

Washington Public Power Supply System

P.O. Box 968 3000 George Washington Way Richland, Washington 99352 (509) 372-5000

Docket No. 50-397

March 3, 1986

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

Subject: NUCLEAR PLANT NO. 2
LICENSEE EVENT REPORT NO. 84-031-06

Dear Sir:

Transmitted herewith is Licensee Event Report No. 84-031-06 for WNP-2 Plant. This report is submitted in response to the report requirements of 10CFR50.73 and discusses the item of reportability, corrective action taken, and action taken to preclude recurrence and provides supplementary information to Licensee Event Report No. 84-031-05.

This report is submitted to document the completion of the WNP-2 Engineering review identified in the corrective action section of Licensee Event Report No. 84-031-05. This report identifies the remainder of the items found during completion of the Appendix "R" review by Generation Engineering.

Very truly yours,

JW Baker for

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

CMP:mt

Enclosure:
Licensee Event Report No. 84-031-06

cc: Mr. John B. Martin, NRC - Region V
Mr. R.C. Barr, NRC - Site (901A)
Ms. Dottie Sherman, ANI
INPO Records Center - Atlanta, GA

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)										DOCKET NUMBER (2)										PAGE (3)	
Washington Nuclear Plant - Unit 2										0 5 0 0 0 3 0 1 7										1 OF 0 1 7	
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)							
*														0 5 0 0 0							
														0 5 0 0 0							
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5. (Check one or more of the following) (11)																			
*		20.402(b)				20.408(a)				90.73(a)(2)(iv)				72.71(b)							
POWER LEVEL (10)		20.408(a)(1)(i)				90.36(a)(1)				X 90.73(a)(2)(v)				72.71(a)							
		20.408(a)(1)(ii)				90.36(a)(2)				90.73(a)(2)(vi)				OTHER (Specify in Abstract below and in Test, NRC Form 362A)							
		20.408(a)(1)(iii)				90.73(a)(2)(i)				90.73(a)(2)(vii)(A)											
		20.408(a)(1)(iv)				90.73(a)(2)(ii)				90.73(a)(2)(viii)(B)											
		20.408(a)(1)(v)				90.73(a)(2)(iii)				90.73(a)(2)(ix)											
LICENSEE CONTACT FOR THIS LER (12)																					
NAME										TELEPHONE NUMBER											
W. S. Davison, Compliance Engineer										5 0 9 3 7 7 1 - 1 2 5 0 1 1											
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)												Ext. 2726									
CAUSE	SYSTEM	COMPONENT	MANUF. TOLER	REPORTABLE TO NRC		CAUSE	SYSTEM	COMPONENT	MANUF. TOLER	REPORTABLE TO NRC											
SUPPLEMENTAL REPORT EXPECTED (14)																					
YES (15) yes, complete EXPECTED SUBMISSION DATE (16)										X NO											
ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (18)												EXPECTED SUBMISSION DATE (15)									

While performing a review and update of the WHP-2 Appendix "R" Safe Shutdown analysis, ten (10) cables required for safe Plant shutdown following a fire were identified on 4/12/84 as unprotected from fire (i.e., no thermolag fire protection material had been applied to these cables).

Following the 4/12/84 event, a second independent review was initiated and has identified other Appendix "R" infractions.

*	Date	Operating Mode	Power Level
Event 1	04/12/84	2	001
2	11/06/84	1	095
3	12/05/84	1	080
4	12/21/84	1	100
5	01/31/85	4	000
6	05/02/85	1	054
7	06/24/85	4	000
8	11/08/85	1	072
9	11/18/85	1	039
10	01/15/86	1	071

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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	05000397	84	031	06	02	OF	07

TEXT (If more space is required, use additional NRC Form 388A's) (17)

Abstract (Cont'd)

