

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-266/91030(DRS); 50-301/91030(DRS)

Docket Nos. 50-266; 50-301 Licenses No. DPR-24; DPR-27

Licensee: Wisconsin Electric Power Company
231 West Michigan Street - P379
Milwaukee, WI 53201

Facility Name: Point Beach Nuclear Plant, Units 1 and 2

Inspection At: Milwaukee, WI 54241

Inspection Conducted: December 16, 1991 through January 16, 1992

Inspector: *I. T. Yin* 2/12/92
I. T. Yin Date

G. M. Nejfelt 2/12/92
G. M. Nejfelt Date

T. Tella 2/12/92
T. Tella Date

Approved By: *M. P. Phillips* 2/12/92
M. P. Phillips, Chief Date
Operational Programs Section

Inspection Summary

Inspection conducted December 16, 1991 - January 16, 1992
(Reports No. 50-266/91030(DRS); No. 50-301/91030(DRS))

Areas Inspected: Routine, announced inspection of the licensee's self-initiated engineering-oriented vertical slice audit (VSA) of the auxiliary feedwater (AFW) system. The inspection was performed based on selected portions of NRC Inspection Procedure 92720.

Results: The inspectors determined that the scope of the vertical slice audit addressed operations, electrical design, mechanical design, instrument and control design, maintenance, surveillance and testing, and quality and administrative controls. The scope did not include fuse or breaker coordination, AFW pump motor tests, AFW pump suction head verification, supporting system capabilities, or evaluation of generic deficiencies found in industry reviews of AFW systems.

The licensee had determined that a search for missing design basis documents would not be conducted as part of the VSA. The VSA identified a number of issues including some which dated back to 1980. Short-term corrective actions for the check valve leakage problem were initiated and completed during the inspection. The issues had been previously identified through the issuance of 16 maintenance work requests, since 1980, and a finding from the licensee's Safety System Functional Inspection conducted in 1990.

DETAILS

1. Persons Contacted

Wisconsin Electric Power Company (WE)

- *J. Zach, Vice President, Nuclear Power
- +*G. Krieser, Manager, Quality Assurance (QA)
- + E. Lipke, Manager, Nuclear Technical Services
- + R. Newton, Manager, Nuclear Support and Planning
- *A. Reimer, Manager, Nuclear Engineering Projects (NEP)
- +*S. Schellin, Manager, NISD
- +*R. Heiden, Manager, QSD
- +*G. Frieling, Manager, Nuclear Engineering
- *H. Hannenman, Manager, Nuclear Safety and Licensing
- + D. Johnson, Manager, Regulatory Affairs
- *J. Reisenbuechler, Manager Operations and Technical Support
- + T. Koehler, Manager, Maintenance and Engineering, Point Beach
- + J. McNamara, Senior Project Engineer, NEP
- *C. Krause, Senior Project Engineer, Licensing
- +*M. Hoynacki, Engineer, QAS
- +*M. Woznicki, Project Engineer, NES
- *J. Petras, Engineer, QAS

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- + M. P. Phillips, Chief, Operational Programs Section

*Indicates those attending the exit meeting in the WE corporate office on December 20, 1991.

+Indicates those attending the follow-up exit telephone conference on January 16, 1992.

Other licensee personnel were contacted as a matter of routine during the inspection.

2. Background

In 1988 the licensee implemented a Vertical Slice Audit (VSA) program to be conducted by the Nuclear Quality Assurance Division (NQAD). Audit report No. A-P-90-12 of the auxiliary feedwater (AFW) system was selected for review during this inspection. The selected audit was performed by NQAD between September 5 and October 22, 1990, and was the third VSA completed since August 1988. The other two VSAs evaluated the residual heat removal system and the containment.

3. Scope of the Vertical Slice Audit

The licensee had made a conscious decision to limit the scope of the VSA. The VSA scope consisted of an examination of operations, electrical design, mechanical design, instrument and control design, maintenance, surveillance and testing, and quality and administrative control. The VSA scope did not include: fuse or breaker coordination, AFW pump motor tests, AFW pump suction head verification, supporting system capabilities, (i.e., steam generator relief valves or service water system which is an alternate source of water for the AFW system), or evaluation of generic deficiencies found in industry reviews of AFW systems. The licensee also decided that a search for missing design basis documents would not be conducted as part of the VSA. Although a portion of the AFW system was walked down, there were no procedures or checklists to define the walkdown scope or acceptance criteria.

