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AUTH.NAME	AUTHOR AFFILIATION		
LEWIS,K.B.	Washington Public Power Supply System		
PARRISH,J.V.	Washington Public Power Supply System		
RECIP.NAME	RECIPIENT AFFILIATION		

SUBJECT: LER 94-021-00:on 941123,holes cut in MCR floor penetration  
5016 precludes redundant emergency fans WMA-FN-54A(B) from  
pressurizing CR sufficiently to meet applicable  
surveillance.Holes resealed on 941123.W/941222 ltr.

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WASHINGTON PUBLIC POWER SUPPLY SYSTEM

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December 22, 1994  
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Docket No. 50-397

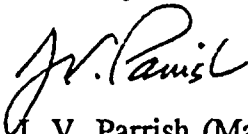
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**Subject: NUCLEAR PLANT WNP-2, OPERATING LICENSE NPF-21  
LICENSEE EVENT REPORT NO. 94-021-00**

Transmitted herewith is Licensee Event Report No. 94-021 for the WNP-2 Plant. This report is submitted in response to the reporting requirements of 10CFR50.73 and discusses the items of reportability, corrective action taken, and action taken to preclude recurrence.

Should you have any questions or desire additional information, please call me or D.A. Swank at (509) 377-4563.

Sincerely,



J. V. Parrish (Mail Drop 1023)  
Assistant Managing Director, Operations

JVP/KBL/mky  
Enclosure

cc: LJ Callan, NRC-RIV  
KE Perkins, Jr., NRC-RIV, Walnut Creek Field Office  
NS Reynolds, Winston & Strawn  
NRC Sr. Resident Inspector (Mail Drop 927N; 2 Copies)  
INPO Records Center - Atlanta, GA  
DL Williams, BPA (Mail Drop 399)

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# LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)

Washington Nuclear Plant - Unit 2

DOCKET NUMBER (2)

0 | 5 | 0 | 0 | 0 | 3 | 9 | 7

PAGE (3)

1 OF 6

TITLE (4)

HOLES CUT IN MAIN CONTROL ROOM FLOOR PENETRATION 5016 PRECLUDES  
REDUNDANT EMERGENCY FANS WMA-FN-54A(B) FROM PRESSURIZING THE CONTROL  
ROOM SUFFICIENTLY TO MEET THE APPLICABLE SURVEILLANCE

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 NUMBERS(S)		
1	1	2	3	9	4	9	4	0	2	1	0	0	1	2	2	2	9	4							0	5	0	0	0	3	9	7

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)

1	0	0	20.402(b)	20.405(c)	50.73(a)(2)(iv)	77.71(b)
			20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.73(c)
			20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract
			20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	below and in Text, NRC
			20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	Form 366A)
			20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME		TELEPHONE NUMBER										
Kurt B. Lewis, Licensing Engineer		AREA CODE										
		5	0	9	3	7	7	-	4	1	4	5

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)

EXPECTED SUBMISSION  
DATE (15)

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ABSTRACT (16)

At 0935 hours on November 23, 1994, with the plant at 100 percent power, an investigation determined that a flow path created by a barrier impairment in the control room floor to the cable spreading room in penetration 5016 located under control room instrument panel H13-P682 prevented emergency fan unit WMA-FN-54B from pressurizing the main control room sufficiently to meet Technical Specification Surveillance (TSS) procedure PPM 7.4.7.2.8 "Control Room Ventilation Pressurization Flow Test" performed at 0300 hours that same morning. The barrier impairment consisted of two 5" X 6" holes, which were opened on November 22, 1994, for routing conduit associated with a "reactor recirculation pump adjustable speed drive" plant modification. By 1045 hours, the holes were resealed and pressurization capability of redundant emergency fans WMA-FN-54A(B) was verified. Root cause analysis indicated that the work planning procedure was deficient because it did not provide adequate guidance for assessing the need for a barrier impairment. Corrective actions included improving guidance contained in the applicable procedures. WNP-2 acknowledges that this event would have prevented both redundant emergency fans WMA-FN-54A(B) from pressurizing the control room sufficiently to meet the surveillance requirement; however, an Engineering assessment of surveillance test results determined that the control room would still have been amply pressurized to prevent infiltration of air during a postulated accident involving a radioactive release. Therefore, this event had no safety significance.

