

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8709100418 DOC. DATE: 87/09/04 NOTARIZED: NO DOCKET #
 FACIL: 50-397 WPPSS Nuclear Project, Unit 2, Washington Public Powe 05000397
 AUTH. NAME AUTHOR AFFILIATION
 ARBUCKLE, J. D. Washington Public Power Supply System
 POWER, C. M. Washington Public Power Supply System
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 87-013-01: on 870531, RHR sys min flow valve RHR-FCV-64B
 discovered operating improperly. Caused by mislocated wire on
 relay in min flow valve control logic due to personnel error
 & inadequate procedure. Wire relocated. W/870904 ltr.

DISTRIBUTION CODE: IE22D COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 6
 TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:

	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR ENCL
	PD5 LA	1 1	PD5 PD	1 1
	SAMWORTH, R	1 1		
INTERNAL:	ACRS MICHELSON	1 1	ACRS MOELLER	2 2
	AEOD/DOA	1 1	AEOD/DSP/NAS	1 1
	AEOD/DSP/ROAB	2 2	AEOD/DSP/TPAB	1 1
	DEDRO	1 1	NRR/DEST/ADS	1 0
	NRR/DEST/CEB	1 1	NRR/DEST/ELB	1 1
	NRR/DEST/ICSB	1 1	NRR/DEST/MEB	1 1
	NRR/DEST/MTB	1 1	NRR/DEST/PSB	1 1
	NRR/DEST/RSB	1 1	NRR/DEST/SGB	1 1
	NRR/DLPQ/HFB	1 1	NRR/DLPQ/QAB	1 1
	NRR/DOEA/EAB	1 1	NRR/DREP/RAB	1 1
	NRR/DREP/RPB	2 2	NRR/PMAS/ILRB	1 1
	REG FILE 02	1 1	RES DEPY GI	1 1
	RES TELFORD, J	1 1	RES/DE/EIB	1 1
	RGN5 FILE 01	1 1		
EXTERNAL:	EG&G GROH, M	5 5	H ST LOBBY WARD	1 1
	LPDR	1 1	NRC PDR	1 1
	NSIC HARRIS, J	1 1	NSIC MAYS, G	1 1

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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	0 4

TITLE (4) Inoperable Residual Heat Removal System Minimum Flow Valve
due to Mislocated wire in the Valve Control Logic

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)
0 5	3 1	8 7	8 7	0 1	3	0 1	0 9	0 4	8 7		0 5 0 0 0

OPERATING MODE (9) 4	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)																			
	20.402(b)					20.405(c)					X 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)					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)(ix)										
POWER LEVEL (10) 0 0 0																				

LICENSEE CONTACT FOR THIS LER (12)										TELEPHONE NUMBER									
NAME J.D. Arbuckle, Compliance Engineer										AREA CODE 5 0 9 3 7 7 - 2 1 1 5									

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)		MONTH	DAY	YEAR
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)										<input checked="" type="checkbox"/> NO				

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

On May 31, 1987 at 1145 hours, during the performance of Plant Procedure (PPM) 7.4.5.1.9, "Residual Heat Removal (RHR) System, Loop B, Operability Test," it was discovered that Minimum Flow Valve RHR-FCV-64B did not operate properly. Given an open signal, the valve would repeatedly cycle open and closed, providing limited minimum flow protection for the "B" RHR pump.

The problem was traced to a mislocated wire on a relay (RHR-RLY-K123B) in the Minimum Flow Valve Control Logic. The wire for the Relay Coil Terminal (T-5) was located on the Normally Open Terminal (T-1). As a result, this arrangement provided a permanent auto-close signal to RHR-FCV-64B, which could only be bypassed by using a keylock switch.

The cause of the event has been determined to be both personnel error and procedural inadequacy in that 1) the wire to the Relay Coil Terminal was mislocated (presumably since May, 1986) and 2) the post-modification test procedure used to test RHR System, Loop B, operability failed to effectively test Minimum Flow Valve Control Logic.

It has been concluded that this abnormal configuration did not represent a condition adverse to plant safety or threaten the health and safety of the public because of the availability of redundant systems to provide adequate core cooling.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Washington Nuclear Plant - Unit 2	05000391787	-01	13	-01	02	OF	04

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

Plant Conditions

- a) Power Level - 0%
b) Plant Mode - 4 (Cold Shutdown)

Event Description

On May 31, 1987 at 1145 hours, during the performance of Plant Procedure (PPM) 7.4.5.1.9, "Residual Heat Removal (RHR) System, Loop B, Operability Test," it was discovered that Minimum Flow Valve RHR-FCV-64B did not operate properly. Given an open signal, the valve would repeatedly cycle open and closed, providing limited minimum flow protection for the "B" RHR pump. The purpose of the valve is to protect the pump against damage from a closed discharge valve by opening when the main line flow is low, and closing when the main line flow is greater than or equal to 800 gpm.

