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SUBJECT: LER 88-030-00:on 880825,RPS caused by loss of power on both RPS div due to mis-application of switch type.W/880926 ltr. W/8 ltr.

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

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	NRR/DOEA/EAB 11	1	1	NRR/DREP/RAB 10	1	1
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NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Washington Nuclear Plant - Unit 2	0 5 0 0 0 3 9 7	1 OF 0 5

TITLE (4) RPS Actuation Caused By Loss Of Power On Both RPS Divisions - Due To Mis-Application Of Switch Type

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 8	2 5	8 8	8 8	0 3 0	0 0	0 9	2 2	8 8		0 5 0 0 0
										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)					
POWER LEVEL (10)	0 0 0	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)(x)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
	AREA CODE
T.R. Wyrick, Compliance Engineer	5 0 9 3 7 7 - 2 1 1 5 8

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

CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS	

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	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)

On August 25, 1988, at 2211 hours, while performing a channel functional test and calibration of the Reactor Protection System (RPS) Bus "A" EPA breakers, a full RPS actuation occurred due to a momentary loss of power to both divisions of RPS. The cause of this event is switch overtravel, which deenergized both divisions of RPS simultaneously.

The loss of both divisions of RPS power also causes the isolation of Nuclear Steam Supply Shutoff System (NS^4) Groups 1,2,4 (partial only), 5,6 and 7. All NS^4 isolation valves actuated as designed or were closed prior to the NS^4 trip. The outboard mainsteam line isolation valves were closed prior to the event. Both Residual Heat Removal Shutdown Cooling Loop B and Reactor Water Cleanup System valves were isolated just prior to the event in anticipation of the momentary loss of RPS Bus "A" power which would by design, isolate the outboard containment isolation valves for these systems.

Plant Operators responded to the event by returning the RPS to normal and by resetting the scram. RHR Shutdown Cooling Loop B was returned to operation at 2220 hours and the RWCU System was back in service at 2223 hours.

The root cause of this event is the design limitations of the power transfer switch. The switch is a break before make configuration and is subject to overtravel during manipulation.

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Abstract (cont'd)

An engineering analysis will be performed to evaluate options for a more reliable power transfer scheme. Additionally, a caution tag was placed on the switch to serve as a reminder that the switch is not mechanically prevented from overtraveling the desired position.

There is no safety significance associated with these RPS actuations. All safety actuations occurred as designed. This event posed no threat to the health and safety of the public or Plant personnel.

Plant Conditions

Power Level - 0%
PLant Mode - 4 (Cold Shutdown)

Event Description

On August 25, 1988, at 2211 hours, while performing a channel functional test and calibration of the Reactor Protection System (RPS) Bus "A" Electrical Protection Assembly (EPA) breakers, a full RPS actuation occurred due to a momentary loss of power to both divisions of RPS. At the time of the event, a Plant Operator was transferring RPS "A" power from its alternate to normal power supply as called for in the procedure, when the RPS Power Supply Select switch overtraveled deenergizing RPS "B" as well as RPS "A".

The loss of both divisions of RPS power causes the isolation of Nuclear Steam Supply Shutoff System Groups 1,2,4 (partial only), 5,6, and 7. For this event the following actuations occurred:

NS4 Group 1 - Main Steamline Isolation and Drainline Valves. The inboard (MSIVs) isolated. The outboard MSIVs were closed prior to the event. All drainline valves were closed prior to the event.

NS4 Group 2 - Reactor Water Sample Valves. Valves were closed prior to the event.

NS4 Group 4 - Miscellaneous Balance of Plant (BOP). Only four valves in this group (floor drain and equipment drain valves) are controlled by RPS power. These valves did isolate during the event.

Group 5 - RHR and Trasversing Incore Probe (TIP). All valves in this group were closed prior to this event.

Group 6 - RHR - Shutdown Cooling. Prior to the event as noted in the discussion above, the operating RHR "B" Loop was isolated in anticipation of the momentary loss of the RPS "A" power supply which would isolate the outboard valves in this group. The result of these actions was that all valves in this group were closed prior to the event.

Group 7 - RWCU. Again, prior to the event in anticipation of the outboard isolation valve closing due to the momentary loss of RPS Bus "A" power during the power supply transfer all both valves in this group were closed prior to the event.

In addition, the design of the RPS power supply is such that if either RPS power bus loses power for an extended period of time the trip relays of the Reactor Building Exhaust Plenum Process Radiation Monitors ("Z" Signal) will deenergize (A Non Engineered Safety Feature Trip) in the affected division.

During a normal RPS power transfer (as in this event), the trip relays are unaffected due to the capacitance inherent in the power supplies of the Process Radiation Monitor Drawers. This capacitance allows momentary lapses of power to occur (as is the case in a normal RPS power transfer) without causing the trip relays to deenergize.