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 (8)			PAGE (3)		
		Year	Number	Rev. No.			
		94	021	00	2	OF	6
TITLE (4) HOLES CUT IN MAIN CONTROL ROOM FLOOR PENETRATION 5016 PRECLUDES REDUNDANT EMERGENCY FANS WMA-FN-54A(B) FROM PRESSURIZING THE CONTROL ROOM SUFFICIENTLY TO MEET THE APPLICABLE SURVEILLANCE							

### Event Description

At 0935 hours on November 23, 1994, with the plant at 100 percent power, an investigation determined that a flow path created by a barrier impairment in the control room floor to the cable spreading room in penetration 5016 [PEN] located under control room instrument panel H13-P682 [PL] prevented emergency fan unit WMA-FN-54B [VH, FAN] from pressurizing the main control room sufficiently to meet Technical Specification Surveillance (TSS) procedure PPM 7.4.7.2.8 "Control Room Ventilation Pressurization Flow Test" performed at 0300 hours that same morning. The barrier impairment consisted of two 5" X 6" holes, which were opened on November 22, 1994, for checking conduit routing associated with a "reactor recirculation pump adjustable speed drive" plant modification. Although the associated work package required implementing a fire impairment for the penetration, the package did not require a barrier impairment ensuring the integrity of the control room pressure boundary.

The surveillance was being performed to verify WMA-FN-54B operability following completion of corrective maintenance on main control room air handler WMA-AH-51B [VH, AHU]. A missing door gasket associated with the air handler had rendered WMA-FN-54B inoperable (LER 94-019-00); thus, once the gasket was replaced (November 22, 1994), Operations was attempting to verify WMA-FN-54B operability during the 0300 hour surveillance.

### Immediate Corrective Action

Once the problem was identified at 0935 hours, the craft immediately resealed the holes in penetration 5016, and by 1045 hours on November 23, 1994, Operations tested and verified control room pressurization capability for both emergency fans WMA-FN-54A(B) [VH, FN]. Personnel performed a walkdown of other main control room floor penetrations to ensure similar problems did not exist. Additionally, the Production Scheduling Manager verbally communicated plant management's expectation to plant maintenance organizations that penetration work or barrier work affecting the control room, Secondary Containment, the Technical Support Center, and the Emergency Operations Facility boundaries, be stopped. The Production Scheduling Manager also verbally communicated that work would not recommence until an evaluation was done on each task to ensure the task met the requirements for maintaining the barrier or mitigating the breach.

After the test of both fans, a followup operability assessment was performed, and from the assessment, it was determined that both redundant emergency fans WMA-FN-54A(B) were inoperable as a result of the holes cut in penetration 5016. Now realizing that the plant had actually been in a Technical Specification (TS) 3.0.3 condition and that a plant shutdown had actually been warranted, WNP-2 reported this condition (late on November 23rd) to the NRC under 10CFR72.(b)(1)(i)(a) TS required plant shutdown.

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 (8)			PAGE (3)		
		Year 9   4	Number 0   2   1	Rev. No. 0   0			
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### Further Evaluation

Penetration 5016 was inoperable at the time of this event and caused this event to occur.

The engineering design change package provided information needed to route and support the conduits, pull and terminate the cables and seal each conduit penetration. Seal control forms completed by Engineering (and incorporated as part of the design package) provided the information for penetration seal requirements. The form identified the seal requirements for penetration 5016 as Three-Hour Fire and Air Flow. Root cause investigation verified that planners are familiar with fire impairment requirements and use this specific information to identify the need to address those requirements. However, no guidelines existed for explaining the term "Air Flow" to aid the planner in determining the impact of Air Flow seal requirements on system operability.

The adequacy of information provided in Engineering design change packages was assessed. In older design change packages such as the one involved in this event, information required to assess impact on equipment related to safety during installation needed improvement. However, recent changes to procedure PPM 1.4.1 "Plant Modifications" require design change packages to include guidance on installation, testing, and operational considerations. Additionally, the 50.59 evaluation in the design change package is now more rigorous, as it is now required to address these considerations, too.

