September 9, 1993, was not listed. This work request was to correct deficiencies found in the heating system in January 1993. The stack gas heating system was placed in service on October 19, 1993, during performance of this cold weather checklist. The procedure was reviewed by management on October 27, 1993. Subsequently, flow rate through the stack gas sample lines had begun to decrease coincident with the onset of severe cold weather in December 1993. The stack gas heating

system was found to be unacceptable on January 6, 1994, when the stack gas trouble alarm annunciated and remained solid with no sample pumps running due to low flow on both skids. This placed the licensee in a 72-hour limiting condition for operations (LCO) per TS Table 13-1, 5.c & .d, which required establishment of an alternate flow pathway; however, the heat tracing that had failed was on both the primary and alternate pathway. The licensee immediately re-initiated nuclear work order (NWO) 12301946 to replace the stack gas sampling lines heat tapes and insulation.

The work order had been entered into the licensee's work planning system as the result of maintenance order (MO) 93SGM0001, initiated on January 1, 1993. The NWO had been partially worked on December 17 and 20, 1993. The mechanic had reported the inability to replace a defective heat trace to the shift supervisor on December 20. Additionally, NWO 12301946 listed TS involvement as N/A (not applicable) even though the loss of stack gas heating during freezing weather would place the licensee in an LCO. The safety significance of this violation is relatively minor in that the inoperability of the stack gas monitoring system was compensated for by closing the containment ventilation valves. The licensee replaced the failed heat trace tapes before returning the stack gas monitoring system to operation and opening the containment ventilation valves on January 7, 1994.

TS 6.8.1 requires that written procedures be established, implemented, and maintained for all structures, systems, components, and safety actions defined in the Big Rock Point Quality List. Section 5.2 of Chapter 13 of Volume 17 of the Big Rock Point Quality List requires procedures for operations and maintenance activities. Section 6.0 of Operations Procedure O-VAS-1, "Cold/Warm Weather Checklists," Revision 10, requires that any corrective actions necessary to complete the procedure be listed. Section 5.2.b of the same procedure includes the stack gas heating system. The failure to list the nuclear work order, a corrective maintenance activity for the heat tracing of the stack gas monitoring system, is considered a violation of TS 6.8.1 (50-155/93021-01(DRP)).

e. Management Controls

The inspectors evaluated the effectiveness of management control, verification, and oversight in the jobs observed during this inspection. The inspectors also attended management and supervisory meetings involving plant status to observe inter-departmental communications and coordination. Additionally, the inspectors monitored the results of the licensee's corrective action programs by reviewing deviation, event, and root cause evaluation reports; attending routine meetings; and discussing plant evolutions and events with the plant staff. The following significant weakness was identified:

**Ineffective Corrective Action:** The failure to ensure that repairs to the stack gas heating system were completed before the stack gas monitoring system became inoperable -- over a year after discovery -- was an example of ineffective corrective action.

Despite a history of freezing in the stack gas monitoring sample lines, plant management failed to schedule and perform needed repairs to the stack gas monitoring heating system until forced to do so by the stack gas monitoring system again becoming inoperable. This placed the licensee in a 72-hour limiting condition for operations (LCO) per TS Table 13-1, 5.c & .d, which required the establishment of an alternate pathway to monitor the exhaust. However, the heating system that failed included both the main and alternate pathways. Management was aware of decreasing flow in the sample lines, coincident with the onset of severely cold weather in December 1993, but did not ensure repairs were accomplished until the stack gas monitoring system failed due to low flow on January 6, 1994. A maintenance order (MO) to accomplish needed repairs had been initiated in January 1993 and a nuclear work order (NWO) was placed in the computerized work planning system in September 1993. Additionally, the decreasing flow rate had been discussed at the morning meetings, but repairs had been delayed due to reduced maintenance crew manning during the holiday season.

Until the corrective action review board meeting the next day, management did not come to the realization that since they could no longer monitor a discharge or establish an alternate pathway that would work, they should isolate the containment ventilation valves and exit the LCO.

**Self-Assessment Efforts:** The licensee had started an effort to develop more positive control of all licensee efforts at the site. The inspectors attended the first meeting of a multi-disciplinary team composed of members of each of the work groups involved with work planning and control. Senior plant management started the meeting by stressing the importance of developing a method for total activity planning and control. The method would be to plan every job, including all pre-planned (PPAC), surveillance, maintenance, health physics, and support activities, not just NWOs. The team's charter was to develop an integrated work and testing schedule to identify, plan, schedule, perform, test, closeout, and document all activities. The licensee has started this effort in recognition that the current automated work control system was too complicated and that the daily planning meetings were not very effective. The licensee's day-to-day planning and execution since the refueling outage has been weak, as noted in previous inspections. Additionally, the licensee has requested and received evaluations of their work control methods from industry groups and other licensees during this assessment period.



f. 10 CFR 21 - Response to Regional Request

A Part 21 notification by Illinois Power (Defect 21-93-027) noted the failure of puffer tube assemblies in certain Westinghouse 4160 VAC breakers. Big Rock Point does not have any breakers that use puffer tubes for arc suppression and was not affected by this notification. Additionally, breaker surveillances included inspection of all arc suppression devices.