4. Evaluation of Licensee Corrective Actions

The inspectors reviewed the following corrective actions for audit finding reports (AFRs) generated by the VSA.

- a. AFR No. A-P-90-12-075: Instrumentation, controlling air operated electric pump discharge valves AF-4012 and AF-4019, was not qualified in accordance with QA or seismic requirements.

The licensee evaluated the consequences of the valves remaining open or the valves remaining closed. The licensee concluded that if the valves remained open, there was a concern with overloading of the EDGs due to the electric driven AFW pumps operating in a runout condition. The proposed corrective action was to upgrade these valves to safety grade with the scheduled completion date of June 1992.

In the interim, the licensee initiated a transient loading calculation for the EDGs; at the end of the inspection the licensee was attempting to obtain additional information from the EDG manufacturer to support the calculation. In the interim, the inspectors considered the calculation to be inconclusive. Pending completion of the corrective actions, the licensee was maintaining the AFR open. The inspectors concurred with the licensee's actions.

- b. AFR No. A-P-90-12-076: The AFW pump suction valves from the condensate storage tank (CST) could remain stuck in the open position when service water was used for the AFW supply. The licensee's corrective action

was to manually close the valves on the suction lines to these pumps from the CST. The licensee revised the station's Emergency Operating Procedures (EOPs) to include these actions when service water was used for the AFW system. However, the licensee identified that one procedure, ECA-0.0, which needed to include these steps, had not been revised. Hence, the AFR remained open. The inspectors verified the corrective actions and had no adverse comments.

- c. AFR No. A-P-90-12-074: Several AFW "time delay relay" setpoints were found omitted in the setpoint document (e.g., for minimum recirculation control and low pressure suction trip). The licensee took corrective actions to: (1) determine the appropriate setpoints, (2) test the equipment, and (3) revise the setpoint document. No change was made to the setpoint procedure, PBNP 6.1.1, Revision 12, because it specifically addressed setpoints for "time delay relays."

The licensee will evaluate generic corrective action taken with the PBNP 6.1.1 "time delay relay" revision.

5. AFW Check Valve Backleakage Issues

In addition to the AFR's referenced above, the licensee's VSA generated documentation, including AFR's, corrective action requests (CAR's) and non-conformance reports (NCR's), related to deficiencies with the AFW discharge check valves. The licensee's actions to address the issues were as follows:

- a. AFR No. A-P-90-12-077: This AFR dealt with two issues concerning the discharge valves from the AFW pumps. The first issue was that the first off check valves (i.e., those nearest the steam generators) (CVs) 1/2 AF-100 and 1/2 AF-101 and AFW pump discharge CVs 1/2 AF-108, AF-109, and AF-110 were not checked, per ASME section XI, for seat leakage, nor was a stroke test performed in the closed direction. The licensee addressed this issue by reclassifying the valves as non-code related based on its conclusion that the valves had no safety function in the closed direction.

The second issue was that the above first off CVs, AFW pump discharge CVs and the second off CVs (AF-102, AF-103, AF-104, AF-105, 1/2 AF-106, and AF-107) if stuck open, would make the AFW pumps inoperable due to steam binding. The licensee addressed this issue by again concluding that the valves were non-code related and that the licensee had the choice of what methods to

use to verify valve positions. The licensee chose to verify closure by monitoring the pipe temperatures once per shift. Based on these corrective actions, the licensee closed the AFR.

