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SUBJECT: LER 90-014-00:on 900703,HPCS sys pump suction valve
 switchgear actuation on high suppression pool level.

W/9 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

August 2, 1990


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

Subject: NUCLEAR PLANT NO. 2
LICENSEE EVENT REPORT NO. 90-014

Dear Sir:

Transmitted herewith is Licensee Event Report No. 90-014 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. 90-014

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 OF 0 6 PAGE (3)

TITLE (4) High Pressure Core Spray (HPCS) System Pump Suction Valve Switchover
Actuation on High Suppression Pool Level due to Procedural Inadequacy

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	7	03	90	09	01	08	02	90		0 5 0 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)																														
4	<table border="1"><tr><td>20.402(b)</td><td>20.406(c)</td><td>X</td><td>50.73(a)(2)(iv)</td><td>73.71(b)</td></tr><tr><td>20.406(a)(1)(i)</td><td>50.38(c)(1)</td><td></td><td>50.73(a)(2)(v)</td><td>73.71(c)</td></tr><tr><td>20.406(a)(1)(ii)</td><td>50.38(c)(2)</td><td></td><td>50.73(a)(2)(vii)</td><td></td></tr><tr><td>20.406(a)(1)(iii)</td><td>50.73(a)(2)(i)</td><td></td><td>50.73(a)(2)(viii)(A)</td><td>OTHER (Specify in Abstract below and in Text, NRC Form 366A)</td></tr><tr><td>20.406(a)(1)(iv)</td><td>50.73(a)(2)(ii)</td><td></td><td>50.73(a)(2)(viii)(B)</td><td></td></tr><tr><td>20.406(a)(1)(v)</td><td>50.73(a)(2)(iii)</td><td></td><td>50.73(a)(2)(x)</td><td></td></tr></table>	20.402(b)	20.406(c)	X	50.73(a)(2)(iv)	73.71(b)	20.406(a)(1)(i)	50.38(c)(1)		50.73(a)(2)(v)	73.71(c)	20.406(a)(1)(ii)	50.38(c)(2)		50.73(a)(2)(vii)		20.406(a)(1)(iii)	50.73(a)(2)(i)		50.73(a)(2)(viii)(A)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)	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)(x)	
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LICENSEE CONTACT FOR THIS LER (12)		TELEPHONE NUMBER
NAME	AREA CODE	
J. D. Arbuckle, Compliance Engineer	509	377-2115

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
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On July 3, 1990 at 1713 hours while the Plant was shutdown for maintenance, a High Pressure Core Spray (HPCS) System pump suction switchover from the Condensate Storage Tanks to the Suppression Pool occurred due to a Suppression Pool high water level condition.

Plant configuration at the time was such that HPCS suction was lined up to the Condensate Storage Tanks (CSTs) with CST Suction Valve HPCS-V-1 open and Suppression Pool Suction Valve HPCS-V-15 closed, the normal system lineup (reference Figure 1). The switchover, an Engineered Safety Feature (ESF) actuation, was the automatic closure of HPCS-V-1 and the opening of HPCS-V-15.

During the event period, Plant Control Room Operators were monitoring Suppression Pool water level because it had been on a gradual, increasing trend for approximately one and a half days due to Excess Flow Check (EFC) Valve testing that was in progress. The level increase was due to water draining through the Main Steam Safety Relief Valves (MSRVs) during the EFC valve testing. During this period the Suppression Pool high level alarm annunciator had been sealed in [the alarm annunciates at +0.5 inches (0.5 inches above normal pool level)]. When Suppression Pool water volume reached approximately +3.1 inches indicated level, the automatic switchover occurred. The normal setpoint for an automatic transfer on high Suppression Pool level is +5 inches.

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-630), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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

Abstract (contd.)

As an immediate corrective action, Plant Control Room Operators took action to lower Suppression Pool level and then realigned the HPCS suction from the Suppression Pool to the Condensate Storage Tanks (HPCS-V-15 was closed and HPCS-V-1 was re-opened).

The cause of this event is procedural inadequacy in that the annunciator response procedures did not provide sufficient guidance to alert Plant Operators of the possibility of an HPCS suction transfer during Operational Mode 4 (Cold Shutdown).

As further corrective action, the annunciator response procedures will be modified to provide additional guidance and actions for those conditions when an HPCS suction valve switchover could occur.

This event posed no threat to the health and safety of either the public or Plant personnel.

Plant Conditions

Power Level - 0%
Plant Mode - 4 (Cold Shutdown)

Event Description

On July 3, 1990 at 1713 hours a High Pressure Core Spray (HPCS) System pump suction switchover from the Condensate Storage Tanks to the Suppression Pool occurred while the Plant was shutdown for maintenance. The switchover occurred as the result of a Suppression Pool high water level condition.

Plant configuration at the time was such that HPCS suction was lined up to the Condensate Storage Tanks (CSTs) with CST Suction Valve HPCS-V-1 open and Suppression Pool Suction Valve HPCS-V-15 closed, the normal system lineup (reference Figure 1). The switchover, an Engineered Safety Feature (ESF) actuation, was the automatic closure of HPCS-V-1 and the opening of HPCS-V-15.

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.

