

Point Beach Nuclear Plant
OPERABILITY DETERMINATION
PART I

OD CR 01 - 3648

REV 0

ENGINEERING TO COMPLETE THIS BOX WHEN OD ACCEPTED BY DSS

SYNOPSIS FOR NIM INFORMATION ONLY

Unit(s) 0 System AF CHAMPS
Equipment ID P-038A/B

- Inoperable - does not meet the minimum level of performance.
- Operable - fully meets performance requirements. No further action required.
- Operable But Degraded - or Operable But Nonconforming - meets the minimum required level of performances, compensatory measures ARE required.
- Operable But Degraded - or Operable But Nonconforming - meets the minimum required level of performances, compensatory measures are NOT required.

Potential to damage P-038A/B during Appendix F fire with LOOP & IA loss.
TITLE (EQUIPMENT NUMBER AND DESCRIPTION OF ISSUE)

1. Describe the condition.

Review of the Motor Driven Aux. Feed Pump (MDAFP) response to an Appendix R fire with a coincident loss of off-site power and instrument air indicates an Appendix R concern in Fire Areas A01-B, A02, A23N and A23S, which are the Central Area of the 26' PAB, SI/CS Pump Room, North Aux. Feed Pump Room and South Aux. Feed Pump Room, respectively. In each of these areas, a MDAFP is relied upon as the means of getting Aux Feedwater to at least one Steam Generator for at least one of the Units and both Units for Fire Area A01-B, to support heat removal from the RCS. The review performed, revealed that an Appendix R fire in these fire areas could potentially result in an auto-start of the credited MDAFP, due to fire damage initiating the start signal or trip of the Main Feedwater Pumps. This auto-start signal also opens the mini-recirc. valve for the MDAFP and motor driven discharge valve(s) for the steam generator to be supplied Aux. Feedwater. Due to fire damage, the motor driven discharge valve may fail to open and the mini-recirc valve may fail closed due to a loss of instrument air supply. This could potentially result in dead heading the pump and subsequent damage to the pump.

2. Identify the Current Licensing Basis (CLB) functions and performance requirements including:

Tech Spec Reference NA

FSAR Reference FPER Section 5.2.2.2

NRC Commitment Reference NA

Other SSAR Section 2.3.2.4.2

If no CLB function, requirement or commitment is affected, no further action is required. N/A Steps 3, 4 and 5 and proceed with Step 6.

A/136

3. **Aggregate Review:** Identify related issues by review of active ODs for the same system including as applicable their compensatory measures. Historical ODs can also be included in this review at the discretion of the Engineer. The review of the active ODs and their compensatory measures is to ensure there is no conflict between the related conditions, i.e., conflicting assumptions or compensatory measures.

OD CR 01-3595 R1, identifies a procedural concern whereby operations personnel could potentially close the discharge path even though the mini-recirc valve may already have failed close due to loss of instrument air. Part of the compensatory measures were to revise the EOP procedures as appropriate to prevent reducing flow to operating AFW pumps below the minimum requirements during loss of instrument air conditions. Permanent revision to the EOP has been completed and is supportive of this OD.

No related issues exist.

Related CR Number 01-3595
Impact: None except as identified above.

Related CR Number _____
Impact: _____

Related CR Number _____
Impact: _____

Review additionally, as applicable, these items to help clarify current plant conditions. These items may have impact on the SSC performance.

Active Temporary Operating Procedure Changes None

Active Temporary Modifications None

Modifications currently being installed None

Recent Work Orders None related to this issue

Approved DCNs None related to this issue

Recently Performed Inservice Testing None related to this issue

4. Evaluate the CLB functions and performance requirements identified in Step 2 against the as-found condition and the related issues identified in Step 3. The evaluation must identify the extent to which the SSC is capable of performing its identified CLB function. Document the evaluation:

As documented in the FPER and SSAR, for certain Appendix R fire scenarios, the MDAFPs are relied upon to supply water to the steam generators to provide RCS decay heat removal. The potential damage to the MDAFP(s) described in section 1 above could prevent this credited equipment from performing its intended function. Current procedural guidance provides for the mitigation of a loss of flow condition for the MDAFPs. However, arrival at this step in the procedure may not occur prior to damage to the pump, assuming the condition described has fully developed upon fire initiation.

The situation as currently evaluated is a classic Appendix R fire, which assumes that fire damage to all safe shutdown equipment located in the affected fire area has occurred. However, fires typically propagate, if unmitigated, from an ignition point to eventual involvement of the entire fire area. The rate of propagation is dependent on the combustible involved and its orientation. Vertical fire propagation can occur quickly, however horizontal propagation occurs much slower. In this case, the fire propagation of concern would be horizontally via cable trays, which is known to occur relatively slow. Because of this progressive nature of fire, the failures required to produce the damage to the pump will not occur simultaneously because the important cables and components are separated by horizontal distance within the area.

The elements of concern, which if failed simultaneously could result in pump damage are as follows:

- Power and control cables to the motor operated discharge valves,
- Control cables to the MDAFPs that cause auto-start of the pumps,
- Instrument air supply header that causes loss of instrument air to the mini-recirc. valves.

