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 AUTH.NAME AUTHOR AFFILIATION
 FIES,C.L. Washington Public Power Supply System
 BAKER,J.W. Washington Public Power Supply System
 RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 90-032-00:on 901211,plant sys engineer discovered cross connection between reactor bldg exhaust air sys & sanitary drain sys in reactor bldg.Caused by design deficiency. Mechanical seal installed.W/910107 ltr.

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WASHINGTON PUBLIC POWER SUPPLY SYSTEM

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

Docket No. 50-397

January 7, 1991

G02-91-004

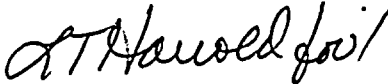
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Washington, D.C. 20555

Subject: NUCLEAR PLANT NO. 2
LICENSEE EVENT REPORT NO. 90-032

Dear Sir:

Transmitted herewith is Licensee Event Report No. 90-032 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,



J. W. Baker (M/D 927M)
WNP-2 Plant Manager

JWB:lr

Enclosure:
Licensee Event Report No. 90-032

cc: Mr. John B. Martin, NRC - Region V
Mr. C. Sorensen, NRC Resident Inspector (M/D 901A)
INPO Records Center - Atlanta, GA
Mr. D. L. Williams, BPA (M/D 399)
NRC Resident Inspector - walk over copy

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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				PAGE (3) 1 OF 0 4		
TITLE (4) Unanalyzed Secondary Containment Leakage Path Caused by Sanitary Drain Piping																
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)			
7	2	1	9	0	3	2	0	1					0 5 0 0 0			
OPERATING MODE (1)		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)				20.405(c)				50.73(a)(2)(iv)				73.71(b)		
4 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)(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 C. L. Fies, Compliance Engineer										TELEPHONE NUMBER AREA CODE 5 0 9 3 7 7 - 2 0 3 9						
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						
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 December 11, 1990 a Plant System Engineer discovered a cross-connection between the Reactor Building Exhaust Air (REA) System and the Plant Sanitary Drain (PSD) System in the Reactor Building (Secondary Containment). This cross-connection resulted in one of the principal safety barriers (Secondary Containment) being in a degraded condition. If the RHR "B" pump room were to flood under postulated accident conditions this could allow a release through the REA vent line from the FDR Sump (FDR-SUMP-R2), through the cross-connection, and out to the PSD System.

The root cause of this event was a design deficiency. The Architect Engineer's design control program did not discover the Secondary Containment Leakage path.

Immediate corrective action was taken to install a mechanical seal in the Plant Sanitary Drain (PSD) line eliminating the Secondary Containment bypass leakage path. Further corrective action will be taken to remove the cross-connection.

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: 60.0 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	LER NUMBER (6)			PAGE (3)		
		YEAR 9 0	SEQUENTIAL NUMBER — 0 3 2	REVISION NUMBER — 0 0 0		OF	0 4

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

Plant Conditions

Power Level - 40%
Plant Mode - 1

Event Description

On December 11, 1990 a Plant System Engineer discovered a cross-connection between the Reactor Building Exhaust Air (REA) System and the Plant Sanitary Drain (PSD) System in the Reactor Building (Secondary Containment). This cross connect resulted in one of the principal safety barriers (Secondary Containment) being in a degraded condition. At WNP-2 the Reactor Building Radioactive Floor Drain (FDR) System drains each floor of the building into four sumps in the basement of the structure at the 422 foot level. These sumps are vented through a Sump Vent Exhaust Filter Subsystem (a part of the REA System) which maintains a small air flow (80 CFM) from each sump to minimize the possibility of airborne release. The Reactor Building PSD System provides a drain for the toilet on the upper floor (606 foot level) of the Reactor Building. This four inch PSD drain line exits the Reactor Building at the 439 foot level and connects into the Plant Sanitary Drains serving other parts of the facility. The cross connect between the two systems occurred at approximately the 440 foot level of the Reactor building where the PSD System was vented to the REA System by a two and one-half inch line. This cross connect was located in the vent line for the FDR Sump (FDR-SUMP-R2) in the Residual Heat Removal (RHR) "B" Pump Room located in the Southwest corner of the Reactor Building. Under the as found condition a potential Secondary Containment bypass leakage path existed through the PSD System. This could occur if the RHR "B" pump room were to flood under postulated accident conditions. Calculation 5.51.055 postulates a flooding level of 454 feet in this pump room. A water level above 440 would allow liquid to flow through the vent line from the sump, through the cross-connection, and out to the PSD System.

Immediate Corrective Action

A mechanical seal was installed in the Plant Sanitary Drain (PSD) line eliminating the Secondary Containment bypass leakage path.

