

# ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:8909150304 DOC.DATE: 89/09/11 NOTARIZED: NO DOCKET #  
 FACIL:50-397 WPPSS Nuclear Project, Unit 2, Washington Public Powe 05000397  
 AUTH.NAME AUTHOR AFFILIATION  
 DAVISON,W.S. Washington Public Power Supply System  
 POWERS,C.M. Washington Public Power Supply System  
 RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 89-034-00:on 890811,TS required shutdown completed as  
 result of inoperability of Class 1E 480 v AC PDS.  
 W/8 ltr.

DISTRIBUTION CODE: IE22T COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 7  
 TITLE: 50.73/50.9 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
	ACRS WYLIE	1 1	AEOD/DOA	1 1
	AEOD/DSP/TPAB	1 1	AEOD/ROAB/DSP	2 2
	DEDRO	1 1	IRM/DCTS/DAB	1 1
	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
	NRR/DEST/RSB 8E	1 1	NRR/DEST/SGB 8D	1 1
	NRR/DLPQ/HFB 10	1 1	NRR/DLPQ/PEB 10	1 1
	NRR/DOEA/EAB 11	1 1	NRR/DREP/RPB 10	2 2
	NUDOCS-ABSTRACT	1 1	REG FILE 02	1 1
	RES/DSIR/EIB	1 1	RGN5 FILE 01	1 1
EXTERNAL:	EG&G WILLIAMS,S	4 4	L ST LOBBY WARD	1 1
	LPDR	1 1	NRC PDR	1 1
	NSIC MAYS,G	1 1	NSIC MURPHY,G.A	1 1
	NUDOCS FULL TXT	1 1		

### NOTE TO ALL "RIDS" RECIPIENTS:

PLEASE HELP US TO REDUCE WASTE! CONTACT THE DOCUMENT CONTROL DESK,  
 ROOM P1-37 (EXT. 20079) TO ELIMINATE YOUR NAME FROM DISTRIBUTION  
 LISTS FOR DOCUMENTS YOU DON'T NEED!

FULL TEXT CONVERSION REQUIRED  
 TOTAL NUMBER OF COPIES REQUIRED: LTTR 40 ENCL 40

1041

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

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

Docket No. 50-397

September 11, 1989

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

Subject: NUCLEAR PLANT NO. 2  
LICENSEE EVENT REPORT NO. 89-034

Dear Sir:

Transmitted herewith is Licensee Event Report No. 89-034 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:lr

Enclosure:  
Licensee Event Report No. 89-034

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)

*Cont No P132528116*

*IF22  
11*

SEP 13 1989  
FBI - RICHLAND  
FBI

## LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Washington Nuclear Plant - Unit 2										DOCKET NUMBER (2) 0 5 0 0 0 3 9 7 1										PAGE (3) 1 OF 0 6		
TITLE (4) Technical Specification Required Shutdown Completed as a Result of Inoperability of Class 1E 480 Volt AC Power Distribution System Caused By Design Deficiency																						
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	1 1	8 9	8 9	0 3 4	0 0	0 9	1 1	8 9							0 5 0 0 0 0							
OPERATING MODE (9) 1			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)																			
POWER LEVEL (10) 1 0 0			20.402(b)					20.405(c)					50.73(a)(2)(iv)					73.71(b)				
			20.405(a)(1)(i)					50.38(c)(1)					50.73(a)(2)(v)					73.71(c)				
			20.405(a)(1)(ii)					50.38(c)(2)					50.73(a)(2)(vi)					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)									
LICENSEE CONTACT FOR THIS LER (12)																						
NAME W. S. Davison, Compliance Engineer										TELEPHONE NUMBER 5 0 9 3 7 7 - 2 5 0 1												
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)										E X T. 2 7 2 6												
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			
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 11, 1989 at 1608 hours, WNP-2 Technical Specification LCO 3.0.3 was entered, an Unusual Event was declared, and a normal reactor shutdown was commenced as a result of declaring six Class 1E 480 volt A.C. Motor Control Centers (MCCs) to be inoperable due to discovery of a design deficiency. The reactor plant was shut-down and the control rods were fully inserted by 1804 hours. The reactor plant was placed in Cold Shutdown, the Technical Specification 3.0.3 LCO was exited, and the Unusual Event secured at 0220 hours on August 12, 1989. An Urgent Plant Modification Request was processed to implement a correction to the design of the Class 1E 480 volt AC Power Distribution System. All of the affected MCC power supply circuit breakers were replaced with jumper cables of equal capacity with the exception of one (MC-8B-A) which was replaced with a fused disconnect of equal capacity. The cause of this event was evaluated as being design deficiency in that the design of the 480 volt AC Power Distribution System did not include fault tripping coordination all the way down to the individual loads at the subfed Class 1E Motor Control Centers. An engineering evaluation of the WNP-2 Class 1E 480 Volt Power Distribution System will be performed to determine the necessity for further modifications to the system design. This event posed no credible threat to the health and safety of the public or plant personnel.



