

CATEGORY 1

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9907270226 DOC. DATE: 99/07/20 NOTARIZED: NO DOCKET #
 FACIL: 50-397 WPPSS Nuclear Project, Unit 2, Washington Public Powe 05000397
 AUTH. NAME AUTHOR AFFILIATION
 SHERMAN, R.N. Washington Public Power Supply System
 SMITH, G.O. Washington Public Power Supply System
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 99-001-00: on 990628, ESF signal closed all eight MSIVs
 while plant was shutdown. Caused by failure of relay
 RPS-RLY-K10D. Subject relay was replaced & tested on 990630.
 With 990720 ltr.

DISTRIBUTION CODE: IE22T COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 5
 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

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WASHINGTON PUBLIC POWER SUPPLY SYSTEM

P.O. Box 968 • Richland, Washington 99352-0968

July 20, 1999
GO2-99-135

Docket No. 50-397

U.S. Nuclear Regulatory Commission
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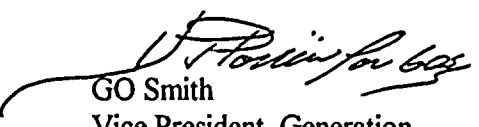
Gentlemen:

Subject: **WNP-2, OPERATING LICENSE NPF-21
LICENSEE EVENT REPORT NO. 99-001-00**

Transmitted herewith is Licensee Event Report No. 99-001-00 for WNP-2. This report is submitted pursuant to 10 CFR 50.73 and discusses the items of reportability, corrective action taken, and action to preclude recurrence.

Should you have any questions or desire additional information pertaining to this report, please call me or PJ Inserra at (509) 377-4147.

Respectfully,


GO Smith
Vice President, Generation
Mail Drop 927M

Attachment

cc: EW Merschoff - NRC RIV
JS Cushing - NRC NRR
INPO Records Center

NRC Senior Resident Inspector - 927N (2)
DL Williams - BPA/1399
PD Robinson - Winston & Strawn

9907270226 990720
PDR ADDCK 05000397
S PDR

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)

WNP- 2

DOCKET NUMBER (2)

50-397

PAGE (3)

1 OF 4

TITLE (4)

Failed Relay Causes ESF Signal to Close All 8 MSIV's While Plant Was Shutdown

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV. NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
06	28	99	1999	001	00	07	20	1999	FACILITY NAME	DOCKET NUMBER

OPERATING MODE	4	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)								
		20.402(b)	20.405(c)	x	50.73(a)(2)(iv)	73.71(b)				
POWER LEVEL	0	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)(vi)	OTHER				
		20.405(a)(1)(iii)	50.73(a)(2)(i)		50.73(a)(2)(vii)(A)					
		20.405(a)(1)(iv)	50.73(a)(2)(ii)		50.73(a)(2)(vii)(B)					
		20.405(a)(1)(v)	50.73(a)(2)(iii)		50.73(a)(2)(x)					

LICENSEE CONTACT FOR THIS LER (12)

NAME

R.N. Sherman, Licensing Engineer

TELEPHONE NUMBER (Include Area Code)

(509) 377-8616

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
X	JC	RLY	G080	NO					

SUPPLEMENTAL REPORT EXPECTED (14)

EXPECTED

MONTH

DAY

YEAR

YES

(If yes, completed EXPECTED SUBMISSION DATE).

X

NO

ABSTRACT:

On June 28, 1999 at approximately 1244 hours the plant was in Mode 4 during a fuel savings dispatch. The reactor vessel head was in place and the head bolts properly tensioned. All control rods were verified to be full in and no core alterations were in progress. The A-Train of the Residual Heat Removal System was in service and performing the shutdown cooling function. The Emergency Core Cooling System equipment that is required by technical specifications for Mode 4 operation was operable. A surveillance of the main turbine throttle valve position switches was in progress. The Nuclear Steam Supply Shutoff System (NSSSS) generated an unexpected Main Steam Isolation Valve (MSIV) closure signal, and all eight MSIV's and the inboard main steam line drain valve closed. Surveillance testing of the main turbine throttle valve position switches was stopped. An Incident Review Board was formed to investigate the event. The resident NRC inspector was notified and the NRC was notified of the unexpected Engineered Safety Feature (ESF) actuation via the Emergency Notification System. The cause of this event was the failure of Reactor Protection System relay RPS-RLY-K10D, in that contacts opened due to vibration from an adjacent relay under test. This generated a half MSIV closure signal. The other half isolation signal was generated, as expected, by the main turbine throttle valve position switch surveillance. There were no personnel errors or procedural deficiencies that contributed to this event. Relay, RPS-RLY-K10D, was replaced and tested on June 30, 1999. In addition, testing of the turbine throttle valves was completed on July 1, 1999, and did not cause an MSIV closure signal. There were no safety consequences associated with this event. This event is being reported per the requirement of 10CFR50.73(a)(2)(iv) as an event or condition that resulted in an automatic actuation of an Engineered Safety Feature. The ESF automatic actuation was not from a valid NSSSS actuation signal. However, the actuation occurred while the isolation system was in service.