Work planner instructions were reviewed. Work planners use procedure PPM 1.3.7D "Work Planning" to prepare detailed work packages for use by the craft in the field in performing their work. Although this procedure provides steps that direct the planner to prepare an Impact Statement and/or a Barrier Impairment Log Sheet, the planner involved did not recognize that the work being planned required these special considerations. Planners have not been required to have the level of training needed to identify the requirements of these two steps.

Work implementation approvals were reviewed. The work instructions required the craft to obtain fire impairment permits prior to performing conduit installation. They did so through the Shift Support Supervisor (SSS). As required, the craft then sought and obtained Control Room Supervisor (CRS) approval to perform the work. The CRS was assured that the craft had the required paperwork, and upon assurance, the CRS approved beginning the work. The SSS issues Barrier Impairment Log Sheets. The SSS later said that he recognized that the control room floor would be penetrated, but he thought the conduit installation would require a small hole that would not impair it. In the past, the installation of conduit through a control room penetration has been completed successfully, based on engineering analysis and 50.59 evaluation without impacting operability. Thus, based on past experience, the CRS and the SSS incorrectly concluded that conduit could be installed through penetration 5016 without impacting the control room emergency ventilation operability.



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 (8)			PAGE (3)		
				Year	Number	Rev. No.			
				9   4	0   2   1	0   0	4	OF	6
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Various procedural instructions relating to seals and impairments were reviewed for adequacy; results follow:

- 1) PPM 1.3.7D "Work Planning" does not contain sufficient guidance to ensure the planner identify that a credited function could be affected by planned work on a barrier and of the potential need for additional actions. In turn, if this guidance regarding barrier impairment were provided, the planner would be able to better communicate these needs to the Production Shift Manager whose job function presently requires Senior Reactor Operator qualifications. With this information, the Production Shift Manager would be in a better position to properly evaluate the impact on credited functions.
- 2) PPM 1.3.57 "Barrier Impairment" is provided to establish a method for tracking impairment of barriers and for evaluating impact on affected safety system operability. The barrier involved in this event deals with radiation ingress to the control room. This procedure lists two barriers to mitigate radiation release events: secondary Containment and Main Steam Tunnel penetrations. It does not provide clear guidance on control room envelope barriers.
- 3) PPM 15.4.5 "Penetration Fire Seal Maintenance and Inspection" provides instructions for installation and repair of fire-rated and nonfire-rated penetration seals. Additionally, this procedure contains the form and controls the seal requirements used by Engineering to control work on penetrations. This procedure requires enhancement in that it needs to explain the meaning of the seal requirements listed on the form and needs to reference PPM 1.3.57 to ensure impairments to credited barriers are considered.
- 4) The following procedures do not advise the user to review PPM 1.3.57 "Barrier Impairment" to determine if planned work could impair a credited barrier:

PPM 1.3.10 "Fire Protection System Program" which provides compensatory measures required in the event of a fire protection system barrier or component impairment.

PPM 10.25.57 "Electrical Raceway Installation" which provides installation and inspection criteria for electrical raceway and supports in seismic Category I and II areas.

#### Root Cause

The root cause of this event was that PPM 1.3.7D "Work Planning" did not sufficiently guide the planner in identifying that his work could affect equipment related to safety. Additionally, several other procedures were identified as needing similar revision.

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FACILITY NAME (1)  Washington Nuclear Plant - Unit 2	DOCKET NUMBER (2)  0   5   0   0   0   3   9   7	LER NUMBER (8)			PAGE (3)		
		Year 9   4	Number 0   2   1	Rev. No. 0   0			
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### Further Corrective Action

