Wisconsin Electric
POWER COMPANY

Point Beach Nuclear Plant
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PBL 97-0045

February 6, 1997

Document Control Desk
US NUCLEAR REGULATORY COMMISSION
Mail Station P1-137
Washington, DC 20555

Ladies/Gentlemen:

DOCKET 50-266 AND 50-301
LICENSEE EVENT REPORT 97-002-00
POTENTIAL TO OVERPRESSURIZE PIPING
BETWEEN CONTAINMENT ISOLATION VALVES
DURING A DESIGN BASIS ACCIDENT
POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2

Enclosed is Licensee Event Report 97-002-00 for Point Beach Nuclear Plant, Units 1 and 2. This report is provided in accordance with 10 CFR 50.73(a)(2)(ii)(B), "a condition that was outside the design basis of the plant." This report describes two (2) containment penetrations in each nuclear unit that could be overpressurized during a design basis accident. The resulting stresses could exceed the design basis values defined by the FSAR code allowables. Operability is ensured using the interim operability criteria (based on ASME Section III Appendix F values). These criteria permit operation in this condition for an interim period only. The plans for restoring the penetrations to code compliance are described in the report.

If you require additional information, please contact us.

Sincerely,

Thomas G Malanowski
for Douglas F. Johnson
Manager-Regulatory Services
and Licensing

GDA

Enclosure

cc: NRC Resident Inspector
NRC Regional Administrator

IE22

NRC FORM 366 (4-95)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 04/30/98

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT

LICENSEE EVENT REPORT (LER)

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

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TITLE (4)
Potential To Overpressurize Piping Between Containment Isolation Valves

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
									PBNP Unit 2	05000301
01	09	97	97	-- 002 --	00	02	06	97	FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9): N
POWER LEVEL (10): 90

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)

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

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Glenn Adams, Licensing Engineer	(414) 221-4691

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

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

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On January 9, 1997, with Unit 1 operating at 90% power and Unit 2 in a refueling shutdown condition, licensee engineers discovered a potential to overpressurize the Unit 1 reactor coolant pump seal return piping. This potential exists in the event that both containment isolation valves (CIV) shut as designed during a design basis loss of coolant accident (LOCA), and the ambient temperature increase heats the trapped fluid. Immediate actions were taken to render one CIV inoperable in the open position; thereby eliminating the potential for pressurization beyond design basis code allowables. The containment Technical Specification Limiting Conditions for Operation (LCOs) were entered. When thermal insulation was installed and analysis demonstrated pipe operability based on interim criteria (based on ASME III, Appendix F), the containment and CIV were restored to operation and LCOs were exited. Subsequently, we have identified one other penetration susceptible to pressurization beyond code allowables. Analysis of that line also demonstrated operability based on interim criteria. Plans for permanently restoring these penetrations to full compliance are described in the report.

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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

Event Description:

On January 9, 1997, with Unit 1 operating at 90% power and Unit 2 in a refueling shutdown condition, licensee engineers were reviewing the design of the Unit 1 and Unit 2 containment penetrations to ensure that no piping was susceptible to thermally-induced overpressurization as described in NRC Generic Letter 96-06. This Generic Letter identified the potential for water-filled piping sections inside containment to be isolated during a design basis loss of coolant accident (LOCA) and overpressurize when the trapped fluid is heated by the containment accident environment.

At 2015 CST on January 9, 1997, licensee engineers discovered the potential for overpressurization of the Unit 1 reactor coolant pump seal return piping (Penetration P-11). This potential exists in the event that both containment isolation valves (CIV) are shut during a design basis large break loss of coolant accident (LOCA). A calculation determined that the trapped fluid could heat up and pressurize the pipe beyond code allowable values. Based on this scenario, the containment was declared inoperable and a 1-hour Technical Specifications Limiting Condition for Operation (LCO) was entered. That LCO was exited when the CIV outside containment was rendered inoperable in the open position, which effectively eliminated the potential for overpressurization. This action required entry into a 4-hour LCO due to the inoperable CIV. During that 4-hour LCO period, a temporary modification installed thermal insulation to the piping section inside containment and an engineering analysis confirmed that the piping penetration was operable in this configuration. Then, at 0006 CST on January 10, the containment was declared operable, power was restored to the CIV outside containment, and the 4-hour LCO was exited.

The aforementioned engineering analysis of the insulated piping penetration (P-11) concluded that the piping stresses would exceed code allowable values described by the design basis, but operability was assured using the interim operability criteria (based on ASME Section III Appendix F values). Since the bodies of the isolation valves are thicker and inherently stronger than the piping, the piping was considered the weak link in the isolated section. Use of the interim operability criteria permit operation in this condition for an interim period only.

Unit 2 is similar in that its penetration P-11 is also susceptible to this overpressure scenario. Pursuant to Generic Letter 91-18, appropriate corrective actions are planned to restore these penetrations to full compliance with the design basis.