One violation was identified in this area.

3. Maintenance (61726 & 62703)

The inspectors observed station maintenance and surveillance activities and determined that they were conducted in accordance with approved procedures, regulatory guides, industry codes and standards, and in conformance with TS.

The following items were considered during this review: approvals were obtained prior to initiating work; test instrumentation was calibrated; 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; results were within specification and properly reviewed, and any deficiencies identified were properly resolved. The following maintenance and surveillance activities were observed:

- SOP 28 Standby Diesel Startup, (Revision 161)
- Work Order #12302345 Fuel Pit Pump Motor Maintenance
- T1-02 Primary System Leakage Test (Revision 21)
- T1-08 Shift Turnover Procedure (Revision 18)
- T1-09 Heat Balance Calculation (Revision 18)
- T7-04 Weekly Reactor Protection Logic System Test (Revision 15)
- T30-01 Monthly Reactor Protection Test (Revision 18)
- T7-18 Bypass Valve Test (Revision 14)

The inspectors noted good communication and safe work practices for those activities observed. Mechanics were generally knowledgeable and attentive to detail in performing their assigned tasks. The following issue was also identified:

On January 17, 1994, the standby diesel experienced slow cranking speeds and failed to start after two attempts. Although the standby diesel generator is not required to achieve shutdown and is not a safety-related component, its operability provides backup to station electrical power should the offsite lines be lost and the emergency diesel generator fail to start. Slow cranking times had been identified during previous test runs on January 3 and January 10. The batteries were placed on charge and the inspector observed a diesel start with no deficiencies on January 20. The old batteries were replaced on

January 21. Deviation report BRP-94-008 was initiated by the licensee to investigate the diesel's failure to start on January 17. Probable contributing factors included weak starting current from the batteries, coupled with the extreme current demands during cranking at very low temperatures. The licensee had not replaced the crank-case oil with a lower viscosity oil as recommended by the manufacturer for severe cold weather conditions. This had been the licensee's practice since construction. The licensee was continuing to evaluate the problem. Pending acceptable resolution of DR BRP-94-008, this is an inspection followup item (155/93021-01).

No violations or deviations were identified in this area.

4. Engineering (37700)

The inspectors evaluated the extent to which engineering principles and evaluations were integrated into daily plant activities. This was accomplished by assessing the technical staff's involvement in non-routine events, outage related activities, and assigned TS surveillances; by observing on-going maintenance work and troubleshooting; and by reviewing deviation investigations and root cause determinations.

To improve engineering support to plant activities, the licensee established the roving engineer program. This individual would be available to provide immediate engineering support for any short-term issues. If a problem was experienced that required long-term engineering support, that item would be given to the appropriate system engineer. The responsibility for roving engineer was rotated among the engineering staff, with a typical duty assignment of one week duration. The inspectors noted that since implementation, operators and mechanics appeared more willing to involve the roving engineer in resolving problems in accomplishing work.

The licensee completed the assessment of whether or not critical safety components were included in the preventive maintenance (PM) program and if the correct level of preventive maintenance was being performed on them. This complex evaluation was completed, as scheduled, by the end of December 1993. Plant components that were not included were being evaluated for their possible addition to the PM program. The inspectors noted that this program had the potential to significantly improve the licensee's ability to appropriately scope and schedule preventive maintenance.

No violations or deviations were identified in this area.

5. Plant Support (71707)

Very Low Total Dose - Overall, the licensee achieved the lowest total dose (157.2 person-rem) since early in plant life, even though the year included an extended refueling outage with major turbine repairs and an unplanned outage to repair a reactor recirculation pump seal. This



total dose was nearly 43 person-rem below the calendar-year goal. Better work request planning and scheduling and improved inter-departmental communications were primary contributing factors in attaining the low total dose. Additionally, there were 74 contamination reports for the year, well below the goal of 106 -- none were reported for November 1993.

No violations or deviations were identified in this area.

6. Inspection Followup Items

Inspection Followup items are matters which have been discussed with the licensee, which will be reviewed by the inspector and which involve some action on the part of the NRC or licensee or both. An Inspection Followup Item disclosed during the inspection is discussed in Paragraph 3.

7. Exit Interview

The inspectors met with licensee representatives (denoted in paragraph 1) on February 1, 1994. The inspectors summarized the purpose and scope of the inspection and the findings. The inspectors also discussed the likely informational content of the inspection report, with regard to documents or processes reviewed by the inspectors during the inspection. The licensee did not identify any such documents or processes as proprietary.