The problem was traced to a mislocated wire on a relay (RHR-RLY-K123B) in the Minimum Flow Valve Control Logic. The relay is designed to deenergize upon the opening of the RHR pump breaker to provide a close signal to RHR-FCV-64B. However, it was discovered that the wire for the Relay Coil Terminal (T-5) was located on the Normally Open Terminal (T-1). As a result, this arrangement provided a permanent auto-close signal to RHR-FCV-64B, which could only be bypassed by using Keylock Test Switch RHR-RMS-S103B, causing the valve to be technically inoperable (an "open" signal would cause the valve to open, but it would close immediately upon reaching its open limit).

The mislocated wire was moved to the correct location and, at 1402 hours, the retest of RHR-FCV-64B was successfully completed. At 1422 hours, PPM 7.4.5.1.9 was completed and RHR, Loop B, Shutdown Cooling was placed into service.

The cause of the event has been determined to be both personnel error and procedural inadequacy in that 1) the wire to the Relay Coil Terminal was mislocated (presumably since May, 1986), and 2) the post-modification test procedure used to test RHR System, Loop B, operability failed to effectively test Minimum Flow Valve Control Logic.

Immediate Corrective Action

As required by the Plant Technical Specifications, Plant Operators acted to secure RHR, Loop B, and the mislocated wire was moved to the correct location.

Further Evaluation and Corrective ActionA. Further Evaluation

- An investigation was performed to determine why the wire for the Relay Coil Terminal was mislocated. Although the results are inconclusive, it is presumed that the mislocation occurred during a Plant Modification (PMR 02-84-0589-0) which was implemented during May, 1986. The modification provided auto-close signals to all three RHR Minimum Flow Valves upon the stopping of their respective pumps.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/88

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

- A review of PPM 7.4.5.1.9 results, since the modification was made, has concluded that they were satisfactory and consistent with procedural requirements. However, at the time of the event, Plant Operators were performing the procedure with the "two-year valve position verification" requirements in effect. During this two-year test, Plant Operators are required to record valve position from two separate places, which means the process is slower. As a result, the Operators noted that RHR-FCV-64B would open upon pump start, then close when full open was reached. Plant Operators recognized there was a problem and disconnected the Auto-Close Relay (RHR-RLY-K123B) from the circuit with Keylock Test Switch RHR-RMS-S103B. It has been concluded that, as the procedure is currently written, the sequence of steps that checks the operation of RHR-FCV-64B was being performed too quickly to adequately test the valve control logic. The valve would open on starting the pump, Plant Operators would open Test Return Valve RHR-V-24B to establish flow, and RHR-FCV-64B would close. (It should be noted that this process was performed in accordance with the procedure.) It has also been concluded that the procedure is adequate for its intended purpose and, accordingly, the Logic System Functional Test procedures need to be revised to effectively test the logic.

B. Further Corrective Action

- The control logic wiring for the other two RHR Minimum Flow Control Valves was verified to be correct.
- The Logic System Functional Test procedures will be modified to ensure that RHR Minimum Flow Valve controls are properly verified.

Safety Significance

It was determined by engineering analysis that the pump was adequately protected for previous operating conditions. However, during the event period there could have been an emergency condition where the RHR, B, pump could start and operate for several minutes with only the minimum flow valve providing pump protection. During this postulated condition, the continuous cycling of the valve would increase the possibility of valve failure. The valve could fail in a manner that would not allow adequate flow through the pump; possibly causing damage to the pump and, in the worst case, the loss of RHR, Loop B.

The loss of RHR, Loop B, is not considered to be an unacceptable consequence due to the redundant design of the Emergency Core Cooling System (ECCS). The RHR System, which is part of the ECCS, is comprised of three independent loops and each is capable of providing adequate cooling flow to the reactor. (As stated previously in the LER, the control logic for the other two minimum flow valves was verified to be correct.) In addition, two other Emergency Core Cooling Systems, the High Pressure Core Spray (HPCS) System and Low Pressure Core Spray (LPCS) System, were also available to provide core cooling. The ECCS has redundancy designed into the system so that adequate cooling can be provided, even in the event of failures.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/88

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

Therefore, the conclusion that the abnormal configuration did not represent a condition adverse to plant safety or threaten the health and safety of the public is based upon the availability of redundant systems to provided adequate core cooling.

Similar Events

None

EIIS InformationText ReferenceEIIS Reference

RHR-FCV-64B
RHR-RLY-K123B
RHR-RMS-S103B
RHR-V-24B
Residual Heat Removal System
High Pressure Core Spray System
Low Pressure Core Spray System

System	Component
BO	Control Valve
BO	Relay
BO	Switch
BO	Valve
BO	---
BG	---
BM	---

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

P.O. Box 968 • 3000 George Washington Way • Richland, Washington 99352

Docket No. 50-397

September 4, 1987

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

Subject: NUCLEAR PLANT NO. 2
LICENSEE EVENT REPORT NO. 87-013-01

Dear Sir:

Transmitted herewith is Licensee Event Report No. 87-013-01 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.

Very truly yours,

C.M. Powers

C.M. Powers (M/D 927M)
WNP-2 Plant Manager

CMP:db

Enclosure:
Licensee Event Report No. 87-013-01

cc: Mr. John B. Martin, NRC - Region V
Mr. C. J. Bosted, NRC Site (M/D 901A)
INPO Records Center - Atlanta, GA
Ms. Dottie Sherman, ANI
Mr. D. L. Williams, BPA (M/D 399)

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