September 16, 2005

NRC 2005-0120
10 CFR 50.73

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

Point Beach Nuclear Plant Units 1 and 2
Docket Nos. 50-266 and 50-301
License Nos. DPR-24 and DPR-27

Licensee Event Report 266/301/2005-004-00
Auxiliary Feedwater Recirculation Capability in Local Operating Mode

Enclosed is Licensee Event Report (LER) 266/301/2005-004-00 for the Point Beach Nuclear Plant Units 1 and 2. LER 266/301/2005-004-00 describes the discovery that the mini-recirculation valves for the motor-driven auxiliary feedwater (AFW) pumps would not automatically open in the local mode of operation. If the pumps were started in this mode, pump damage could occur due to lack of cooling flow though the pump prior to aligning a flow path to a steam generator. This condition is reportable in accordance with 10 CFR 50.73(a)(2)(ii)(B).

This submittal contains no new or revised regulatory commitments.

Dennis L. Koehl
Site Vice-President, Point Beach Nuclear Plant
Nuclear Management Company, LLC

Enclosure

cc: Administrator, Region III, USNRC
Project Manager, Point Beach Nuclear Plant, USNRC
Resident Inspector, Point Beach Nuclear Plant, USNRC
PSCW

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NRC FORM 366 (6-2004) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES 6-30-2007

Estimated burden per response to comply with this mandatory collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0066), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
POINT BEACH NUCLEAR PLANT UNIT 1	05000266	1 of 4

TITLE (4)

AUXILIARY FEEDWATER RECIRCULATION CAPABILITY IN LOCAL OPERATING MODE

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
									PT BEACH UNIT 2	05000301
07	20	2005	2005	-- 004 --	00	09	16	2005	FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	1
POWER LEVEL (10)	100%

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply) (11)

20.2201(b)	20.2203(a)(3)(ii)	X 50.73(a)(2)(ii)(B)	50.73(a)(2)(ix)(A)
20.2201(d)	20.2203(a)(4)	50.73(a)(2)(iii)	50.73(a)(2)(x)
20.2203(a)(1)	50.36(c)(1)(i)(A)	50.73(a)(2)(iv)(A)	73.71(a)(4)
20.2203(a)(2)(i)	50.36(c)(1)(ii)(A)	50.73(a)(2)(v)(A)	73.71(a)(5)
20.2203(a)(2)(ii)	50.36(c)(2)	50.73(a)(2)(v)(B)	OTHER
20.2203(a)(2)(iii)	50.46(a)(3)(ii)	50.73(a)(2)(v)(C)	Specify in Abstract below or in NRC Form 366A
20.2203(a)(2)(iv)	50.73(a)(2)(i)(A)	50.73(a)(2)(v)(D)	
20.2203(a)(2)(v)	50.73(a)(2)(i)(B)	50.73(a)(2)(vii)	
20.2203(a)(2)(vi)	50.73(a)(2)(i)(C)	50.73(a)(2)(viii)(A)	
20.2203(a)(3)(i)	50.73(a)(2)(ii)(A)	50.73(a)(2)(viii)(B)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Eric A. Schmidt	920-755-6265

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

SUPPLEMENTAL REPORT EXPECTED (14)			EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO				

ABSTRACT

While performing a test to validate proper operation of a local control station for auxiliary feedwater (AFW), a deficiency was discovered in Procedure AOP-10, "Control Room Inaccessibility", which could have potentially led to damage of a motor-driven AFW pump. AOP-10 provides direction for evacuation of the control room for reasons other than a fire as postulated in 10 CFR 50, Appendix R. One purpose of the procedure is to maintain the plant in safe shutdown condition by locally controlling the turbine-driven AFW pumps until control room accessibility is restored. In the event that supplemental AFW flow was required, AOP-10 directed the operator to place the motor-driven AFW pump in local control and start the pump. The sequence of procedure steps in AOP-10 did not account for the local control station circuitry isolating the control function of the AFW flow recirculation valve. This recirculation flowpath provides minimum required flow for cooling the motor-driven AFW pumps when discharge flow is below the recommended flow rate. Consequently, if a motor-driven AFW pump were to be started from the local control station, a flowpath would not exist until a discharge valve was opened. Once the procedure deficiency was identified, operators were briefed on the condition and the procedure was revised to correct it. This procedure deficiency did not result in any damage to the AFW pumps.

