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 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 94-010-00: on 940810, initiated fire safe shutdown due to lack of adequate analysis of potential fire impact on min flow control valve circuitry. Interim C/A put in place & potential long term C/A being evaluated. W/940909 ltr.

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WASHINGTON PUBLIC POWER SUPPLY SYSTEM

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September 9, 1994
GO2-94-212

Docket No. 50-397

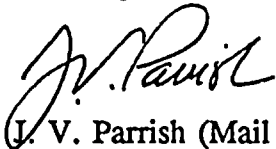
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Subject: **NUCLEAR PLANT WNP-2, OPERATING LICENSE NPF-21,
LICENSEE EVENT REPORT NO. 94-010, REVISION 0**

Transmitted herewith is Licensee Event Report No. 94-010 for the WNP-2 Plant. This report is submitted in response to the reporting requirements of 10CFR50.73 and discusses the items of reportability, corrective action taken, and action taken to preclude recurrence.

Should you have any questions or desire additional information, please call me or D.A. Swank at (509) 377-4563.

Sincerely,



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

JVP/BRH
Enclosure

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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 4
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TITLE (4) **Fire Safe Shutdown**

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 NUMBER(S)						
08	10	94	94	-	0	1	0	-	0	0	09	09	94	N/A				0 5 0 0 0			

OPERATING MODE (9)		5		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR (11)															
POWER LEVEL (10) 0 0 0				20.402(b)				20.405e				50.73(a)(2)(iv)				73.71(b)			
				20.405(a)(1)(i)				50.36(c)(1)				50.73(a)(2)(v)				73.71(c)			
				20.405(a)(1)(ii)				50.36(c)(2)				X 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)				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)										TELEPHONE NUMBER			
David Swank, Compliance Manager										AREA CODE		377-4563	
										509			

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

SUPPLEMENTAL REPORT EXPECTED (14)						EXPECTED SUBMISSION DATE (15)		MONTH		DAY		YEAR	
<input type="checkbox"/> YES (if yes, complete EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO													

ABSTRACT (16)

In April 1994, the WNP-2 Quality Assurance (QA) Directorate initiated a special focused audit of the licensing basis fire safe shutdown procedures and associated calculations and programs. In response to the QA findings, a detailed system by system evaluation was performed. This evaluation included consideration of both safe shutdown and non-safe shutdown systems and components. Through this evaluation it was identified that a start of Residual Heat Removal (RHR) pump 2B and a fire induced failure to open of the minimum flow control valve (RHR-FCV-64B) could have resulted in damage to the pump.

The cause of this event was lack of an adequate analysis of the potential fire impact on the minimum flow control valve circuitry. Interim corrective actions have been put in place, and potential long term corrective actions are being evaluated. Given the multiple safe shutdown paths that could be available, the short time frame in which this condition must occur, and the comprehensive fire protection program utilized at WNP-2, this event was deemed to have minimal safety significance.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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TEXT (17)

Event Description

In April 1994, the WNP-2 Quality Assurance (QA) Directorate initiated a special focused audit of the fire safe shutdown procedures and associated calculations and programs. As a result of the findings of this audit, a voluntary Event Notification was made at 2039 hours eastern daylight time on May 17, 1994. The plant was in Operational Condition 5 (Refueling) at the time this voluntary report was made. This notification was made voluntarily even though the investigation into the identified potential deficiencies was ongoing and was not expected to be completed for several weeks. This investigation is now complete, and a reportable condition identified during the investigation is the subject of this Licensee Event Report.

The QA audit identified several potential weaknesses in the fire safe shutdown procedures and program. The areas of concern identified on May 17, 1994, included: 1) lack of a well documented time motion study for a fire requiring control room evacuation; 2) inadequately documented analysis for the effects of a spurious actuation of the High Pressure Core Spray (HPCS) [BG] system; 3) inadequately documented analysis for the effects of a spurious actuation of the Reactor Core Isolation Cooling (RCIC) [BN] system; and 4) inadequately documented analysis for the effects of a spurious actuation of non-safe shutdown equipment on the ability to safely shut down the plant.

