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 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 93-017-00: on 930426, discovered that fire damper seismic qualification concerns identified in 1985 through 1987, but not reported. Caused by failure to include fire dampers on safety-related mechanical list. No C/A required. W/930524 ltr.

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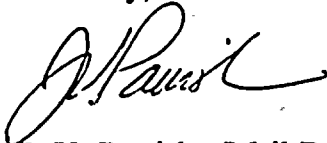
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U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: NUCLEAR PLANT WNP-2, OPERATING LICENSE NPF-21
LICENSEE EVENT REPORT NO. 93-017

Transmitted herewith is Licensee Event Report No. 93-017 for the WNP-2 Plant. This report is submitted in response to the report requirements of 10CFR50.73 and discusses the items of reportability, corrective action taken, and action taken to preclude recurrence.

Sincerely,



J. V. Parrish (Mail Drop 1023)
Assistant Managing Director, Operations

JVP/CDM/cgeh
Enclosure

cc: Mr. J. B. Martin, NRC - Region V
Mr. R. Barr, NRC Resident Inspector (Mail Drop 901A, 2 Copies)
INPO Records Center - Atlanta, GA
Mr. D. L. Williams, BPA (Mail Drop 399)

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)

Washington Nuclear Plant - Unit 2

DOCKET NUMBER (2)

0 5 0 0 0 3 9 7

PAGE (3)

1 OF 6

TITLE (4)

FIRE DAMPER SEISMIC QUALIFICATION CONCERNS IDENTIFIED IN 1985 THROUGH 1987 WERE NOT REPORTED

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 NAMES	DOCKET NUMBERS (S)												
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OPERATING MODE (9) 1 THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)

POWER LEVEL (10)	0	9	2	20.402(b)	20.405(C)	50.73(a)(2)(iv)	77.71(b)
				20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.73(c)
				20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
				20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
				20.405(a)(1)(iv)	X 50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
			20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
C. D. Mackaman, Licensing Engineer	AREA CODE
	5 0 9 3 7 7 - 4 4 5 1

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)

<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)
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ABSTRACT (16)

At 1350 hours on April 26, 1993, it was discovered that fire damper seismic qualification concerns were identified in 1985 through 1987, but not reported. A seismic event could have caused the failure of fire dampers WMA-FD-6, WMA-FD-52 and WMA-FD-54 to remain open. These fire dampers must remain open to provide Division 2 Heating, Ventilation and Air Conditioning (HVAC) cooling to the Control Room and the Critical Switchgear Room. The sash type chains and chain end fastening clips, used to hold the fire dampers open, could not be seismically qualified, and could have failed during a seismic event.

Two root causes for this event have been identified: (1) The failure to include fire dampers on the Safety-Related Mechanical (SRM) list; and (2) the failure to rereview a Nonconformance Report (NCR) for reportability following a scope and intent change.

No corrective actions are required. All fire dampers were modified for seismic qualification in 1987, and programs are currently in place to prevent recurrence of the programmatic problems.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION																									
FACILITY NAME (1) Washington Nuclear Plant - Unit 2		DOCKET NUMBER (2) 0 5 0 0 0 3 9 7						LER NUMBER (8) <table border="1"> <tr> <td>Year</td> <td>Number</td> <td>Rev. No.</td> </tr> <tr> <td>93</td> <td>017</td> <td>00</td> </tr> </table>			Year	Number	Rev. No.	93	017	00	PAGE (3) <table border="1"> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>OF</td> <td>6</td> </tr> </table>						2	OF	6
Year	Number	Rev. No.																							
93	017	00																							
2	OF	6																							
TITLE (4) FIRE DAMPER SEISMIC QUALIFICATION CONCERNS IDENTIFIED IN 1985 THROUGH 1987 WERE NOT REPORTED																									

Plant Conditions

Power Level - 92

Plant Mode - 1 (Power Operation)

Event Description

During a Licensing Department effort to reduce the reportability review backlog, one reportable item was discovered at 1350 hours on April 26, 1993. A review of past Nonconformance Reports (NCRs) for potential 10CFR Part 21 reportability discovered that fire damper seismic qualification deficiencies identified in 1985 through 1987 should have been reported under Part 21. A seismic event could have caused the failure of fire dampers WMA-FD-6, WMA-FD-52 and WMA-FD-54 to remain open. The failure of WMA-FD-6 to remain open would result in a loss of Division 2 Control Room Heating, Ventilation and Air Conditioning (HVAC) cooling. The failure of WMA-FD-52 and WMA-FD-54 to remain open would result in a loss of Division 2 Critical Switchgear Room HVAC cooling.

