

NRC Resident



Kewaunee Nuclear Power Plant
N490 Highway 42
Kewaunee, WI 54216-9511
920 388 2560

Point Beach Nuclear Plant
6610 Nuclear Road
Two Rivers, WI 54241
920 755 2321

Kewaunee / Point Beach Nuclear
Operated by Nuclear Management Company, LLC

NRC 2002-0068

10 CFR 2.201

August 12, 2002

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Ladies/Gentlemen:

Dockets 50-266 and 50-301
Point Beach Nuclear Plant, Units 1 and 2
Reply to a Notice Of Violation (EA-02-031)
NRC Special Inspection Report No. 50-266/01-17 (DRS); 50-301/01-17 (DRS)

Reference: 1. Letter from J. E. Dyer (NRC) to M. E. Warner (NMC) dated July 12, 2002

In Reference 1, the Nuclear Regulatory Commission (NRC) forwarded the final results of its significance determination and Notice of Violation (NOV) for the finding identified in the subject inspection report. The NRC cited a violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings", and Criterion XVI, "Corrective Action". The basis for this violation was that certain procedures did not provide adequate operator instructions to verify that the auxiliary feedwater (AFW) pump recirculation flow control valves were open while controlling AFW flow upon low instrument air header pressure. The NOV also stated that Nuclear Management Company (NMC) failed to promptly identify and correct this condition. This finding has been characterized as red using the significance determination process.

We have reviewed this NOV and, pursuant to the provisions of 10 CFR 2.201, have prepared a written response to the violation as requested by your letter. We concur this is a violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings" and also acknowledge the aspect of the violation attributed to 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action". Our response to the violation is included as an attachment to this letter.

Sincerely,

Mark E. Warner
Site Vice President

JG/kmd

A/220
~~219~~

NRC 2002-0068

Page-2.

Attachment

cc: NRC Regional Administrator
NRC Project Manager
Director, Office of Enforcement

NRC Resident Inspector
PSCW

NRC 2002-0068

Attachment

Page 1

**REPLY TO A NOTICE OF VIOLATION
EA-02-031
NRC SPECIAL INSPECTION REPORT
NO. 50-266/01-17 (DRS); 50-301/01-17 (DRS)
POINT BEACH NUCLEAR PLANT UNITS 1 AND 2**

NRC VIOLATION

During a NRC inspection conducted on December 3, 2001 through February 28, 2002, a violation of NRC requirements was identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," NUREG-1600, a summary of the violation is listed below:

10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings", requires, in part, that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances.

10 CFR Part 50 Appendix B, Criterion XVI, "Corrective Action," requires, in part, that measures shall be established to assure that conditions adverse to quality are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective actions taken to preclude repetition.

Contrary to the above, as of November 29, 2001, activities affecting quality were not prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances. Specifically, procedures EOP-0.1 Unit 1 "Reactor Trip Response", Revision 24, and EOP-0.1 Unit 2 "Reactor Trip Response", Revision 23, did not provide adequate operator instructions to verify that the auxiliary feedwater (AFW) pump minimum flow recirculation valves were open while controlling AFW flow upon low instrument air header pressure. The Notice of Violation also stated that the licensee failed to promptly identify and correct this condition. The following situations were listed as prior opportunities to identify this condition:

- In October 1997, the safety function of the minimum flow recirculation valves was considered in response to Condition Report 97-3363.
- In March 1997, the licensee identified a failure mode of the AFW system due to the loss of instrument air as discussed in Licensee Event Report 97-14-00

This violation is associated with a Red SDP finding.

NMC RESPONSE

We concur this is a violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings", and that the finding has been properly characterized through the significance determination process (SDP) as red. We also acknowledge the aspect of the violation attributed to 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action".

Reason for the Violation

The violation occurred because procedure EOP-0.1, Reactor Trip Response, did not contain the specific operator actions needed to assure that, in all instances, operators would consistently control or stop AFW flow to prevent AFW pump damage under certain conditions. The conditions of concern were loss of instrument air coincident with either steam generator overfill or RCS overcooling. Under such conditions, operator actions could have caused the loss of the required minimum flow through the AFW pumps while the pumps were running. The minimum flow required by the pumps provides for pump cooling, which is necessary to maintain the safety-related functions of the pump. The PBNP design assumes that this function is accomplished by maintaining adequate forward flow when the pumps are running. Recirculation flow was not considered to be needed until late in the postulated accident, such that operators would have sufficient time to manually open the recirculation valves or to secure the AFW pumps.

Our investigation of this issue determined that the cause of the violation was a deficiency in the Emergency Operating Procedure (EOP) validation process. The validation had not identified that the procedure lacked the specific operator actions needed. Specifically, the EOP validation process did not evaluate the interactions among design, procedure, and human error timeline analysis. Although the validation process was found to be deficient, our process was in accordance with industry practices at the time the EOPs were originally validated.

Using this integrated perspective allowed us to properly evaluate the consequences of a loss of instrument air causing the AFW recirculation valves to fail closed, combined with a possibility that an operator would manually close the discharge valve on an AFW pump, and most importantly, the timing of this action prior to implementation of the abnormal operating procedure for loss of instrument air (AOP-5B). It was only from this integrated perspective that we discovered the potential to damage multiple AFW pumps. Therefore, the violation occurred because the analytical tools capable of identifying this vulnerability were not previously readily available and not typically used in the nuclear industry at the time of the original validation.