## 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)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Washington Nuclear Plant - Unit 2	0   5   0   0   0   3   9   7	8   9	—   0   3   4	—   0   0	0   2	OF	0   6

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

Plant Conditions

- a) Plant Mode - 1 (Power Operation)  
b) Power Level - 100%

Event Description

On August 11, 1989 at 1608 hours, WNP-2 Technical Specification LCO 3.0.3 was entered, an Unusual Event was declared, and a normal reactor shutdown was commenced as a result of declaring six Class 1E 480 volt A.C. Motor Control Centers (MCCs) to be inoperable due to discovery of a design deficiency. The reactor plant was shut-down and the control rods were fully inserted by 1804 hours. The reactor plant was placed in Cold Shutdown, the Technical Specification 3.0.3 LCO was exited, and the Unusual Event secured at 0220 hours on August 12, 1989.

The design deficiency was discovered during the investigation of an equipment failure event which occurred on August 8, 1989. The motor for a permanently installed non-Class 1E motor operated hoist located in the Rad Waste Building, MT-HOI-25, shorted to ground. Simultaneous with blowing the load fuses, the entire Class 1E Motor Control Center (MC-8A/2C) was automatically deenergized by the instantaneous overcurrent trip of the upstream power supply circuit breaker.

On August 9, 1989, a cause investigation was initiated to evaluate the event. This investigation resulted in the conclusion on August 11, 1989, that the fault tripping design for the Class 1E 480 volt Division 1 and Division 2 AC Power Distribution System for Motor Control Centers MC-7A-A, MC-7B-B, MC-7B-A, MC-8A-A, and MC-8B-A was deficient. The specific portion of the design evaluated as deficient was the failure to extend the depth of the coordination for the WNP-2 AC Electrical System protective tripping past the major 480 volt distribution centers down to the subfed Motor Control Center level. The power supply circuit breakers that feed the above listed 480 Volt Motor Control Centers do not have instantaneous overcurrent protection devices of sufficient range that they can be adjusted high enough to prevent the breakers from tripping as a result of a fault in a subfed branch circuit. The design would allow a fault in an individual non-Class 1E load to cause the loss of the entire Class 1E Motor Control Center.

At approximately 1530, on August 11, 1989, an evaluation of the design deficiency was completed and presented to the Plant Operating Committee (POC). Following the POC recommendation, the Plant Manager concluded that this design deficiency rendered major portions of the AC Electrical Power Distribution System inoperable and presented a significant safety hazard. Based on this conclusion, at 1608 hours, an Unusual Event Emergency Classification was declared and Technical Specification 3.0.3 was entered. At 0220 hours on August 12, 1989, the reactor plant was placed in the Cold Shut Down mode and the Emergency Classification was downgraded from Unusual Event to normal plant operation.



## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Washington Nuclear Plant - Unit 2	0 5 0 0 0 3 9 7	8 9	— 0 3 4	— 0 0	0	3	OF 0 6

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

Immediate Corrective Action

An Urgent Plant Modification Request was processed to implement a correction to the design of the Class 1E 480 volt AC Power Distribution System. All of the affected MCC power supply circuit breakers were replaced with jumper cables of equal capacity with the exception of one (MC-8B-A) which was replaced with a fused disconnect of equal capacity.

Further Evaluation and Corrective ActionA. Further Evaluation

1. This event is being documented as reportable in compliance with the following requirements of 10CFR50.73:
  - o (a)(2)(i)(A) - The completion of any nuclear plant shutdown required by the plant's Technical Specifications;
  - o (a)(2)(ii)(B) - Any event or condition that resulted in the condition of the nuclear power plant, including its principal safety barriers, being seriously degraded, or that resulted in the nuclear power plant being: ... (B) In a condition that was outside the design basis of the plant;
  - o (a)(2)(v) - Any event or condition that alone could have prevented the fulfillment of the safety function of structures or systems that are needed to: ... (A) Shut down the reactor and maintain it in a safe shutdown condition;
  - o (a)(2)(vii) - Any event where a single cause or condition caused at least one independent train or channel to become inoperable in multiple systems or two independent trains or channels to become inoperable in a single system designed to: ... (A) shut down the reactor and maintain it in a safe shutdown condition;
2. The cause of this event was evaluated as being design deficiency in that the design of the 480 volt AC Power Distribution System did not include fault tripping coordination all the way down to the individual loads at the subfed Class 1E Motor Control Centers. The design of the 480 Volt AC Power Distribution System is an original plant design supplied by Burns and Roe Company. A root cause evaluation is still in progress. Any substantive information which results from this effort will be reported via a supplemental LER.
3. This event was reported to the NRC per the requirements of 10CFR21 by telephone on August 17, 1989. A written report was submitted on August 21, 1989.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Washington Nuclear Plant - Unit 2	0   5   0   0   0   3   9   7	8   9	-   0   3   4	-   0   0	0   4	OF	0   6

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

4. The feeder circuit breaker for MC-8B-A was replaced with a fused disconnect switch, instead of a jumper, to comply with the requirements of NRC Reg Guide 1.63 for backup overcurrent protection of containment penetrations.
5. The Power Panel feeder breaker for MC-8B-B was also replaced with jumper cables to guarantee fault tripping coordination even though it contains no non-Class 1E loads.