Further Evaluation and Corrective ActionA. Further Evaluation

1. This event is being reported per the requirements of 10CFR50.73(a)(2)(ii) as ".... an event or condition that resulted in the condition of the nuclear power plant, including its principal safety barriers, being seriously degraded...." This event was previously reported on the Emergency Notification System (ENS) under 10CFR50.72(b)(1)(ii) as a one hour reportable event at 1723 hours on December 11, 1990.

LICENSEE EVENT REPORT (LER)
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FACILITY NAME (1)

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YEAR

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NUMBER

Washington Nuclear Plant - Unit 2

0 5 0 0 0 3 9 7

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

2. The root cause of this event was a design deficiency. The cross-connection was designed into the plant by the Architect-Engineer. It is not clear why a cross-connection is provided at the 440 foot level in addition to the PSD vent provided at the 617 foot level. Further, the A/E's design control program did not discover this Secondary Containment leakage path.
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. A walkdown of the Reactor Building (Secondary Containment) Sanitary and Roof Drain Systems was performed to identify any additional bypass paths. (The walkdown was limited to these two drain systems since a Plant Design Review had recently been completed involving penetrations and other systems-see Similar Events below.) No additional paths with credible flooding events were identified. The walkdown did discover Miscellaneous Drain Valve 102 (MD-V-102) in an open position. This is a three inch valve located at the 572 foot Level of the Reactor Building and is used to drain water from the Standby Gas Treatment (SGT) deluge valves to the Roof Drain (RD) System. With MD-V-102 open a path existed through Secondary Containment to the outside atmosphere. Corrective action was taken to close the valve and, in addition, MD-V-102 was added to the Secondary Containment Integrity Surveillance Procedure (PPM 7.4.6.5.1.1) which requires verification of position on a 30 day frequency.
2. The cross-connection between the REA System and the PSD System at the 440 foot level of the Reactor Building will be removed.

Safety Significance

1. The design basis accident mitigation function of the Secondary Containment Structure is to provide a volume which allows the Standby Gas Treatment (SGT) System to filter and provide a controlled release point for any radioactivity that may be generated. Surveillance tests are performed periodically to verify the ability of the SGT System to draw down the Secondary Containment to greater than or equal to 0.25 inches of vacuum water gauge. These tests have been completed successfully even with the cross-connection and MD-V-102 in an open position. Therefore, the design basis function of the Secondary Containment has not been impacted by this event.
2. An item of concern for this event is a Residual Heat Removal (RHR) suction line break postulated to drain the Suppression Pool into the RHR "B" pump room as described in Calculation 5.51.55. This would flood the room up to the 454 foot level (where the suppression pool and RHR "B" rooms have water of equal height) approximately fourteen feet above the point where the FDR and PSD Systems were cross connected. With the cross connect in place when the water level reached

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440 feet in the RHR "B" pump room it would slowly begin to drain out through the PSD System. The lowering of the suppression pool level below 454 feet would impact the minimum NPSH required by the ECCS Pumps. However, the drain down through the two and one-half inch cross connect line would be slow allowing time for operator action to manually close the isolation valve (RHR-V-4B). In addition, the release would be limited to the relatively clean water in the suppression pool.

- Another accident scenario that would be impacted by the cross connect is the ECCS passive failure during long-term cooling following a LOCA. This accident is discussed in the FSAR in response to Question Q.212.003. This accident postulates a 23 GPM Pump seal leak which could be postulated to occur in the "B" RHR Pump. This would be a slow event and would be detected by the Safety related Leak Detection devices installed in the pump room. Operator action could then be taken to close the isolation valve (RHR-V-4B) to stop the leak.
- Since no flooding events occurred prior to plugging the PSD line, this event posed no threat to the health and safety of plant personnel or the public.

Similar Events

LERs 88-012 and 89-024 discuss events that are related to this LER. A corrective action in 88-012 required a Plant Design Review to identify any potential bypass leakage and unmonitored effluent paths. This effort discovered the bypass leakage path associated with the Control Rod Drive (CRD) System Hydraulic Control Unit (HCU) Control Valves as described in LER 89-024. The results of this evaluation are summarized in Supply System Engineering memo SS2-PE-89-0646 dated June 22, 1989. The cross-connection was not discovered by this review since it was focused on a penetration by penetration evaluation that did not completely review upstream system connections.

EIIS Information

Text Reference

EIIS Reference System Component

Secondary Containment
Reactor Building Exhaust Air System (REA)
Plant Sanitary Drain System (PSD)
Residual Heat Removal System (RHR)
Radioactive Floor Drain Sump (FDR-Sump-R2)
Radioactive Floor Drain System (FDR)
Roof Drain System (RD)
Miscellaneous Drain Valve 102 (MD-V-102)
Standby Gas Treatment (SGT)
RHR "B" Suction Isolation (RHR-V-4B)
Control Rod Drive System (CRD)
Hydraulic Control Unit System (HCU)

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