Event Description:

On July 20, 2005, at 0451 CDT, with both Point Beach Units at normal full power operation, a test start of motor-driven [MO] auxiliary feedwater (AFW) [BA] pumps [P] P-38A and P-38B was being performed from the local control station. During this activity, it was discovered that valve AF-4007, the recirculation valve [FCV] for P-38A, would not automatically open in the local mode of operation. The test was suspended, the pump declared out of service, and the system was put in a safe condition. The recirculation valve provides a minimum flow path for pump cooling to prevent pump damage when forward flow is less than a prescribed value. As this test was being performed to validate steps in Procedure AOP-10, "Control Room Inaccessibility", it was recognized that the procedural steps were not adequate. The procedure did not address manually opening the recirculation valve prior to local pump start. This was of concern because the control function circuitry for the AFW flow recirculation valve is isolated when the pump is operated from the local control station. Consequently, pump damage could occur due to lack of cooling flow though the pump prior to aligning a flow path into a steam generator. This condition is also applicable to valve AF-4014, the recirculation valve for P-38B motor-driven AFW pump. Therefore, this condition is being reported under 10 CFR 50.73(a)(2)(ii)(B) as an unanalyzed condition that significantly degraded plant safety. This condition was previously reported via the emergency notification system (Event Number 41885) in accordance with 10 CFR 50.72(b)(3)(v)(D).

Controlling motor-driven AFW pumps P-38A and P-38B from a safe shutdown local control condition would only be performed for conditions where steam generator level could not be normally maintained using turbine-driven [TRB] AFW pumps 1P-29 and 2P-29 and only during those times when the control room was required to be evacuated for reasons other than a fire postulated 10 CFR 50 Appendix R. The station has taken compensatory actions to brief operators about the condition and AOP-10 has been revised. The revised procedure directs operators to open the discharge motor operated valve and the recirculation valve prior to a local start of motor-driven AFW pump P-38A or P-38B.

The associated recirculation valve will automatically operate when motor-driven AFW pumps P-38A or P-38B are started from the control room. Follow up testing has verified P-38A AFW pump operability.

Component and system Description:

The AFW system automatically supplies feedwater to the steam generators to remove decay heat from the reactor coolant system (RCS) upon the loss of normal feedwater supply. The AFW pumps provide cooling water to the steam generator secondary side via connections to the main feedwater (MFW) piping inside containment. The steam generators function as a heat sink for core decay heat.

The AFW system consists of three independent pump systems; two motor-driven AFW pumps which are shared between the two units, and one dedicated steam turbine-driven pump per unit. Each motor-driven pump is capable of providing 100% of the design AFW flow rate, while the turbine-driven pump is capable of providing 200% of the design flowrate. Each pump is provided with a recirculation line to maintain pump discharge flow above the minimum required flow rate for pump cooling. Each AFW pump system can be manually aligned to take suction from the service water system. The normal source of water for the AFW pumps is the condensate storage tank (CST) and the safety related supply is the service water (SW) system. Motor operated valves are provided to allow the suction supply for the AFW pumps to be manually transferred to the SW system.