1. PPM 15.4.5 will be revised to explain the meaning of the seal requirements listed on the Seal Control Form. This procedure will also be revised to reference PPM 1.3.57 to help users determine if seal work could also impair credited barriers. These revisions will be completed by January 6, 1995.
2. PPM 1.3.7D will be revised to help planners identify that a credited function could be affected by planned work and that the need for the following may apply: 1) additional specialized help may be required to evaluate impact on credited barriers, 2) use of Barrier Impairment Log Sheets, and 3) the work order Impact Statement needs to be completed to identify the critical work to the Production Shift Manager so work can be appropriately authorized. The procedure will also be revised to emphasize the need for the planners to identify barrier impairments in the Impact Statement. These revisions will be completed by January 6, 1995.
3. Operations training on barrier impairments will be presented to include a review of Operations Department responsibilities associated with managing impairments and the applicable procedure changes made as a result of this event. This training will be completed by March 1, 1995.
4. The Engineering Staff Support training department will conduct training for appropriate engineering staff to review the applicability of PPM 1.3.57. Work planning personnel will also attend this training. This training will be completed by March 28, 1994.
5. PPM 1.3.57 will be revised to include the control room envelope as part of the barrier impairment evaluation criteria. This procedure will additionally be clarified to help the user understand its applicability. These revisions will be completed by January 6, 1995.
6. PPM 1.3.10 and PPM 10.25.57 will be revised to reference PPM 1.3.57 to aid users in determining if seal work could also impair credited barriers. These revisions will be completed by January 6, 1995.
7. By January 10, 1995, training sessions will have been conducted with the following organizations to ensure personnel understanding of the procedure revisions implemented to avoid a recurrence of this event: engineering, maintenance, operations, work planning, quality assessment, and the plant contractor.





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 (8)			PAGE (3)		
		Year	Number	Rev. No.			
		94	021	010	6	OF	6
TITLE (4) HOLES CUT IN MAIN CONTROL ROOM FLOOR PENETRATION 5016 PRECLUDES REDUNDANT EMERGENCY FANS WMA-FN-54A(B) FROM PRESSURIZING THE CONTROL ROOM SUFFICIENTLY TO MEET THE APPLICABLE SURVEILLANCE							

8. Night Orders were issued to Operations crews on December 16, 1994 to discuss how cutting the holes in penetration 5016 impacted the ability of the HVAC system to pressurize the control room. Corrective actions addressing this concern were discussed, and it was emphasized to the crews that until the corrective actions are fully implemented, extra care must be taken in authorizing seal removal and barrier penetration. It was pointed out that as a minimum, these authorizations should be preceded by contacting the appropriate Technical Services engineer and discussing the potential impact and compensation methods required.

#### Safety Significance

Two remote fresh-air intakes serving either of two redundant emergency filter units [VH, FLT] and associated emergency fans (WMA-FU-54A(B) and WMA-FN-54A(B) respectively) are provided to pressurize the main control room. This limits infiltration of radioactive contaminants or smoke within the plant but external to the control room. During a Loss Of Coolant Accident (LOCA), a protection signal automatically isolates the normal control room ventilation system and initiates emergency pressurization of the control room.

The Supply System has assessed this event as having no safety significance. The main control room is located on the 501 Elevation of the Radwaste Building. Technical Specification 4.7.2.e.2 requires that each emergency fan be capable of pressurizing the main control room to 0.125 inches of water column with respect to adjacent areas to prevent unfiltered inleakage. During performance of PPM 7.4.7.2.8 (with the barrier impaired), WMA-FN-54B pressurized the control room to approximately 0.12 inches of water column. This value is adequate to preclude infiltration of air into the control room during a LOCA. Once penetration 5015 was resealed, Operations tested and verified that both emergency fans WMA-FN-54A(B) met the surveillance requirement.

#### Similar Events

There are no reported LERs in which the control room pressure boundary was breached. However, because of the lack of guidance in procedures, there may have been past work performed that did breach this boundary but went unrecognized. The current configuration does meet the control room pressurization requirements. A rigorous set of corrective actions have been implemented in response to this event to prevent recurrence.

Although LER 92-012 did not report an event which involved the control room pressure boundary, it did discuss an event in which Residual Heat Removal System [BO] access plugs were not installed. Corrective actions for this event included developing procedure PPM 1.3.57 "Barrier Impairment." This procedure did not include the control room pressure boundary as part of its criteria. However, LER 94-021-00 corrective actions have revised this procedure to include the pressure boundary as part of its criteria.