Subsequently, the GL 96-06 review identified one other containment penetration susceptible to overpressurization and potentially outside its design basis code allowable stress values. This penetration is designated P-28b, and is similar in Unit 1 and Unit 2.

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An engineering calculation was prepared to determine the potential stresses on the isolated piping section and demonstrate Unit 1 operability at those stresses. Calculated stresses exceeded code allowables, but operability was assured using the interim operability criteria (based on ASME Section III Appendix F values). Since the bodies of the isolation valves are thicker and inherently stronger than the piping, the piping was considered the weak link in the isolation section. Use of the interim operability criteria permit operation in this condition for an interim period only.

Our engineering evaluation concluded that the potential stresses on Unit 2 penetration P-28b are bounded by the Unit 1 configuration. Therefore, we have concluded that the Unit 2 stresses during the postulated transient would exceed code allowable values, but operability will be assured based on the interim operability criteria (based on ASME Section III Appendix F values). Pursuant to Generic Letter 91-18, appropriate corrective actions are planned to restore these penetrations to full compliance with the design basis.

The IEEE Standard 803A-1983 component identifiers for this report are:

Penetration (PEN)
Relief Valve (RV)
Valve (v)

Component and System Description:

Penetration P-11 - This 3-inch line is normally open during power operation; transporting coolant from the reactor coolant pump seal water return to the chemical and volume control system. Automatic containment isolation of this line is provided by a fail-closed air-operated valve inside containment (CV-313A) and a motor-operated valve outside containment (CV-313).

Penetration P-28b - This 3/8-inch line is a normally isolated section that may be opened to draw a sample from the pressurizer liquid space, when required (normally weekly). Automatic containment isolation of this line is provided by a normally-closed fail-closed air-operated valve inside containment (SC-953) and a similar valve outside containment (RC-966B).

Corrective Actions:

1. The review of all containment penetrations for potential thermally-induced overpressurization was completed. Results were transmitted to the NRC in our letter PBL-97-0029, "Generic Letter 96-06 120-Day Response, Assurance of Equipment Operability and Containment Integrity During Design Basis Accident Conditions", dated January 28, 1997. This letter also describes the corrective actions listed below.

2. Unit 1 Penetration P-11. *During the Spring 1997 Unit 1 refueling outage, we plan to install pressure relief protection or effect other changes to restore the piping to code compliance.*

3. Unit 2 Penetration P-11. *We plan to modify the operation or design of the seal return line prior to Unit 2 startup from the present refueling outage (U2R22). These changes will restore the piping to code compliance.*

4. Unit 1 Penetration P-28b. *During the Spring 1997 Unit 1 refueling outage, we plan to install pressure relief protection or effect other changes to restore the piping to code compliance.*

5. Unit 2 Penetration P-28b. *We plan to install pressure relief protection or effect other changes to restore the pressurizer liquid space sample piping to code compliance. Based on the long lead time for the procurement of the appropriate relief valves and the significant impact to the containment leakage testing program, we plan to defer this modification to the next scheduled Unit 2 refueling outage (U2R23) in the Spring of 1998. These changes will restore the piping to code compliance.*

Cause:

Original design did not provide overpressure protection for the piping sections identified herein to accommodate the thermally-induced overpressurization that may occur during a design basis accident.

Reportability:

A 4-hour prompt notification per 10 CFR 50.72(b)(2)(iii)(C) was reported to the NRC duty officer at 2235 CST on January 9, 1997. This Licensee Event Report is being submitted in accordance with the requirements of 10 CFR 50.73(a)(2)(ii)(B), "A condition that was outside the design basis of the plant."

Safety Assessment:

Without thermal insulation installed on the piping inside containment, containment penetration P-11 may have been pressurized beyond the stress levels allowed by interim operability criteria, and may have ruptured. Based on the inherent flexibility of the mechanical penetration design described in the PBNP FSAR (Figure 5.1-2), it is our engineering judgment that the penetration itself would not have ruptured due to the strain imposed by the overpressurized pipe which passes through the penetration. Therefore, this safety assessment focuses primarily on the effects of a pipe rupture in a single location; either inside containment or outside containment.

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If the pipe were to rupture inside containment, the piping outside containment and the intact containment barrier outside containment (CV-313) would prevent the release of radioactivity to the Primary Auxiliary Building (PAB). If the pipe were to rupture outside containment, the piping inside containment and the intact containment barrier inside containment (CV-313A) would prevent the release of radioactivity. Either rupture could disable the capability for RCP seal return; however, this function is not essential during a design basis accident and does not disable the RCP seal cooling function.

The preceding safety assessment bounds the potential adverse effects of Penetration P-28b for the following reasons; (1) the piping of P-28b is smaller (3/8-inch) than that of P-11, (2) the stresses in this piping were not found to exceed interim operability criteria, and (3) pressurizer liquid sampling is not an essential function during a design basis accident.

Similar Occurrences:

None.