Sash type chains, "S" hooks, fusible links and chain end fasteners were used to hold fire dampers in the open position during normal operation. A failure of any of these components would cause the associated fire damper to close inadvertently. Based on the results of Calculation EQ-02-85-064004-01, the chains, end fastening clips and sheet metal screws for fire dampers WMA-FD-6, WMA-FD-52 and WMA-FD-54 could not be seismically qualified. The calculation concluded that the predicted seismic loading on the chains and fastening clips exceeded their rating, and they could fail during a seismic event. The fire dampers and associated hardware were supplied to WNP-2 by Ruskin Manufacturing between 1974 and 1975, and subsequently installed by Waldinger Corporation.

Immediate Corrective Actions

No immediate corrective actions were required as the fire damper deficiencies were corrected in 1987. Since the deficiencies were previously corrected, the fire dampers were within their design basis at the time of event discovery.

Further Evaluation and Corrective Action

A. Further Evaluation

1. In accordance with 10CFR50.72(b)(1)(ii), this event was reported to the NRC Operations Center via the Emergency Notification System (ENS) at 1444 hours on April 26, 1993, as "Any event or condition during operation that results in the condition of the nuclear power plant, including its principal safety barriers, being seriously degraded. . . ."

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION									
FACILITY NAME (1) Washington Nuclear Plant - Unit 2	DOCKET NUMBER (2) 0 5 0 0 0 3 9 7			LER NUMBER (8)			PAGE (3)		
				Year	Number	Rev. No.			
				9 3	0 1 7	0 0	3	OF	6
TITLE (4) FIRE DAMPER SEISMIC QUALIFICATION CONCERNS IDENTIFIED IN 1985 THROUGH 1987 WERE NOT REPORTED									

2. This event is reportable under 10CFR50.73(a)(2)(ii)(B) as "Any event or condition that resulted in . . . the nuclear power plant being . . . In a condition that was outside the design basis of the plant. . . ."
3. There were no structures, components or systems that were inoperable prior to the start of the event that contributed to the event.
4. On August 14, 1974, Waldinger issued a Purchase Order (PO) to Ruskin in care of their representative, BoniCamp and Company, for fire dampers for WNP-2. The PO included the requirement for seismic qualification as an attachment. The completed PO form did not state that seismic qualification of the fire dampers was required, and the form did not refer to the attached material. It is probable that Ruskin did not receive the PO attachment from BoniCamp because the fire dampers and associated installation hardware were supplied without seismic qualification. It is also probable, that the PO attachment was not included in the receipt inspection requirement documentation, as the fire dampers were released to Waldinger for installation without seismic qualification. A review of correspondence between Ruskin and Waldinger dated July 20, 1978, implies that Waldinger had seismic calculations performed by another organization after receipt of the fire dampers to assure Seismic Class 1 requirements were met.
5. During the original system reviews, fire dampers were not included on the Safety-Related Mechanical (SRM) list. Consequently, reviews of the qualification documentation by the Architect Engineer (Burns and Roe) and the Supply System were not performed. On June 12, 1985, this condition was identified and documented in NCR 285-0365. The NCR stated that seventy-four fire dampers added to the SRM list required seismic qualification documentation. A Justification for Continued Operation (JCO) was included confirming operability of the affected systems based on the expectation that the equipment could be readily qualified.
6. In 1976, or earlier, Ruskin identified that the originally supplied 3/32" by 1" long "S" hooks could fail during a seismic event, and recommended replacing them with 3/16" by 1-1/2" long "S" hooks. Sample equipment qualification walkdowns were conducted in October 1985, of seven fire dampers selected from the seventy-four added to the SRM list. Of the seven selected fire dampers, five were found with "S" hooks that were smaller (two were also of a different type) than specified. NCR 285-0543 was initiated on October 24, 1985, as a result of the walkdown findings. A JCO was prepared stating that only Division 1 was affected, and based on the redundancy of the affected equipment, continued operation was justified. However, the JCO did not address the need to consider a single failure in Division 2 or the likelihood of similar conditions existing in Division 2 based on the results of the sample walkdowns. On November 8, 1985, Calculation EQ-02-85-064002-01 was

