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SUBJECT: LER 90-006-00: on 900308, 10CFR App R cable fire protection.
 W/9 ltr.

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WASHINGTON PUBLIC POWER SUPPLY SYSTEM

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

April 9, 1990

Docket No. 50-397

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

Subject: NUCLEAR PLANT NO. 2
LICENSEE EVENT REPORT NO. 90-006

Dear Sir:

Transmitted herewith is Licensee Event Report No. 90-006 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

WSD:lr

Enclosure:
Licensee Event Report No. 90-006

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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EXPIRES: 4/30/92

LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1) Washington Nuclear Plant - Unit 2										DOCKET NUMBER (2) 0 5 0 0 0 3 9 7 1				PAGE (3) 1 OF 04		
TITLE (4) 10CFR50 Appendix "R" Cable Fire Protection																
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)			
03	08	90	09	006	000	04	09	90					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)														
POWER LEVEL (10)		20.402(b)				20.406(c)				50.73(a)(2)(iv)				73.71(b)		
9 9		20.406(a)(1)(i)				50.36(c)(1)				50.73(a)(2)(v)				73.71(c)		
		20.406(a)(1)(ii)				50.36(c)(2)				50.73(a)(2)(vii)				OTHER (Specify in Abstract below and in Text, NRC Form 365A)		
		20.406(a)(1)(iii)				50.73(a)(2)(i)				50.73(a)(2)(viii)(A)						
		20.406(a)(1)(iv)				50.73(a)(2)(ii)				50.73(a)(2)(viii)(B)						
		20.406(a)(1)(v)				50.73(a)(2)(iii)				50.73(a)(2)(ix)						
LICENSEE CONTACT FOR THIS LER (12)																
NAME C. L. Fies, 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)																
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs						
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 March 8, 1990 the expanded 10CFR50 Appendix R analysis was completed which systematically evaluated shutdown path components and their electrical circuits. This analysis identified twelve problem cables that could prevent an orderly plant shutdown in the unlikely event of a Design Basis Fire.

The root cause of this event was equipment design deficiency caused by the Architect-Engineer/Supply System who failed to thoroughly implement Appendix R requirements.

Immediate corrective action was taken to place these items on an hourly fire watch. Plant procedures were changed to eliminate the problem associated with two cables. In addition, an urgent Plant Modification Request was issued to provide design for a permanent correction of the remaining items.

The event posed no threat to the health and safety of either the public or plant personnel.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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	9 0	— 0 0 6	— 0 0	0 2	OF	0 4

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

Plant Conditions

Power Level - 99%

Plant Mode - 1

Event Description

On March 8, 1990 an expansion of the previously completed 10CFR50 Appendix R Fire Protection review identified twelve new cables in four fire areas vulnerable to a Design Basis Fire (DBF). This expanded analysis adds the guidance provided in Generic Letter 86-10 and includes spurious signal analysis and computerization techniques. The analysis methodology uncovered additional problems not previously identified by the original AE methodology.

The first fire area involved a postulated DBF in the Main Control Room (Area RC-X). A DBF could result in a worst case failure of cables 2DG2-26, 2DG2-33, 2DG2-44, 2DG2-45, and BSYNC-9028. This could cause spurious actuation of the local protective relays which could cause the Division II Diesel Generator (E- DG-2) to become disconnected from the associated 4160 VAC Safety Related Bus (E-SM-8). One additional cable, 2D12D-4, during the DBF, could cause a loss of power to safety related circuit breakers E-CB-8/81 and E-CB-8/83. Loss of this power supply would result in the loss of the two Division II 480 Volt Safety Related buses (E-SL-81 and E-SL-83).

The second fire area where a DBF could cause a loss of shutdown capability was the chiller area in the Radwaste/Control Building (Area RC-XIII). A DBF in this area could result in the worst case failure of cables 1SM7-121 and 2SM8- 131. Specifically, a short to ground would cause the potential transformer fuses to open and the undervoltage relays on the 4160 Volt Safety related buses for Division I (E-SM-7) and Division II (E-SM-8) would deenergize. This would cause the loss of both buses.