- o 11/6/84 - 15 ft. length of cable tray found unprotected.
- o 12/5/84 - Found three cables requiring thermolag coating and one cable requiring a transfer switch in circuit to provide electrical isolation from control room.
- o 12/21/84 - Discovered that the emergency stop switch for the Division-2 Emergency Generator (EDG) was not isolated from the main control room by a transfer switch.
- o 1/31/85 - Four fans observed without remote transfer switch isolation capability for control room circuits.
- o 5/2/85 - It was discovered that six (6) 4KV circuit breakers in the power distribution network had circuitry in the control room that was not provided with remote transfer switch isolation capability. A Residual Heat Removal Pump and Service Water System Pump were also found to have a similar problem.
- o 6/24/85 - Circuits for Division 2 EDG were found without control isolation capability via remote shutdown transfer switch.
- o 11/8/85 - Control Room switches for control for Residual Heat Removal System low pressure interface valves RHR-V-53A and RHR-V-123A were found to be in need of circuit isolation. In the event of a Control Room fire, via remote transfer switches. Service water valve (SW-V-48) for Diesel Generator Division II Cooling was found to have a similar problem. These isolation problems have also been encountered with control circuits for closing of some non Appendix "R" circuit breakers: (RHR-CB-P2C, E-CB-8/85, CRD-CB-P/1B, E-CB-B/8, E-CB-B/3, RCC-CB/P/1B, RCC-CB-P/1C, E-CB-CCH/CR/1B, REA/CB/FN/1B, ROA/CB/FN/1B, TSW/CB/P/1B, E-CB-85/82, TMU-CB-P/1B, TMU-CB-P/1C). These circuit breakers feed equipment which is not required for the operation of the Appendix "R" safe shutdown systems. However, their spurious connection to the Diesel Generator Division II Supplied Vital Bus could cause an overload condition and result in failure of Diesel Generator Division II which is required for safe shutdown of the Plant.
- o 11/18/85 - An engineering study revealed that Service Water Pump (SW-P-1B) could fail due to fire in the Reactor Building which could damage circuit breaker control cables. This system is required for safe shutdown of the Plant.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OWS NO 3150-0104
EXPIRES 8/31/86

FACILITY NAME (1)

DOCKET NUMBER (2)

LER NUMBER (3)

PAGE (3)

YEAR SEQUENTIAL
NUMBER REVISION
NUMBER

Washington Nuclear Plant - Unit 2

0 5 0 0 0 3 9 7 8 4 - 0 3 1 - 0 6 0 3 OF 0 7

TEXT (If more space is required, use additional NRC Form 364A's) (17)

Abstract (Cont'd)

- o 1/15/86 - An engineering study revealed that Service Water Flow instruments for Control Room indication (SW-FI-9A and SW-FI-9B) could fail due to a fire in the exclusion area of the Cable Spreading Room. (SW-FI-9B) has been determined as part of minimum required instrumentation for safe shutdown of the Plant.

All conditions noted through the 1/31/85 event have been corrected, including three cables discovered on 8/30/85. Engineering direction has been obtained for the deficiencies found on 5/2/85, 6/24/85, 11/8/85, 11/18/85 and 1/15/86. All cables outside the main control room were immediately placed on an hourly fire watch patrol pending correction of the condition.

Plant Conditions

	<u>Event 1</u>	<u>Event 2</u>	<u>Event 3</u>	<u>Event 4</u>	<u>Event 5</u>	<u>Event 6</u>
a) Power Level -	1%	95%	80%	100%	0%	54%
b) Reactor Mode -	2	1	1	1	4	1
	<u>Event 7</u>	<u>Event 8</u>	<u>Event 9</u>	<u>Event 10</u>		
a) Power Level -	0%	72%	39%	71.2%		
b) Reactor Mode -	4	1	1	1		

Event

On 4/12/84, a review and update of the original 10CFR50 Appendix "R" Safe Shutdown Analysis identified a total of ten (10) cables which connected circuits necessary for safe Plant shutdown that should have been protected (cable raceways with Thermolag fire protection coating) from an exposure to fire but were not. Nine (9) of the cables were added after the original analysis was complete. One cable was inadvertently missed by the original analysis.

Failure to protect these cables could have resulted in the loss of ability to safely shutdown the plant following a fire. These cables provided necessary indication and control for the Diesel Generator, Standby Service Water, Residual Heat Removal (RHR), and Reactor Building HVAC Systems.

Subsequent to 4/12/84, a second independent review was initiated which is now complete. This review had identified the following deficiencies to date:

On 11/6/84, a cable was identified that was not protected from fire over a 15 ft. length of vertical cable tray. Failure of this cable could have resulted in a loss of ability to isolate the reactor following a fire. This cable provided an isolation signal to a 1" RHR bypass valve (RHR-V-123A). All portions of this cable except the 15 ft. length mentioned above, were protected as a result of the original analysis.



LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO 3150-0104

EXPIRES 8/31/85

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Washington Nuclear Plant - Unit 2	0500039784	84	031	06	04	OF	07

TEXT (If more space is required, use additional NRC Form 304A-2 (17))

Event (Cont'd)

On 12/5/84, four (4) additional cables which required protection were identified. Three (3) cables required the addition of thermolag coating to their associated conduits. The fourth cable required the inclusion of a transfer switch in the circuit to provide electrical isolation from the Main Control Room under conditions where a fire exists in the main control room. These four (4) cables connect circuits necessary for safe Plant shutdown and should have been protected from exposure to fire, but were not. The cables provided necessary control and indication for the Diesel Generator, Standby Service Water, Residual Heat Removal and Reactor Building HVAC Systems.

On 12/21/84, an additional cable was identified which required the inclusion of a transfer switch in the circuit to provide electrical isolation from the Main Control Room. The circuit affected provides control functions for the Division 2 Emergency Diesel Generator. A fire in the Main Control Room has the potential to damage this cable such that a trip of the diesel generator output breaker will occur.

On 1/31/85, eleven (11) additional cables were identified which required the inclusion of a transfer switch in their circuits to provide electrical isolation from the main control room. The circuits affected provide control functions for Reactor Building HVAC fans RRA-FN-10, RRA-FN-14, Main Control Room fan WMA-FN-32B, and Critical Switchgear Area Supply Fan WMA-FN-53B. A fire in the Main Control Room has the potential to damage cables associated with these fans and render the fans inoperable. This could result in a failure of equipment that has been identified as necessary for safe shutdown of the Reactor.

On 5/2/85, thirty (30) additional cables were identified which require the addition of a transfer switch in their circuits to provide electrical isolation from the Main Control Room. This discovery affected a number of electrical distribution circuit breakers (CB's) in the safe shutdown power supply path. 4KV circuit breakers E-CB-B8, -3/8, -8/81, -8/83-8/DG2 and DG2/8 were found to lack total control room isolation capability. 4KV circuit breakers for RHR pump 2B (RHR-P-2B) and Service Water (SW) system pump 1B (SW-P-1B) were also found without total control isolation capability. At the same time, the 24 volt instrument power supply for SW-P-1B discharge pressure indicator (SW-PI-32BR) was observed to require remote transfer switch isolation capability. A control room fire may have rendered these circuits inoperable.

On 6/24/85 additional cables were identified which require addition of a transfer switch in their circuits to provide electrical isolation from the main control room. The equipment affected included the Division 2 Diesel Generator. A fire in the main control room has the potential to damage these cables and render the diesel generator inoperable.



LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO 3150-0104

EXPIRES 8/31/85

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (3)				PAGE (3)			
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER					
Washington Nuclear Plant - Unit 2	0500039784	—	031	—	060	5	7		

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

Event (Cont'd)

On 8/30/85 three (3) cables associated with RHR and Reactor Building HVAC Systems were discovered to have been erroneously reported as completed on Revision 4 of LER 84-031. These cables were pulled into conduits and spliced during the Spring 1985 Outage. In violation of the Maintenance Work Request Procedure, the operability retest portion of the work request was returned in order to perform operability retesting after the cables were spliced prior to conclusion of the thermolagging activity. This resulted in this Maintenance Work Request (MWR) being statused as field work complete in the tracking system. The contractor group responsible for completion of the thermolagging was aware that the work effort was not complete, but a miscommunication resulted in the Plant Technical Staff believing that the entire work activity was complete. A brief walkdown was conducted and resulted in a confirmation of the completed work status. The items associated with the work request were then erroneously removed from the fire watch patrol list. Upon discovery of the error, the three (3) cables were immediately replaced on the hourly fire watch patrol list. Thermolagging of these cables was completed prior to the 10/18/85 date mentioned in Rev. 5 of this LER.

On 11/8/85 the ongoing Appendix "R" review, (which was performed by WHP-2 Engineering Department staff as identified in the corrective action of this LER) revealed: Separation between the control switches for two series high to low pressure system interface valves (RHR-V-53A and RHR-V-123A) was not sufficient to preclude hot shorts from opening both valves simultaneously and failing the low pressure safe shutdown system during a Control Room fire. One end of the auto circuit for service water valve (SW-V-4B) was not isolated from the effects of a Main Control Room fire. A short to ground of control cables could cause loss of emergency control power and cause this valve to fail in the shut position prior to bringing the emergency generator for Division II on line. These problems have the potential to fail safe shutdown required equipment. A Main Control Room fire could also cause the spurious closing of various non Appendix "R" circuit breakers including; RHR-CB-P/2C, E-CB-8/85, CRD-CB-P/1B, E-CB-B/8, E-CB-B/3, RCC-CB-P/1B, RCC-CB-P/1C, E-CB-CCH/CR/1B, REA-CB-FN/1B, ROA-CB-FN/1B, TSW-CB-P/1B, E-CB-85/82, TMU-CB-P/1B, TMU-CB-P/1C. These breakers connect equipment which is not required for the operation of the Appendix "R" safe shutdown systems. However, spurious connection to the Diesel Generator Division II Supplied Emergency Bus would cause an overload condition for the Appendix "R" safe shutdown Diesel Generator (DG-2).