**B. Further Corrective Action**

1. By August 14, 1989, each of the power supply circuit breakers listed above had been removed and replaced by jumper cables of equal current carrying capacity with the exception of MC-8B-A. The power supply circuit breaker for this Motor Control Center was replaced with a fused disconnect in order to comply with the requirements of NRC Reg Guide 1.63 for containment penetration overcurrent protection.
2. An engineering evaluation of the WNP-2 Class 1E 480 Volt Power Distribution System will be performed to determine the necessity for further modifications to the system design.
3. The Supply System is currently conducting a self generated Safety System Functional Inspection (SSFI). This inspection is designed to discover the type of fault documented by this LER and is ongoing at present. The Class 1E AC Power Distribution System will be examined in the future as part of the SSFI effort.

**Safety Significance**

As soon as the condition was evaluated as being outside the design basis of the plant and presenting a possible common mode failure mechanism, the appropriate emergency classification was declared and the required provisions of the WNP-2 Technical Specifications were applied. The plant operators acted in a timely fashion to put the plant in a safe shutdown condition.

During a design basis accident, as a result of occurrences such as high energy line breaks or seismic activity, some or all of these Motor Control Centers could have been deenergized as a result of damage sustained to Non-Class 1E loads which they feed. This could have presented a common mode failure mechanism which could have allowed multiple electrical equipment faults to potentially affect the operability of the following:



## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Washington Nuclear Plant - Unit 2	0 5 0 0 0 3 9 7	8 9	— 0 3 4	— 0 0	0 5	OF	0 6

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

Division 1 Emergency Diesel Generator and associated loads  
Division 2 Emergency Diesel Generator and associated loads  
Standby Gas Treatment Fan 1A-1  
Standby Gas Treatment Fan 1B-2  
Hydrogen Recombiner 1A  
Low Pressure Coolant Injection Loop A  
Low Pressure Coolant Injection Loop B  
Low Pressure Coolant Injection Loop C  
Low Pressure Core Spray System  
Reactor Water Cleanup Containment Isolation  
Reactor Closed Cooling Water Containment Isolation  
Main Steam Leakage Control System  
Residual Heat Removal Containment Spray System  
Fuel Pool Cooling System

The loss of some or all of the above components/systems during accident conditions could have resulted in failure to achieve and maintain safe shutdown of the reactor. Since no such incidents occurred at WNP-2, and the design has been corrected, the safety significance is minor. This event posed no credible threat to the health and safety of the public or plant personnel.

Similar Events

LER 89-06, "Entry Into Technical Specification 3.0.3 Caused by Discovery of Calculation Errors in Post LOCA Integrated Control Room Dose," documented an event in which discovery of a design deficiency resulted in application of Technical Specification 3.0.3 to shut down the reactor plant. Cold Shutdown was not achieved because the condition was corrected within the time frame of the LCO. The corrective actions resulting from LER 89-06 were not applicable to the event reported by this LER.

## 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)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Washington Nuclear Plant - Unit 2	0   5   0   0   0   3   9   7	8   9	—   0   3   4	—   0   0	0   6	OF	0   6

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

EIIS InformationText ReferenceEIIS Reference

## System      Component

Class 1E 480 Volt Motor Control Center	ED	PL
Control rods	AA	ROD
MT-HOI-25	WH	HOI
Load fuses	ED	FU
AC Power Distribution System	ED	---
MC-7A-A	ED	PL
MC-7B-B	ED	PL
MC-7B-A	ED	PL
MC-8A-A	ED	PL
MC-8B-A	ED	PL
Circuit breakers	ED	BKR
Division 1 Emergency Diesel Generator	ED	GEN
Division 2 Emergency Diesel Generator	ED	GEN
Standby Gas Treatment Fan 1A-1	BH	FAN
Standby Gas Treatment Fan 1B-2	BH	FAN
Hydrogen Recombiner 1A	BB	RCB
Low Pressure Coolant Injection Loop A	BO	---
Low Pressure Coolant Injection Loop B	BO	---
Low Pressure Coolant Injection Loop C	BO	---
Low Pressure Core Spray System	BM	---
Reactor Water Cleanup Containment Isolation	CE	---
Reactor Closed Cooling Water Containment Isolation	CC	---
Main Steam Leakage Control System	SB	---
Residual Heat Removal Containment Spray System	BO	---
Fuel Pool Cooling System	CG	---