We acknowledge the aspect of the violation attributed to 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action". The examples cited in the Notice of Violation listed two prior opportunities, dating from 1997, which could have allowed PBNP to identify the AFW vulnerability. The PBNP corrective action process in 1997 was in the initial stages of being restructured from a process that had previously been determined to be ineffective. This condition was documented in NRC Inspection Reports 96006 and 96007, for which a Severity Level III violation for corrective action was cited (EA 96-273). Additional enforcement action in this area was documented in NRC Inspection Reports 97010 and 97022 (EA 97-347 and EA 97-505). We recognize that those past deficiencies likely contributed to conditions wherein these prior opportunities may not have been effectively evaluated. However, the improvements already implemented, or being made, to our corrective action process in the intervening years are such that similar issues occurring today would be appropriately addressed.

We concur with the assessment in your July 12, 2002 letter, that although opportunities may have existed to identify the issue, they occurred several years ago and are not necessarily indicative of current performance.

Corrective Actions Taken

Upon determining the potential significance of this condition, we immediately took actions to assure that operators would respond appropriately in the unlikely event this condition were to occur. To alert operators to this condition, we placed information tags adjacent to the control room controls for all four AFW pumps to provide a reminder of the minimum flow requirements for each pump. In conjunction with this, we briefed the operations crew on shift at the time and initiated shift briefings for all oncoming crews on the concerns identified with a loss of instrument air, as well as AFW pump requirements to maintain adequate minimum pump flow. Our training group tailored specific immediate and follow on simulator training to enhance operators' knowledge of this condition and to reinforce proper AFW flow control. This included simulator scenario runs on loss of instrument air.

The primary corrective action to address this vulnerability was to revise procedures to provide specific guidance to the operators on how to control feedwater flow to ensure pump cooling.

Additionally, pneumatic backup was installed on the recirculation valves to allow additional time to respond to a loss of instrument air. These modifications have enhanced AFW system reliability by providing operators with significant additional time to respond to a loss of instrument air condition in accordance with station procedures.

The control room simulator was modified to model AFW pump characteristics during their response to low flow conditions.

The EOP validation process was changed to incorporate PRA into the EOP procedural change validation process.

Point Beach staff had earlier initiated a voluntary project to improve the fidelity of the PRA model. The purpose of this PRA update project is to: verify the PRA properly modeled plant modification that had been installed since the original PRA model; update the model to allow for better use of the on-line safety monitor; update the reliability and availability data for components and systems; and to expand the human reliability analysis. This is a broad scope project that has revalidated the assumptions in each section of the model as they are revised. The PRA update project has been structured such that the most risk significant plant systems were evaluated first. Four plant systems were initially evaluated using the integrated approach of design, procedures and Human Error Timeline Analysis. These systems were ECCS, Service Water, Electrical, and AFW. Each of the systems was ranked based upon risk significance. In addition to these four systems evaluations, we also reviewed procedurally directed operator actions to assure consistency with PRA assumptions on the next two risk-significant systems, instrument air and component cooling water. No further issues or additional concerns were identified from these reviews. The six systems reviewed comprise 80% of core damage frequency risk for the Point Beach units.

To assure that other operator actions associated with a loss of instrument air were adequately considered, we performed a review of the EOPs. This review served to identify the impact that a loss of instrument air condition may have on systems other than AFW and if the operator actions associated with those systems, as directed by the EOPs, were adequate.

Corrective Action To Be Taken

We are continuing to use PRA reviews to enhance the safety of our facility. Additionally, we plan to continue to factor PRA insights into both operating procedures and operator training. The PRA update project is planned to be completed by 2004.

To further improve the future effectiveness of the AFW system by providing additional pump protection against low flow, Point Beach is classifying the open function of the pump recirculation flow control valves, as safety-related. This will provide a redundant method of providing for minimum AFW pump flow and consequently, pump cooling. As a result, testing and quality assurance requirements required for safety-related functions will be applied to the open function of these valves. As discussed previously, internal pump cooling is designed to be provided by minimum forward flow through the pumps. Classifying the recirculation flow control valves as safety-related will provide greater assurance that minimum flow will be available to provide internal pump cooling. The pneumatic backup supply to the recirculation flow control valves is limiting and therefore Point Beach will also continue to specify operator action to manually open these recirculation valves. Similar to other plants, Point Beach has one common recirculation flowpath from all the AFW pumps to the condensate storage tanks. Because not all of the recirculation flow path is safety related, operability of the AFW pumps will not be dependent upon the availability of that flow path. We expect to have the valves' open function classified as safety-related by September 30, 2002.

Date Of Full Compliance

Based on the revisions to the procedures and the modification to the AFW pump recirculation flow control valves, along with improvements achieved in the corrective action process, PBNP is currently in compliance with requirements. The additional actions will further enhance reactor safety.

List of Regulatory Commitments

The following condition is committed to by NMC in this response. Any other statements in this response are provided for information purposes and are not considered to be regulatory commitments.

1. Point Beach will classify the AFW pump recirculation flow control valves' open function as safety-related.