Plant Operators responded to the event by returning the RPS transfer switch to normal and by resetting the scram. RHR Shutdown Cooling Loop B was returned to operation at 2220 hours. The RWCU system was back in service at 2223 hours. All NS^4 isolations were reset and returned to their pre-event lineup, with the exception of the inboard MSIVs which were left closed.

On August 26, at 1553 hours, while performing a channel functional test and calibration of the Bus "B" EPA breakers, a full RPS actuation occurred which was caused by a momentary loss of power to both divisions of RPS. Because of the RPS actuation on the previous day, while performing the same surveillance on the opposite division, it was discussed and recognized that transferring the power switch could cause a full RPS actuation. Because the possibility of an RPS actuation was anticipated and management direction was given to proceed with the surveillance, this event is not reportable per 10CFR50.73 (a)(2)(iv).

Prior to the August 26 RPS actuation, in anticipation of the momentary loss of RPS division B power, RHR Shutdown Cooling Loop B and the RWCU System were isolated. The inboard MSIVs had remained closed following the August 25, 1988 event and the outboard MSIVs were closed for clearance order purposes.

Plant Operators responded to this RPS actuation by placing the RPS transfer switch to normal and by resetting the scram. RHR Shutdown Cooling Loop B was restored at 1601 hours. The RWCU system was back in service at 1603 hours. All other isolations on the NS^4 equipment were reset and restored to their pre-event lineup.

Further Evaluation and Corrective Action

A. Further Evaluation

This event is reportable per 10CFR50.73(a)(2)(iv) an Engineered Safety Feature Actuation.

There were no structures, systems, or components inoperable prior to this event which contributed to the event.

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

The cause of this event is RPS power supply transfer switch overtravel. The root cause of this event is the design limitation of the switch, which has too little operational tolerance. The overtravel was caused by a lack of understanding of the design limitations of the switch. The switch is a three position switch which is normally in the normal (middle) position. The switch can be moved to a left or right position to transfer either RPS bus to the alternate power source. The switch uses a break before make contact arrangement, thus when the switch is moved, the existing power supply circuit is broken before the new power supply circuit is made. The design limitation is that any movement past the middle switch position can break the other RPS circuit contacts, causing a loss of RPS power to both buses. Because of this break before make design, operators are sensitive to the need to transfer power quickly and in doing so, can cause the switch to overtravel.

The RPS power supply transfer switch is manufactured by General Electric, Model Number SBM.

B. Further Corrective Action

A Technical Evaluation Request was initiated to evaluate options for a more reliable power transfer scheme.

A caution tag was placed on the switch to serve as a reminder that the switch is not mechanically prevented from overtraveling the desired postion and that overtravel could cause a full RPS actuation.

This LER will be required reading for all licensed personnel on the Operations Staff.

As part of requalification training, this LER will be reviewed with all operations staff. In conjunction with this review, direction will be provided in the simulator, on proper RPS power supply select switch operation.

Safety Significance

There is no safety significance associated with these RPS actuations. All safety actuations occurred as designed. The RHR Shutdown Cooling System was restored within 10 minutes following both events. The Technical Specification requirements for restoring Shutdown Cooling while in a Cold Shutdown condition is 1 hour. Accordingly, this event posed no threat to the health and safety of the public or Plant personnel.

Similar Events

LER 87-20 - A failure of the same switch described in LER 87-20 is different from the overtravel of the switch in this event. In the LER 87-20 event, the stop tab on the switch was physcially broken and did not prevent the switch from overtravelling when moved to an alternate power supply position. In this event the switch functioned as designed and there were no component failures.

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

EIIS Information

Text Reference	EIIS Reference	
	System	Component
Reactor Protection System (RPS)	JC	- - - - -
RPS Electrical Protection Assembly (EPA)	JC	BKR
RPS-Bus-A and B	JC	BU
RPS Power Supply Select Switch	JC	JS
Nuclear Steam Supply Shutoff System (NS^4)	BD	- - - - -
Reactor Water Sample Valves	AD	V
Miscellaneous Balance of Plant (BOP)	BD	- - - - -
RHR and Traversing Incore Probe (TIP) System	IG	- - - - -
RHR Shutdown Cooling System	BD	- - - - -
Reactor Water Cleanup (RWCU) System	CE	- - - - -
Reactor Building Exhaust Plenum Process Radiation System	IL	- - - - -
Standby Gas Treatment System (SGT)	BH	- - - - -
Control Room Emergency Filtration System	VH	- - - - -
Reactor Building Ventilation System	VA	- - - - -
Main Steamline Isolation and Drainline Valves (MSIVs)	SB	ISV/V

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

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

Docket No. 50-397

September 26, 1988

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

Subject: NUCLEAR PLANT NO. 2
LICENSEE EVENT REPORT NO. 88-030

Dear Sir:

Transmitted herewith is Licensee Event Report No. 88-030 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,

S. M. McKay for

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

CMP:sm

Enclosure:
Licensee Event Report No. 88-030

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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