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 FACIL:50-305 Kewaunee Nuclear Power Plant, Wisconsin Public Servic 05000305
 AUTH.NAME AUTHOR AFFILIATION
 WEBB,T.J. Wisconsin Public Service Corp.
 EVERS,K.H. Wisconsin Public Service Corp.
 RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 89-015-00:on 890816,pipe rupture restraint not installed
 as designed results in condition outside plant design basis.
 W/8 ltr.

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 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

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WISCONSIN PUBLIC SERVICE CORPORATION

600 North Adams • P.O. Box 19002 • Green Bay, WI 54307-9002

September 15, 1989

10 CFR 50.73

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Gentlemen:

Docket 50-305
Operating License DPR-43
Kewaunee Nuclear Power Plant
Reportable Occurrence 89-015-00

The attached Licensee Event Report for reportable occurrence 89-015-00 is being submitted in accordance with the requirements of 10 CFR 50.73, "Licensee Event Report System."

Sincerely,

A handwritten signature in cursive script, appearing to read "K. H. Evers" followed by a flourish.

K. H. Evers
Manager-Nuclear Power

PMF/jms

Attach.

cc - INPO Records Center
Mr. Robert Nelson
US NRC, Region III

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Kewaunee Nuclear Power Plant	DOCKET NUMBER (2) 0 5 0 0 0 3 0 5	PAGE (3) 1 OF 0 4
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TITLE (4) Pipe Rupture Restraint Not Installed As Designed Results In A Condition Outside The Plant's Design Basis

EVENT DATE (6)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)		
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES		
0 8	1 6	8 9	8 9	0 1 5	0 0	0 9	1 5	8 9	N/A		
									DOCKET NUMBER (8) 0 5 0 0 0		

OPERATING MODE (9) N		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more of the following) (11)									
POWER LEVEL (10) 1 0 0	20.402(b)	20.402(a)	60.73(a)(2)(iv)	73.71(b)							
	20.402(a)(1)(i)	20.38(a)(1)	60.73(a)(2)(v)	73.71(a)							
	20.402(a)(1)(ii)	60.38(a)(2)	60.73(a)(2)(vi)	OTHER (Specify in Abstract below and in Text, NRC Form 305A)							
	20.402(a)(1)(iii)	20.73(a)(2)(i)	60.73(a)(2)(vii)(A)								
	20.402(a)(1)(iv)	60.73(a)(2)(ii)	60.73(a)(2)(vii)(B)								
	20.402(a)(1)(v)	X 60.73(a)(2)(iii)	60.73(a)(2)(viii)								

LICENSEE CONTACT FOR THIS LER (12)		TELEPHONE NUMBER	
NAME Thomas J. Webb - Plant Nuclear Engineer		AREA CODE 4 1 4	NUMBER 3 8 8 - 2 5 6 0

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)									
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC

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

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single space typewritten lines) (16)

At 1120, on August 16, 1989, with the plant at 100% power, Wisconsin Public Service Corporation was notified that rupture restraint 2152, as installed, would not have met its design basis. The restraint is located inside containment on the residual heat removal (RHR) return line to the reactor coolant system (RCS). Two bolts and two 1/2 inch thick steel plates were discovered missing from the restraint on March 20, 1989, while the plant was in refueling shutdown. Upon discovering that the restraint was not built as designed, the personnel involved initiated a work request to install the missing parts. As part of the investigation into the incident, Kewaunee's architect engineer (Fluor Daniel), formerly Pioneer Services and Engineering) was contracted to analyze the restraint's as built condition. It was Fluor Daniel who contacted WPSC on August 16.

The rupture restraint was installed during original plant construction. It appears that the missing parts were not installed during original construction. Due to the length of time between plant construction and the discovery that the parts were missing (approximately 15 years), the cause of this event can not be determined.

In order to correct this nonconformance with the plants design basis, the missing bolts and plates were installed prior to the end of the 1989 refueling outage. Further action is not anticipated since this appears to be an isolated incident.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1) Kewaunee Nuclear Power Plant	DOCKET NUMBER (2) 0 5 0 0 0 3 0 5	LER NUMBER (3)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		8 9	0 1 5	0 0	0 2	OF	0 4

TEXT (If more space is required, use additional NRC Form 308A's) (17)

Description of Event

At 1120, on August 16, 1989, with the plant at 100% power, Wisconsin Public Service Corporation (WPSC) was notified that rupture restraint 2152, as installed, had not met its design basis. WPSC had requested Kewaunee's architect engineer (Fluor Daniel, formerly Pioneer Services and Engineering) to re-analyze the restraint. The request was made after two bolts and two 1/2 inch thick plates were discovered missing from the restraint. The restraint is located inside containment [NH] on the residual heat removal [BO] (RHR) return line to the reactor coolant system [AB] (RCS).