As a result of the detailed further evaluation described below, it was determined that for a fire in the main control room, a start of Residual Heat Removal (RHR) [BO] pump 2B [BO,P], along with a fire damage induced failure to open of the RHR pump 2B minimum flow control valve (RHR-V-64B) [BO,FCV], could have resulted in damage to the pump. Fire damage to the minimum flow control valve circuitry was possible due to the unprotected cable routing in the main control room that is associated with the valve automatic open logic. Pump damage could have occurred based on the extended time period (up to 10 minutes) in which the RHR 2B pump could have operated with no flow prior to the Operators taking manual control of the system at the remote shutdown panel. The B train of RHR is the dedicated/protected system for a fire in the main control room. As such, damage to this pump could have impacted the ability to shut down and cool down the plant. The Supply System is evaluating the potential for additional analysis or testing in an effort to determine whether the RHR pump 2B could have survived the postulated conditions. The staff will be informed if the information provided in this report is substantially modified by this evaluation.

Immediate Corrective Action

With the plant in a refueling condition at the time this deficiency was identified, no immediate corrective actions were necessary.

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Further Evaluation

The potential for damage to RHR pump 2B is a condition alone that could have prevented the fulfillment of the safety function of a system needed to remove residual heat. This is due to the potential for a single fire in the main control room to damage both RHR trains A and B. This condition is reportable pursuant to the requirements of 10CFR50.73(a)(2)(vii). The specific conditions voluntarily reported on May 17, 1994, were subsequently determined to be not reportable based on the results of the further evaluation discussed below.

In response to the potential fire safe shutdown deficiencies identified in May 1994, the Supply System initiated a detailed system by system evaluation using a team of experienced Supply System and contractor personnel. This evaluation included both safe shutdown and non-safe shutdown systems and components and the potential safe shutdown impact that fire effects on these systems could cause. This evaluation resulted in the identification and resolution of over 200 potential deficiencies.

Based on the results of the evaluation described above, a detailed walk through of the associated fire safe shutdown procedures was also performed. This effort resulted in numerous enhancements being incorporated into the procedures. Several of these enhancements were identified in a Supply System letter (GO2-94-163) to the staff dated July 15, 1994.

Root Cause

The cause of not protecting the RHR train B minimum flow control valve circuitry was lack of an adequate analysis in that the effect of fire damage on the valve circuitry was not evaluated.

Further Corrective Actions

As described in the further evaluation section above, a detailed system by system evaluation of the plant was completed prior to plant restart. This detailed evaluation was the method by which the RHR train B protection deficiency was identified.

Certain Operator actions prior to the evacuation of the main control room, identified as a result of the above described evaluations, are considered interim actions at this point in time. Supply System to NRC letter GO2-94-163 dated July 15, 1994, stated: "The Supply System continues to evaluate the fire safe shutdown methodology for WNP-2 to ensure optimum implementation of our post-fire safe shutdown capability. The staff will be kept informed of developments resulting from these evaluations. Formal discussions of the planned permanent resolution of the above identified issues, including schedule, will be initiated prior to the next refueling outage currently scheduled for April, 1995."

These evaluations remain to be completed.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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Safety Significance

Although not completely protected from the effects of fire, multiple methods of safely shutting down the plant are available to the Operators outside the main control room. These include RHR trains A and B following depressurization of the vessel using the safety/relief valves, and the RCIC system. In addition, other safety related systems such as HPCS and Low Pressure Core Spray (LPCS) [BM] would be expected to be available to automatically provide adequate core cooling unless they are also damaged by the main control room fire. Thus, although a single fire could have impacted operation of RHR trains A and B, the condition could only occur in the short time period from control room evacuation to the time the Operators take local control at the remote shutdown panel, and multiple safe shutdown paths would have had to have been damaged by the fire to impact safe shutdown of the plant.

In addition to the multiple safe shutdown paths and the short time period during which this condition would have had to occur as described above, WNP-2 also maintains a comprehensive fire protection program. For the main control room where this condition is postulated to occur, the fire protection program includes detection [KP] both in the room and within the panels in question, control of transient and installed combustible loading, installed fire barriers, physical separation, constant manning, and manual fire suppression and fire fighting capabilities.

Given the combination of: 1) multiple methods of providing safe shutdown from outside the main control room; 2) the short time period during which the pump start and damage to the minimum flow control valve circuitry would have to occur; 3) the constant manning of the main control room; and 4) a comprehensive fire protection program, the postulated failure of the RHR 2B pump is judged to have had minimal potential safety significance and no actual safety significance.

Similar Events

Licensee Event Report (LER) 84-031-00 through 84-031-06 described conditions where adequate protection of safe shutdown cables from the effects of fire was not provided. In response to these findings, detailed walk-downs of the plant were performed to ensure that the identified cables were adequately protected. However, this effort did not include a detailed system by system re-evaluation of the plant for potential impacts on safe shutdown. Therefore, the corrective actions would not be expected to identify and correct the condition identified in this LER.