

# ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:8906300101 DOC DATE: 89/06/23 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  
 POWERS, C.C. Washington Public Power Supply System  
 RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 89-021-00: on 890527, ESF isolations & actuations due to  
 RPS EPA breaker trip - cause unknown. W/8 ltr.

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 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

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NRR/DEST/CEB 8H	1 1	NRR/DEST/ESB 8D	1 1
NRR/DEST/ICSB 7	1 1	NRR/DEST/MEB 9H	1 1
NRR/DEST/MTB 9H	1 1	NRR/DEST/PSB 8D	1 1
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EXTERNAL: EG&G WILLIAMS, S	4 4	FORD BLDG HOY, A	1 1
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WASHINGTON PUBLIC POWER SUPPLY SYSTEM

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

Docket No. 50-397

June 23, 1989

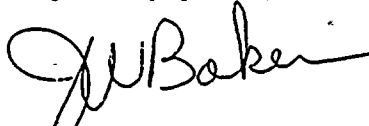
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Subject: NUCLEAR PLANT NO. 2  
LICENSEE EVENT REPORT NO. 89-021

Dear Sir:

Transmitted herewith is Licensee Event Report No. 89-021 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 (M/D 927M)  
WNP-2 Plant Manager

CMP:lg

Enclosure:  
Licensee Event Report No. 89-021

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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*11*

## LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Washington Nuclear Plant - Unit 2										DOCKET NUMBER (2) 0 5 0 0 0 3 9 7 1 OF 0 4													
TITLE (4) Engineered Safety Feature (ESF) Isolations and Actuations Due to a Reactor Protection System (RPS) Electrical Protection Assembly (EPA) Breaker Trip - Cause Unknown																							
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	2	7	8	9	8	9	0	2	1	0	0	0	6	2	3	8	9	0	5	0	0	0
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)																					
5		20.402(b)				20.405(c)				<input checked="" type="checkbox"/> 50.73(a)(2)(iv)				73.71(b)									
POWER LEVEL (10)		0 0 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)(vii)				OTHER (Specify in Abstract below and in Text, NRC Form 366A)									
		20.405(a)(1)(iii)				50.73(a)(2)(ii)				50.73(a)(2)(viii)(A)													
		20.405(a)(1)(iv)				50.73(a)(2)(iii)				50.73(a)(2)(viii)(B)													
		20.405(a)(1)(v)				50.73(a)(2)(iii)				50.73(a)(2)(ix)													
LICENSEE CONTACT FOR THIS LER (12)																							
NAME										TELEPHONE NUMBER													
J.D. Arbuckle, Compliance Engineer										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													
X	JIC	BKR	G0180	Y																			
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)																							
<p>On May 27, 1989 at 1038 hours an Electrical Protection Assembly (EPA) breaker (RPS-EPA-3D) tripped causing a loss of power to Reactor Protection System (RPS) Bus B. The loss of power on RPS Bus B caused a half-scam in RPS Division B and multiple Engineered Safety Feature (ESF) actuations. At the time of the event the Plant was in a shutdown condition for the annual maintenance and refueling outage.</p> <p>The loss of RPS B power causes Nuclear Steam Supply Shutoff System (NSSSS) Containment Inboard and Outboard Isolations for Groups 1,2,5,6 and 7; and a Reactor Building Exhaust Plenum Radiation Monitor "Z" signal (a non-NSSSS ESF trip signal) which initiates several ESF actuations including the Standby Gas Treatment (SGT) System, the Control Room Emergency Filtration System, and a Reactor Building Ventilation System isolation. Plant Operators responded by restoring all systems, including Residual Heat Removal (RHR) Shutdown Cooling, to pre-event lineup status by 1100 hours.</p> <p>The cause of this event is not known. Investigation at the time of the event identified a potential cause (work in progress on Differential Pressure Indicating Switch MS-DPIS-8B), but the cause can not be conclusively determined. Further corrective action consists of installing an upgrade to the EPA breaker equipment. This action will enhance the troubleshooting capabilities for the EPA breakers.</p> <p>There is no safety significance associated with this event. No actual plant conditions requiring the Engineered Safety Feature isolations and actuations existed, and all isolations and actuations occurred as designed.</p>																							

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (8)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Washington Nuclear Plant - Unit 2	0 5 0 0 0 3 9 7	8 9	— 0 2 1	— 0 0 0	2	OF	0 4

TEXT (If more space is required, use additional NRC Form 368A's) (17)

Plant Conditions

- a) Power Level - 0%
- b) Plant Mode - 5 (Refueling)

Event Description

On May 27, 1989 at 1038 hours an Electrical Protection Assembly (EPA) breaker (RPS-EPA-3D) tripped causing a loss of power to Reactor Protection System (RPS) Bus B. The loss of power on RPS Bus B caused a half-scam in RPS Division B and multiple Engineered Safety Feature (ESF) actuations. At the time of the event the Plant was in a shutdown condition for the annual maintenance and refueling outage.