The two bolts and two 1/2 inch thick plates were discovered missing from the restraint on March 20, 1989, while the plant was in refueling shutdown. They were discovered missing during an IE Bulletin 79-14 pipe walkdown of the RHR return piping. As part of the walkdowns, the location of the rupture restraints are documented on the pipe's isometric drawing, the gaps between the pipe and restraints are measured, and the direction of restraint is identified. Although the Bulletin requires a comparison of pipe hangers as found and as designed configuration, it does not require this comparison for rupture restraints. However if, as in this case, the restraint appears to be installed incorrectly, a comparison will be made. Upon discovering that the restraint was not installed as designed, the personnel involved initiated a work request to install the missing parts and notified Kewaunee plant management of the deviation. The missing parts were installed prior to the end of the refueling outage. As part of the investigation into the incident, Fluor Daniel was contracted to analyze the rupture restraint in its as found configuration.

Cause of Event

This rupture restraint was installed prior to the plant receiving its operating license in 1974. It appears that the bolts and plates for restraint 2152 were not installed during original construction. Due to the length of time between the installation of the restraint and the discovery that it was not installed as designed (approximately 15 years), the cause of this incident could not be determined.

Analysis of Event

This report is submitted in accordance with 10 CFR 50.73 (a)(ii)(2) as a condition that resulted in the plant being outside of its design basis. This event was also reported in accordance with 10 CFR 50.72 (b)(2)(i) at 1145, on August 16, 1989.

Rupture restraints are installed on high energy piping systems to prevent a ruptured pipe from forming a plastic hinge and then impacting safety related equipment; i.e. to prevent pipe whip. However, rupture restraints do not provide pipe support during normal plant operation or during design basis accidents that do not assume an arbitrary rupture of the line in question.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3180-0104

EXPIRES: 8/31/85

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
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TEXT (If more space is required, use additional NRC Form 388A's) (17)

Rupture restraint 2152 is located on the RHR return line to the RCS. The analysis of the RHR return line identifies the containment vessel and valve RHR-11 (the RHR isolation motor valve) as potential targets of RHR pipe whip if rupture restraint 2152 is not installed as designed. Although the restraint in its as found configuration would not have prevented the pipe from whipping, the lack of restraint did not significantly affect the health and safety of the public for the following reasons:

1. The probability that the RHR pipe would rupture in a location requiring rupture restraint 2152 to prevent pipe whip is small.
2. The lack of restraint would not have significantly increased the consequences of an assumed rupture of the RHR piping.

The probability that a pipe greater than 3 inches in diameter would rupture is $8.5 \text{ E-10/hour-section}$ (refer to WASH 1400). The section of pipe in question is only considered a high energy line during plant heat-up and cooldown. During normal plant operations and below cold shutdown the line is not exposed to pressurized high temperature fluid. Operating experience has shown that the plant is in these conditions less than 200 hours each year. Therefore, the probability that a rupture would have occurred and rupture restraint 2152 would have been required is less than 1.7 E-07/yr .

If it is assumed that the RHR return line had ruptured, the subsequent pipe whip would not have significantly increased the consequences of the accident. Check valve SI-22B is downstream of RHR-11 and would not have been damaged by the pipe whip. Therefore, it can be assumed that SI-22B would have closed, thereby preventing a loss of coolant accident (LOCA). Since the pipe whip would not result in a LOCA, any damage incurred by the containment vessel would not have resulted in a significant release of radioactivity. Finally, alternate methods of decay heat removal (alternate line ups of the RHR system, the auxiliary feedwater system, the safety injection system, etc.) would not have been affected by the pipe whip.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)	
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
Kewaunee Nuclear Power Plant	05000305	89	0115	010	04	OF 04

TEXT (if more space is required, use additional NRC Form 388A's) (17)

Corrective Actions

The condition of non-compliance with the plant's design basis was corrected when the missing plates and bolts were installed on April 6, 1989. This was prior to the end of the 1989 refueling outage, which was in progress at the time.

As previously stated, IE Bulletin 79-14 does not require a comparison of a rupture restraint's as built configuration and its design. However as part of the walkdowns for the Bulletin, restraint location, restraint orientation, and the gap between the pipe and the restraint are determined and documented. Therefore, it is safe to assume that significant deficiencies in rupture restraint installation would have been identified during these walkdowns. Since the walkdowns of the large bore piping has been completed and no other deficiencies have been identified, this appears to be an isolated occurrence and further corrective actions are not required.

Additional Information

Equipment Failures: None

Similar Events: None