Each motor-driven AFW pump is powered from an independent safeguards power supply and feeds one steam generator in each unit. AFW pump P-38A supplies AFW flow to the Unit 1 and Unit 2 A steam generators, while AFW pump P-38B supplies the Unit 1 and Unit 2 B steam generators. Each motor-driven AFW pump's discharge header contains two normally closed automatic motor operated valves. Upon receipt of an AFW actuation signal, the discharge valve associated with the affected unit receives an automatic open signal and the discharge valve associated with the unaffected unit receives an automatic close signal. This feature will ensure that 100% of the motor-driven AFW pump flow will be delivered to the affected unit, thereby, assuring that the accident analysis flowrates are met. Each motor-driven AFW pump is also equipped with a backpressure control valve, which is designed to preclude the motor-driven AFW pump from tripping on an overcurrent condition at low steam generator pressures.

Each unit's turbine-driven AFW pump receives steam from both steam generator main steam lines upstream of the main steam isolation valves. Each of the two steam feed lines can supply 100% of the required steam flow to the turbine-driven AFW pump.

The AFW system actuates automatically in response to specific plant conditions. The AFW system is capable of supplying feedwater to the steam generators during normal unit startup, shutdown, and hot standby conditions.

One pump at full flow is sufficient to remove decay heat and cool the unit to residual heat removal (RHR) entry conditions.

A remote/local switch, start/stop pushbuttons, and power light (breaker or starter closed) are available in the event that local operation of the equipment is desired. PBNP FSAR 7.5-13 states that local stop/start pushbutton motor control stations are provided with a selector switch that will transfer control of the switchgear from the control room to local control and initiate an annunciator in the control room. The control function circuitry for the AFW flow recirculation valve is isolated when the pump is operated from the local control station. Westinghouse letter dated March 15, 1968, specifies the design of the local control stations and the requirement for its close proximity to the pumps.

Safety Significance:

The entry conditions for Procedure AOP-10, "Control Room Inaccessibility", are toxic gas in the control room, confirmed bomb threat in or adjacent to the control room, or other life threatening conditions as determined by the Shift Manager necessitating evacuation of the control room. Maintaining the plant in safe shutdown until control room access is restored is accomplished through operation of the turbine-driven AFW pumps. Procedures direct local starting of a motor-driven AFW pump only in the event that supplemental AFW flow were to be needed. Since such an event is beyond the range of design basis accidents analyzed in the PBNP FSAR, no additional failure is postulated to occur. Therefore, a condition that would necessitate starting of a motor-driven AFW pump is unlikely. This contingency action is provided in procedures as a defense in depth. Consequently, the safety significance of this reported condition is considered to be low.

NMC further concluded that this condition did not constitute a loss of any safety function; therefore, the failure of the recirculation valve to open from the local control station did not constitute a safety system functional failure.

Cause:

The cause of this condition was a deficient procedure caused by inadequate review of procedure AOP-10 during its development. The sequence of procedure steps in AOP-10 did not account for the fact that the control function circuitry for the AFW flow recirculation valve is isolated when the pump is operated from the local control station. Requirements for verification and validation of AOP-10 development in 2002 failed to include engineering review of the new procedure. Additionally, there was an incorrect statement in the supporting documentation that indicated all of the actions contained in this new procedure were already specified in existing plant procedures.

Corrective Action:

AOP 10 was revised to ensure that a flowpath is established for the motor-driven AFW pump prior to starting the pump from the local control station. This was done by directing that the discharge valve and the recirculation valve be opened prior to placing the motor-driven AFW pump in local control. Operators were briefed about this condition.

The AFW test procedure for local control testing was revised to include direction to open the recirculation valve prior to starting the pump from the local control station.

The EOP/AOP Verification and Validation process has been improved since the initial revision of this procedure. Significant relevant changes include the addition of additional engineering reviews during revisions to abnormal operating procedures (AOPs) and emergency operating procedures (EOPs).

Plant procedures and documents were reviewed to document the basis regarding the use of the local control stations for the motor-driven AFW pumps.

Previous Similar Events:

A review of recent LERs (past three years) identified one event that involved a potential for failure of AFW associated with operation on minimum recirculation flow:

LER Number	Title
266-2002-003-00/01	Possible Common Mode Failure of AFW due to Partial Clogging of Recirculation Orifices