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION											
FACILITY NAME (1) Washington Nuclear Plant - Unit 2	DOCKET NUMBER (2) 0 5 0 0 0 3 9 7	LER NUMBER (8)						PAGE (3)			
		Year		Number		Rev. No.					
		9 3	0 1 7	0 0	4	OF	6				
TITLE (4) FIRE DAMPER SEISMIC QUALIFICATION CONCERNS IDENTIFIED IN 1985 THROUGH 1987 WERE NOT REPORTED											

completed showing that the five nonconforming "S" hooks identified in NCR 285-0543 would not have failed during a seismic event.

The problem with the small "S" hooks was not found reportable for the specific deficiencies at WNP-2, and is not directly related to the event reported in this LER. It is; however, being reported for the generic implications that may be of concern to other plants.

7. NCR 285-0543 was revised on April 30, 1987, to include sixteen trap door type fire dampers that had marginal or inadequate design. Calculation EQ-02-85-064004-01 determined that, of the sixteen fire dampers identified in the NCR revision, only WMA-FD-6, WMA-FD-52 and WMA-FD-54 had as-built configurations (see Figure 1) that could have failed during a seismic event. The seismic loading on the sash chains and chain end fastening clips exceeded their rating.

This condition should have been reported when it was discovered in May 1987, pursuant to 10CFR50.72 and 10CFR50.73, as being outside plant design basis. Since the NCR revision increased the scope and intent of the original NCR, it should have been rereviewed for reportability. Apparently, this did not occur, as the NCR reportability evaluation determination was left as "Not Reportable."

Though only three of the fire dampers were found to have a clearly inadequate design, approximately twenty-one fire dampers were modified in accordance with Basic Design Change (BDC) 02-86-0018 to include stronger chains, "S" hooks, fusible links and/or chain end fastening hardware. In some cases, the method of attaching the chain was also modified; see Figure 1 for example. These modifications were implemented under Maintenance Work Request (MWR) AU9856, and completed on June 3, 1987.

B. Root Cause

Two root causes for this event have been identified:

- (1) The failure of the original system reviews to include fire dampers on the SRM list.
- (2) The failure to rereview NCR 285-0543 for reportability following a scope and intent change.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION							
FACILITY NAME (1) Washington Nuclear Plant - Unit 2	DOCKET NUMBER (2) 0 5 0 0 0 3 9 7	LER NUMBER (8)			PAGE (3)		
		Year 9 3	Number 0 1 7	Rev. No. 0 0			
TITLE (4) FIRE DAMPER SEISMIC QUALIFICATION CONCERNS IDENTIFIED IN 1985 THROUGH 1987 WERE NOT REPORTED							

C. Further Corrective Action

No further corrective action is required. The Problem Evaluation Request (PER), Root Cause Analysis (RCA), Component Safety Classification (CSC) and the Design Requirement Document (DRD) Programs are currently in place to identify and correct original component classification and equipment qualification errors. In addition, the Supply System has established better purchasing controls for seismic requirements and equipment receipt inspections since 1974, and the reportability review process has been upgraded since 1987 to prevent recurrence of this event.