On 11/18/85 the ongoing Appendix "R" review revealed: A fire in the Reactor Building could fail control cables for the circuit breaker for Service Water Pumps, 1B (SW-CB-P/1B) by opening the control circuit fuses. This event could disable the Division II Appendix "R" required safe shutdown system due to loss of cooling water supply to equipment required for achieving a safe reactor shutdown.



LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO 3150-0104

EXPIRES 8/31/85

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 4	0 3 1	0 6	0 6	0 7	

TEXT (If more space is required, use additional NRC Form 306A's) (17)

Event (Cont'd)

On 1/15/86 the ongoing Appendix "R" review discovered that service water flow instruments for Control Room indication (SW-FI-9A and SW-FI-9B) could fail due to a fire in the exclusion area of the Cable Spreading Room. This fire could simultaneously fail both redundant instruments. The Division II instrument has (SW-FI-9B) (Service Water Flow Indicator 9B) been identified as part of minimum required instrumentation for safe shutdown of the Plant.

Immediate Corrective Action

- o Upon identification, each area outside the Main Control Room was included on the Plant fire watch tour. The Main Control Room is continuously manned and was therefore not added to the fire watch tour.

Further Corrective Action

- o All deficiencies identified up to and including those associated with the 1/31/85 event have been corrected and are no longer included on the hourly fire watch tour, except 3 cables as stated in the 8/30/85 portion of this report. Thermolagging for these cables was corrected by 10/18/85, and these circuits required for safe shutdown now meet the requirements of 10CFR50 Appendix "R".
- o Instructions on how to add/delete items to the fire watch log have been communicated to personnel of all departments.
- o The procedural requirements and expectations for appropriate action involving completeness of work on MWR's was communicated to contractor management and field personnel.
- o Plant Modification Records (PMRs) have been generated and Engineering direction has been obtained for correcting the conditions noted on 5/21/85, 6/24/85, 11/8/85, 11/18/85, and 1/15/86.
- o The control room evacuation procedure has been modified to reflect interim compensatory measures, which may be implemented locally and are designed to overcome any possible affects of a control room fire. These measures will remain in effect until Plant Modifications referenced below to correct the discrepancies are completed.
- o Engineering has completed the review of the Appendix "R" Safe Shutdown Analysis. It had been anticipated that this review would be complete by 4/30/85, but since individuals performing the review were also providing engineering direction, it was necessary to redirect engineering efforts to prepare PMR's for correcting identified deficiencies. All Engineering directions to remedy the deficiencies found during this extensive review have been completed and the implementation of these directions is expected to be completed by the end of the spring (R-1) refueling outage.



LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMS NO. 3150-0104

EXPIRES: 8/31/88

FACILITY NAME (1)

DOCKET NUMBER (2)

LER NUMBER (3)

PAGE (3)

Washington Nuclear Plant - Unit 2

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TEXT (If more space is required, use additional NRC Form 388A-1 (17))

Further Corrective Action (Cont'd)

- o The latest revision of the Maintenance Work Request procedure has remedied the possibility of the 8/30/85 event recurring, since the operability retesting documentation is printed as part of the original work document, rather than attached separately.

Safety Significance

WNP-2 experienced no fires in these areas. The Reactor Building and Main Control Room Fire Detection Systems remained operable throughout the interval, and additional fire watch tours were performed on a routine basis.

The potential effects of the condition discovered on 8/30/85 are minimized by the fact that the area in which the 3 affected cables were located remained on the fire watch due to other requirements throughout the period that the cables were specifically removed as a fire watch item. The health and safety of the public and plant personnel was not affected by this event.

Similar Events

See 85-023

EIIS InformationEIIS ReferenceText ReferenceSystemComponent

RHR-P-2B
RHR-V-123A
RRA-FN-10, -14
WMA-FN-52B, -53B
E-CB-B8, -3/8, -8/81, -8/83,
-8/DG2, -DG2/8
SW-P-1B
SW-PI-32BR
SW-V-216, -217
SW-FI-9A
SW-FI-9B

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