LICENSEE EVENT REPORT (LER)

Failed Relay Causes ESF Signal to Close All 8 MSIV's While Plant Was Shutdown

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
WNP-2	50-397	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 4
		99	001	00	

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

Event Description

On June 28, 1999 at approximately 1244 hours the plant was in Mode 4 during a fuel savings dispatch. The reactor vessel head was in place and the head bolts properly tensioned. All control rods were verified to be full in and no core alterations were in progress. The A-Train of the Residual Heat Removal (RHR) System was in service and performing the shutdown cooling function. The Emergency Core Cooling System (ECCS) equipment that is required by technical specifications for Mode 4 operation was operable. A surveillance of the main turbine throttle valve position switches was in progress. The Nuclear Steam Supply Shutoff System (NSSSS) generated an unexpected Main Steam Isolation Valve (MSIV) [SB, ISV] closure signal, and all eight MSIV's and the inboard main steam line drain valve closed.

The resident NRC inspector was notified and the NRC Operations Center was notified of the unexpected Engineered Safety Feature (ESF) actuation via the Emergency Notification System (ENS). The notification Event Number is 35877. The ENS notification cited 10CFR50.72(b)(2)(ii), ESF actuation.

Immediate Corrective Action

Surveillance testing of the main turbine throttle valve position switches was stopped. An Incident Review Board (IRB) was formed and the event was investigated.

Further Evaluation

The IRB determined that during the surveillance test of the #4 Turbine Throttle Valve, the valve position relay, RPS-RLY-K10H [JC, RLY] was energized as a result of the #4 Turbine Throttle Valve being opened. This condition was expected and provides one-half of the NSSSS logic needed to generate a signal for closure of the MSIV's. In addition, the IRB determined the contacts of the valve position relay for the #3 Turbine Throttle Valve, RPS-RLY-K10D [JC, RLY], opened due to vibration from the operation of relay RPS-RLY-K10H. This was not anticipated and provided one-half of the NSSSS logic needed to generate a signal for closure of the MSIV's. The two NSSSS channel signals, together, were sufficient to generate the MSIV closure signal, which caused the eight MSIV's and the inboard main steam line drain valve to close. The two relays involved in this event, RPS-RLY-K10H and RPS-RLY-K10D are physically adjacent to one another.

This event is being reported per the requirement of 10CFR50.73(a)(2)(iv) as an event or condition that resulted in an automatic actuation of an Engineered Safety Feature. The ESF automatic actuation was not from a valid NSSSS actuation signal. However, the actuation occurred while the isolation system was in service.

LICENSEE EVENT REPORT (LER)**Failed Relay Causes ESF Signal to Close All 8 MSIV's While Plant Was Shutdown**

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

The following information regarding this event is provided to enhance the Significance Determination Process:

1. Both trains of Emergency AC power were operable and capable of performing their intended safety function.
2. The High Pressure Core Spray System was operable and capable of performing its intended safety function.
3. The A Train of the Residual Heat Removal System was in service performing the Shutdown Cooling function and the B train was operable and capable of performing its intended safety function.
4. All control rods were verified full in and no core alterations were in progress.

The event described above did not involve a loss of intended safety function. In addition, the event described above did not involve an event or condition that alone could have prevented the fulfillment of any safety functions described in 10CFR50.73(a)(2)(v).

Root Cause

The cause of this event was the failure of relay RPS-RLY-K10D, in that contacts opened due to vibration from an adjacent relay under test. This generated an MSIV closure signal. This conclusion is supported by physical evidence obtained by plant test equipment. There were no personnel errors or procedural deficiencies that contributed to this event.

The investigation regarding the cause of the relay to fail when it was subject to vibration is ongoing. The preliminary examination did not identify evidence of materials degradation that could have contributed to intermittent opening of contacts 11-12. Metallic and non-metallic parts appear to be in good condition. The momentary opening of the contact is believed to be the result of insufficient contact wipe, which made the 11-12 contact shock sensitive in the de-energized state. The calibration sheet for the relay, dated February 9, 1994, has been reviewed and indicates the wipe and gap settings were acceptable. A test of the relay indicates the normally closed wipe for the 11-12 and the 9-10 contacts is unacceptable. At this time there is no explanation for the reduction in contact wipe from the 1994 information. Additional examination of the fingers and spring force measurements are underway.

Further Corrective Action

Relay, RPS-RLY-K10D, was replaced and tested on June 30, 1999. In addition, testing of the turbine throttle valves was completed on July 1, 1999, and did not cause an MSIV isolation signal to be generated.

Assessment of Safety Consequences

There were no safety consequences associated with this event. The closure of the MSIV's while in Mode 4, did not impact plant safety because reactor coolant system temperature was limited to less than 200° F. The control rods were fully inserted at the time of the MSIV closure. The Emergency Core Cooling Systems that are required by technical specifications were operable and capable of performing their intended safety functions. The A-Train of the RHR system was operating and performing the shutdown cooling function. This event did not represent a threat to the health and safety of the public or plant personnel.



LICENSEE EVENT REPORT (LER)

Failed Relay Causes ESF Signal to Close All 8 MSIV's While Plant Was Shutdown

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

Similar Events

No previous similar events were identified where all eight MSIV's were closed due to failed relay.