Location of cables and piping for the above elements was identified based on plant design documents and verified by field walkdown. Review of this information for fire areas A01-B, A02 and A23N & A23S verifies the existence all of the above elements in each fire area. Consideration of specific fire scenarios (i.e., fire growth from an initial stage) indicates that for a fire to damage all three elements it must propagate horizontally across a minimum 10' space. Each of the areas of concern are fully protected by photoelectric fire detection systems, which ensures prompt fire brigade response to a developing fire condition. Additionally, fire Areas A02 and A23N & A23S are protected with wet pipe sprinkler and halon 1301, respectively, automatic fire suppression systems that will further mitigate the spread of any fire in those areas.

In response to this condition hourly fire rounds have been established to minimize the possibility of a fire and to mitigate the consequences of the fire should it occur. This in conjunction with existing fire protection features and plant procedures provides reasonable assurance that Operations personnel will have adequate time to respond and mitigate the condition prior to potential pump damage.

Note: If the SSC is determined to be inoperable based on this evaluation, mark Step 5 N/A and continue with Step 6.

5. Evaluate the need for compensatory measures Complete with input from DSS.

Degraded or nonconforming, however, no compensatory measures are required.

Degraded or nonconforming. The following compensatory measures are **REQUIRED** in order to maintain operability.

If Compensatory Measures are not required go to Step 6

Compensatory measures must be in place prior to OD final approval by the DSS

Affected Unit (1 OR 2 OR 0) 0

Describe the Compensatory Measure (what needs to be performed):

Perform hourly fire rounds in Fire Zones 187, 151, & 304.

Basis which indicates the Compensatory Measure maintains operability:

The fire rounds in conjunction with existing fire protection features and plant procedures provides reasonable assurance that Operations personnel will have adequate time to respond and mitigate the condition prior to potential pump damage.

Implementation Mechanism (Procedure number, Temp Mod number, etc):

The fire rounds have already been initiated and added to the fire round list. Security has been notified and is currently performing the rounds.

Plant condition(s) or mode(s) of operation which require the Compensatory Measure:

Per FPER requirements these fire rounds must be performed when either unit is above 200°F.

Under what conditions may the Compensatory Measure be terminated?

When both units are below 200°F or upon correction of the condition described in Section 1.

6. Prepared By:

Robert Ladd and Greg Jones

Greg Jones
Name (Print) / Signature

Date/Time: 12-7-01/1215

Engineering Manager Approval of Evaluation and Proposed Compensatory Measure (if applicable)

Norm Hoefert

Norm Hoefert
Name (Print) / Signature

Date/Time: 12-7-01/1250

7. SRO Review of Operability Documentation

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- Evaluation Accepted
- Evaluation and Compensatory Measures Accepted.
- Compensatory Measures Verified in Place.
- NP 10.1.1, LCO Tracking Log updated to include new items.

DSS: Clay Hill / [Signature] Date/Time: 12/7/01
Name (Print) / Signature 1330

Route OD package to in-box in WCC for processing. Package includes original Part I, all attachments, and related condition report.

OPERABILITY DETERMINATION

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PART II CORRECTIVE ACTION PLAN, SCHEDULE AND JUSTIFICATION

This plan should be developed as a part of the EAC process. (30 days to complete)

1. For those Operable But Degraded or Nonconforming items, what action(s) need to be done to restore the condition to its "fully operable" or "fully qualified" status?
 - Also consider any compensatory measures in place and what needs to be done for their removal.

To ensure a discharge path for the MDAFPs in the event an auto-start signal is generated by an Appendix R fire, the mini-recirc. valves should be modified to provide a N₂ backup to their IA supply. The N₂ supplies must be separated such that a north side fire does not jeopardize the P-038A N₂ supply and a fire in the south end of the room does not jeopardize that for P-038B.

Modification MR 01-144 is being performed to remedy this problem. This modification extends the N₂ supply from valves AF-04012 and AF-04019 to mini-recirc valves AF-04007 (P-038A) and AF-04014 (P-038B). MR 01-144 has been prepared and is currently in the review cycle. This modification is expected to be released by the end of January.

The control cables for valve AF-04014 must be further evaluated to determine if they require protection from fire damage. This valve is located in the north side of the room, however its control cables are routed through the south side of the room. Therefore a south side fire will damage these cables, possibly resulting in spurious closure of the valve. If further evaluation of these cables verifies the possibility of this spurious operation then these cables will be rerouted or fire wrapped to prevent their being damaged by a south side fire.

2. When should the action(s) listed in question 1 be performed? This schedule represents the earliest available opportunity to perform the corrective actions, allowing reasonable time for planning, scheduling, design, procurement, etc.

The above listed modification should be performed at the earliest convenience, and may be performed as non-outage modifications if performed for one pump at a time. Evaluation of the solution of the control cable for AF-04014 is in progress. The schedule to complete any identified corrective action will be determined upon completion of this evaluation.

3. Please provide justification for this schedule based on:

- the amount of time required for design, review, and approval of the corrective action,
- procurement for replacement or repair,
- availability of specialized equipment to perform the repair,
- the need to be in hot or cold shutdown to implement the corrective action,
- or other factors that constrain the corrective action schedule.

This activity should be completed at the earliest possible opportunity because of the risk involved. A fire that results in the losses discussed in this OD could conceivably result in the loss of AFW one unit or the other, therefore this issue requires immediate attention.

Prepared by: Robert L. Ladd


Name (Print) / Signature

Date/Time: 1/18/2002 - 1500
hrs

Engineering Manager
Approval

Norman L. Hoefert / Norman L. Hoefert
Name (Print) / Signature

Date/Time: 11/18/02 15:00