The third fire area involved the Reactor Building (Area R-I) where two cables (2M8BA-145 and 2M8BB-210) were impacted by the analysis. The first cable is a control cable to a Residual Heat Removal Lower Drywell Spray Inboard Isolation Valve (RHR-V-17B). A DBF could result in 120 VAC power being applied to this cable which is connected to the control circuitry for the RHR Lower Drywell Spray Outboard Isolation Valve (RHR-V-16B). As a result, the DBF could cause both RHR-V-16B and RHR-V-17B to open diverting shutdown cooling flow. The second cable provided power to a valve associated with the RHR Steam Condensing mode of operation (RHR-V-87B). This mode of operation has been deactivated for WNP-2 but the power cable remains connected to the valve. Inadvertent valve operation could possibly occur during a DBF violating Emergency Core Cooling System (ECCS) high-to-low pressure interface requirements.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 500 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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	9 0	— 0 0 6	— 0 0	0 3	OF	0 4

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

The fourth fire area involved a postulated fire in a cable chase in the Reactor Building (Area RC-III) which could impact cables 2CHB-15 and 2SL81-70. The loss of these cables could cause Control Room Chiller 1B (CCH-CR-1B) to fail which would, in turn, cause the loss of chiller cooling capability to the control room. Safety related Standby Service Water Cooling would still be available.

Immediate Corrective Action

Immediate corrective action was taken to place these items on an hourly fire watch. In addition an urgent Plant Modification Request was issued to provide design for a permanent correction to these items.

Further Evaluation and Corrective ActionA. Further Evaluation

1. This event is being reported per the requirements of 10CFR50.73(a)(2)(v) as "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...."
2. The root cause of this event was inadequate analysis methodology by the Architect-Engineer (AE) in response to Appendix R requirements. The Supply System revised the AE's original methodology which resulted in deficiency identification.
3. There were no structures, components or systems that were inoperable prior to the start of this event which contributed to the event.

B. Further Corrective Action

1. Plant procedures will be evaluated to assure the loss of the "B" chiller (CCH-CR-1B) is adequately addressed in response to a fire in the Reactor Building (Area RC-III).
2. A plant modification will be implemented during an outage of sufficient duration to execute the completed design. It will correct the deficiencies identified as a result of a DBF in the Main Control Room (Area RC-X), Chiller Area RC-XIII and Reactor Building Area R-I. The modification will provide isolation of the problem cables in the event of a DBF.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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

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

Safety Significance

No fires were experienced in the areas associated with the identified cables. The fire detection systems remained operable and fire watch tours were performed on a routine basis. The health and safety of the public and plant personnel was not affected by this event.

Similar Events

LERs 84-031 (Revisions 0, 1, 2, 3, 4, 5 and 6), 85-043, 88-022, and 88-026 have previously been written on this subject. These LERs reported a variety of problems discovered during the initial review of the Appendix "R" analysis and installation performed by the Architect-Engineer for WNP-2, Burns and Roe. In addition, other Appendix "R" associated issues were also reported.

EIIS InformationText ReferenceEIIS Reference

System	Component
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EDG-2 (Division II Diesel Generator)
E-SM-8 (Division II 4160 VAC Bus)
E-SL-81 (Division II 480 VAC Bus)
E-SL-83 (Division II 480 VAC Bus)
E-SM-7 (Division I 4160 VAC Bus)
RHR-V-17B (Residual Heat Removal Valve 17B)
RHR-V-16B (Residual Heat Removal Valve 16B)
CCH-CR-1B (Control Room Chiller 1B)
WMA-CC-51B-1 (Mixed Air Cooling Coil 51B-1)

EB	GEN
EB	BU
EB	BU
EB	BU
EB	BU
SO	V
SO	V
VH	CHU
VH	CCL