The loss of RPS Bus B power causes Nuclear Steam Supply Shutoff System (NSSSS) Containment Inboard and Outboard Isolations for Groups 1 (Main Steam Line Drain Valves only), Group 2 (Reactor Water Sample Valves), Group 5 [Residual Heat Removal (RHR) and Traversing In-Core Probe (TIP) Systems], Group 6 (RHR Shutdown Cooling), and Group 7 [Reactor Water Cleanup (RWC) System]. At the time of the event, both the TIP and RWC Systems were already out of service for maintenance.

In addition, the loss of RPS Bus B power causes an NSSSS Group 3 (Primary and Secondary Containment Ventilation and Purge System) and partial Group 4 [Miscellaneous Balance of Plant (6-Valves)] isolation. These isolations occurred because RPS Bus B is the power supply for Reactor Building Exhaust Plenum Radiation Monitors (Channels B and D). Loss of RPS Bus B power de-energizes these monitors, causing a "Z" signal - a non-NSSSS ESF trip signal. All required Group 3 and 4 actions occurred as designed, including the automatic start of the Standby Gas Treatment (SGT) System and the Control Room Emergency Filtration System, and a Reactor Building HVAC Isolation.

Plant Operators responded by investigating the situation and, finding no immediate cause, shut EPA breaker RPS-EPA-3D and returned RPS Bus B to the normal power supply.

Immediate Corrective Action

As previously stated, Plant Operators responded by investigating the situation and, finding no immediate cause, returned RPS Bus B to the normal power supply. All systems were restored to pre-event lineup status within 22 minutes.

Further Evaluation and Corrective ActionA. Further Evaluation

1. This event is reportable under 10CFR 50.73(a)(2)(iv) as "an event or condition that resulted in manual or automatic actuation of any Engineered Safety Feature (ESF), including the Reactor Protection System (RPS)."
2. There were no structures, components or systems that were inoperable at the start of the event that contributed to the event.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)				PAGE (3)			
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER					
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TEXT (If more space is required, use additional NRC Form 368A's) (17)

3. The cause of this event is not known. A potential cause was identified following the trip but the cause cannot be conclusively determined. Immediately following the breaker trip, a review of all work in progress was conducted to identify any activities having the potential of causing a trip. Work on Differential Pressure Indicating Switch MS-DPIS-8B (Main Steam Line A High Flow) was in progress at the time of the trip which consisted of splice inspections and lug replacement. [MS-DPIS-8B is a flow switch in the logic circuit for relay RPS-RLY-K3B (Main Steam Isolation Valve Closed) which is utilized in the Nuclear Steam Supply Shutoff System actuation logic]. If during the work on MS-DPIS-8B a short occurred, it would be sensed on RPS Bus B and the EPA breaker might trip on undervoltage before a protective fuse on RPS-RLY-K3B opened. No method is available to confirm the probable cause; however, there have been no spurious trips during the last year of operation and none since this event.
4. Visual inspections of the breaker have also provided no indication of probable cause of the trip.
5. The EPA Breaker (RPS-EPA-3D) is manufactured by General Electric Company (Part No. TFJ226175W6).

**B. Further Corrective Action**

1. The EPA Breaker Assembly (RPS-EPA-3D) was replaced with a spare component.
2. An upgrade to the EPA breaker equipment has recently been developed that provides enhanced operating characteristics, including modifications to reduce susceptibility to spurious trips, a "first-in, seal-in" indicator and improved output voltage control. This upgrade will be procured and installed, subject to availability of the modified components, by the end of the next maintenance and refueling outage.

**Safety Significance**

There is no safety significance associated with this event because no Plant condition requiring the ESF isolations and actuations existed, and all ESF actuations occurred as designed.

In addition, at the time of the event reactor water level was greater than 22 feet above the reactor vessel flange with the fuel pool gate removed which provided a large heat sink for core cooling. Plant Operators responded by restoring all systems, including RHR Shutdown Cooling, to pre-event lineup status within 22 minutes.

Accordingly, this event posed no threat to the health and safety of either the public or Plant personnel.

**Similar Events**

LERs 87-019 and 87-025

## 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 (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		8 9	0 2 1	0 0	0 4	OF	0 4

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

EIIS InformationText ReferenceEIIS Reference

## System      Component

EPA Breaker (RPS-EPA-3D)  
Reactor Protection System (RPS)  
RPS-Bus-B  
Nuclear Steam Supply Shutoff System (NSSSS)  
Main Steam Line Drain Valves  
Reactor Water Sample Valves  
Residual Heat Removal (RHR) System  
Traversing In-Core Probe (TIP) System  
Reactor Water Cleanup (RWCU) System  
Reactor Building Exhaust Plenum Radiation Monitor  
Standby Gas Treatment (SGT) System  
Control Room Emergency Filtration System  
Reactor Building HVAC  
MS-DPIS-8B  
RPS-RLY-K3B

JC      BKR  
JC      ---  
JC      BU  
BD      ---  
SN      LOV  
AD      ISV  
BD      ---  
IG      ---  
CE      ---  
IL      MON  
BH      ---  
VH      ---  
VA      ---  
SB      PDIS  
JC      RLY