Safety Significance

Between initial plant startup in 1984 to the completion of MWR AU9856 in 1987, fire dampers WMA-FD-6, WMA-FD-52 and WMA-FD-54 could have failed to remain open during a seismic event. This would have caused a Division 2 Control Room and Critical Switchgear Room loss of HVAC cooling. There is minimal safety significance associated with this event because 100% redundant cooling would still have been available to the Control Room and the Division 1 Critical Switchgear Room. Accordingly, Control Room personnel and Division 1 safety-related equipment would still have been available for event response. Since no seismic event actually occurred, this condition posed no threat to the health and safety of either the public or plant personnel.

Similar Events

A review of LER files found no similar events at WNP-2.

EIIS Information

Text Reference

Control Room Fire Damper WMA-FD-6
Switchgear Room Fire Dampers WMA-FD-52
and WMA-FD-54

EIIS Reference

<u>System</u>	<u>Component</u>
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VI	DMP
VJ	DMP

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION							
FACILITY NAME (1) Washington Nuclear Plant - Unit 2	DOCKET NUMBER (2) 0 5 0 0 0 3 9 7	LER NUMBER (8)			PAGE (3)		
		Year	Number	Rev. No.			
		93	017	00	6	OF	6
TITLE (4) FIRE DAMPER SEISMIC QUALIFICATION CONCERNS IDENTIFIED IN 1985 THROUGH 1987 WERE NOT REPORTED							

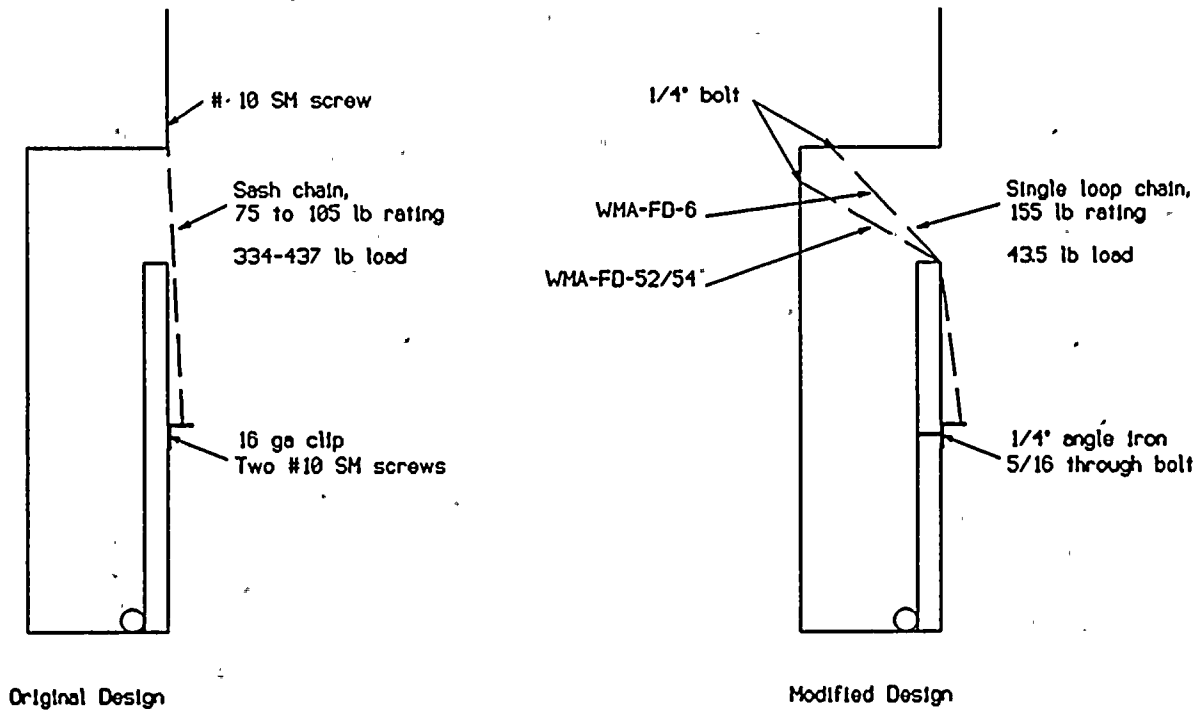


Figure 1