- b. AFR NO. A-P-90-12-080: The AFW system second off CVs had been leaking since 1980 (16 MWRs issued); the licensee decided that the valves would not be repaired unless it was determined that the leakage was "gross." The corrective actions to this AFR were to revise the maintenance procedure to specify an acceptance criteria for check valve leakage or require the performance of an analysis if the corrective maintenance was not done. Based on this, the AFR was closed.
- c. CAR No. 90-002: Inadequate post maintenance testing program for CVs. The CAR was issued on November 21, 1990, and was still open. This deficiency had also been identified in the licensee's SSFI in 1988 and had resulted in the issuance of post maintenance test procedure PBNP 3.2.6 on January 30, 1990. Based on a review of the proposed actions for the CAR, it was not clear that the Nuclear Power Department (NPD) concurred with the VSA finding and, therefore NPD was not actively trying to find ways to improve CV leakage testing requirements. At the time of the inspection, NPD had requested an extension of the corrective action completion date to April 1, 1992. Because the initial problem was identified in 1988, and the open status of the CAR, it did not appear that the licensee's corrective actions were timely.
- d. NCR No. N-90-233: The AFW system sees higher temperatures than the 100°F design due to CV back leakage from Unit 1 to Unit 2. The licensee reviewed the effects on the piping system due to higher temperatures and considered it acceptable; however, this was not done via engineering evaluation. Based on this review, the NCR was closed on December 11, 1990. No evaluation to determine the effects of CV back leakage on pump binding or the effects of high localized temperatures on equipment environmental qualifications was performed. This was another example of QA closeout of an audit finding without adequate technical review as previously documented in NRC Inspection Report Nos. 50-266/89012 and 50-301/89011, Paragraph 4.a.

The licensee stated that they were aware of the QA closeout problem and had incorporated the concern of high temperature effects on the operations of the system into CR 91-535, which was issued on December 12, 1991. In addition, the licensee had issued CR 91-534 to address AFW system operability due to check valve backleakage. These CRs remained open.

The inspectors' concluded that the actions described above to address the AFRs, CAR, and NCR, were, of themselves, insufficient to ensure operability of the AFW system. These actions did not resolve the CV leakage problem and associated high temperatures in the system. The inspectors found the operating temperature for the 1P-29 and P-38A AFW pumps had exceeded the design temperature of 100°F limit for extended periods of time. Temperatures recently measured between the first off and third off CVs were between 220°F and 323°F. In addition, components in the area had not been evaluated from an EQ standpoint to determine if they would remain qualified at these higher temperatures.

In addition to the temperature concerns, the AFW system design included four vertical pipe runs ranging from 6 feet to 62'- 7" on the AWF pump 1-P29 discharge piping without any high point vents or keep fill system to prevent water hammer.

Based on these concerns the licensee took the following actions:

- o Discussed the high temperature operating conditions with the pump manufacturer and found the adverse conditions to be acceptable.
- o Conducted a worst case piping stress analyses and pipe restraint and support calculations; all stresses and loadings met design code allowables.
- o Contacted the material suppliers and performed additional EQ studies; all materials were either metallic or had been manufactured to withstand approximately 300°F continuous operating temperature.
- o Revised the AFW system operation valve lineup on December 19, 1991, by changing pump discharge motor-operated valves 4020, 4021, 4022, and 4023 from the open/auto to the shut/auto position. This effectively stopped the steam generator CV back leakage flow from 1HX-1B to 2HX-1A.
- o Planned to evaluate the installation of leak tight CVs to replace the current third-off CVs.

- o Vent pipes and valves would be installed on the top of the long sections of vertical pipe runs, and that monitoring measures would be initiated after the hardware installation.

The inspectors reviewed the above actions and determined that they should be sufficient to correct the identified deficiencies. In addition, the 10 CFR 50.59 safety evaluation for revising the valve lineup was reviewed and determined to be acceptable.

6. Design Basis Document Reconstitution Program

During the performance of this and other VSAs, detailed engineering reviews were limited because of incomplete design basis documentation. As a result, the licensee was in the process of developing design basis documents with their design reconstitution program. The design reconstitution program was started appropriately one year ago with a scheduled completion of 1994.

7. Exit Interview

The inspectors met with licensee representatives (denoted in Paragraph 1) at the conclusion of the onsite portion of the inspection on December 20, 1991, and summarized the purpose, scope, and findings of the inspection. Subsequent material was reviewed by the inspectors, and discussions were held on January 16, 1992, with licensee representatives (also denoted in Paragraph 1) at the conclusion of the in-office review to discuss the results of the inspection. The inspectors also discussed the likely informational content of the inspection report with regard to documents or processes reviewed during the inspection. The licensee representatives did not identify any such documents or processes as proprietary.