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

During the event period, Plant Control Room Operators were monitoring the Suppression Pool water level because it had been on a gradual, increasing trend for approximately one and a half days due to Excess Flow Check (EFC) Valve testing that was in progress. The level increase was due to water draining through the Main Steam Safety Relief Valves (MSRVs) during the EFC valve testing. During this period the Suppression Pool high level alarm (annunciator) had been sealed in. [the alarm annunciates at +0.5 inches (0.5 inches above normal pool level)]. Plant Control Room Operators continued to monitor the level increase; however, when Suppression Pool water volume reached approximately +3.1 inches indicated level, the automatic switchover occurred. The Suppression Pool high level trip setpoint which would automatically cause a suction transfer is +5 inches. However, because the tolerance band (accuracy) for the level instrumentation is plus or minus two inches, the automatic switchover could occur as low as +3 inches or as high as +7 inches. Therefore, with the setpoint that actually existed, the suction transfer occurred at the low end of the instrument tolerance band, instead of the automatic suction valve transfer setpoint of +5 inches.

Although the switchover was unexpected, the closure of HPCS-V-1 and the opening of HPCS-V-15 was by Plant design. Plant Control Room Operators took action to lower Suppression Pool level and, at 1028 hours on July 5, 1990, the system was restored to the pre-event lineup status.

Immediate Corrective Action

Plant Control Room Operators responded in an appropriate and timely manner by taking action to lower Suppression Pool level and realigning the HPCS Suction from the Suppression Pool to the Condensate Storage Tanks (HPCS-V-15 was closed and HPCS-V-1 was re-opened).

Further Evaluation and Corrective ActionA. Further Evaluation

1. This event is reportable under 10CFR50.73(a)(2)(iv) as an event or condition that resulted in manual or automatic actuation of any Engineered Safety Feature.
2. There were no structures, systems or components that were inoperable at the start of the event that contributed to the event.

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.

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

3. The circuit operation is such that the HPCS switchover logic is designed to actuate based on either low Condensate Storage Tank or high Suppression Pool levels. Once initiated, the logic opens Suppression Pool Suction Valve HPCS-V-15. When HPCS-V-15 is full open, design logic closes Condensate Storage Tank Suction Valve HPCS-V-1. These valves are interlocked in this manner to prevent losing suction to pump HPCS-P-1. There are two magnetically-activated float switches (HPCS-LS-2A and HPCS-LS-2B) that actuate on high Suppression Pool level. Because of the one-out-of-one logic, either switch can initiate opening of the Suppression Pool suction valve.
4. The cause of this event is less than adequate procedures. Plant Annunciator Response Procedures (PPMs) 4.601.A11 and 4.601.A12, "Annunciator Panel Alarms" for Suppression Pool Level, require that when level is greater than +0.5 inches, Plant Control Room Operators are to lower the Suppression Pool level by means of aligning the Residual Heat Removal (RHR) System to the radwaste system. However, at the time of the event, the RHR System was already in service and providing for shutdown cooling. The alternate method of lowering the pool by means of Suppression Pool Cleanup was also not available because of a high silica condition in the Condensate Storage Tanks.

Plant Control Room Operators are aware of the trip setpoint (+5 inches) for an HPCS auto suction switchover; however, the procedure did not reference this value or provide guidance that the suction transfer can occur within plus or minus two inches of this setpoint. Plant Control Room Operators are not normally expected to know the administrative tolerances (accuracy) of instruments unless they are specifically called out by procedure.

Furthermore, Plant Control Room Operators confirmed that there were no Suppression Pool high level limits for Operational Mode 4 (Cold Shutdown).

B. Further Corrective Action

1. Plant Procedure (PPM) 7.4.3.3.1.60, "HPCS High Suppression Pool Level Actuation - CFT/CC," was successfully completed on July 5, 1990. This procedure is a monthly Channel Functional Test/Channel Calibration of Suppression Pool Water Level Monitors HPCS-LS-2A and HPCS-LS-2B to demonstrate operability within the High Pressure Core Spray System.
2. Plant Procedures (PPMs) 4.601.A11 and 4.601.A12 will be modified to provide additional guidance and actions for those conditions when an HPCS suction valve switchover could occur.

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-630), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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

Safety Significance

There is no safety significance associated with this event. All systems operated as designed to cause a HPCS System pump suction valve switchover on the high Suppression Pool water level condition. In addition, there are no Suppression Pool high level restrictions during Operational Mode 4 (Cold Shutdown) because there is insufficient energy in the reactor during this condition to place significant loads on the containment. Furthermore, Plant Control Room Operators responded by lowering the Suppression Pool and realigning the system to pre-event status. Accordingly, this event posed no threat to the health and safety of either the public or Plant personnel.

Similar Events

There have been two other HPCS pump suction transfers from the Condensate Storage Tanks to the Suppression Pool; however, neither of these events had the same root cause as this event.

EIIS InformationEIIS Reference

System Component

High Pressure Core Spray (HPCS) System	BG	---
HPCS-V-1	BG	V
HPCS-V-15	BG	V
Excess Flow Check (EFC) Valve	NH	V
Main Steam Safety Relief Valves (MSRVs)	SN	RV
Suppression Pool	NH	---
Condensate Storage Tank	KA	TK
HPCS-P-1	BG	P
HPCS-LIS-2A	BG	LIS
HPCS-LIS-2B	BG	LIS
Residual Heat Removal (RHR) System	BO	---



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LICENSEE EVENT REPORT (LER)

TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 300 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-830), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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TEXT (If more space is required, use additional NRC Form 366A (1) (17))

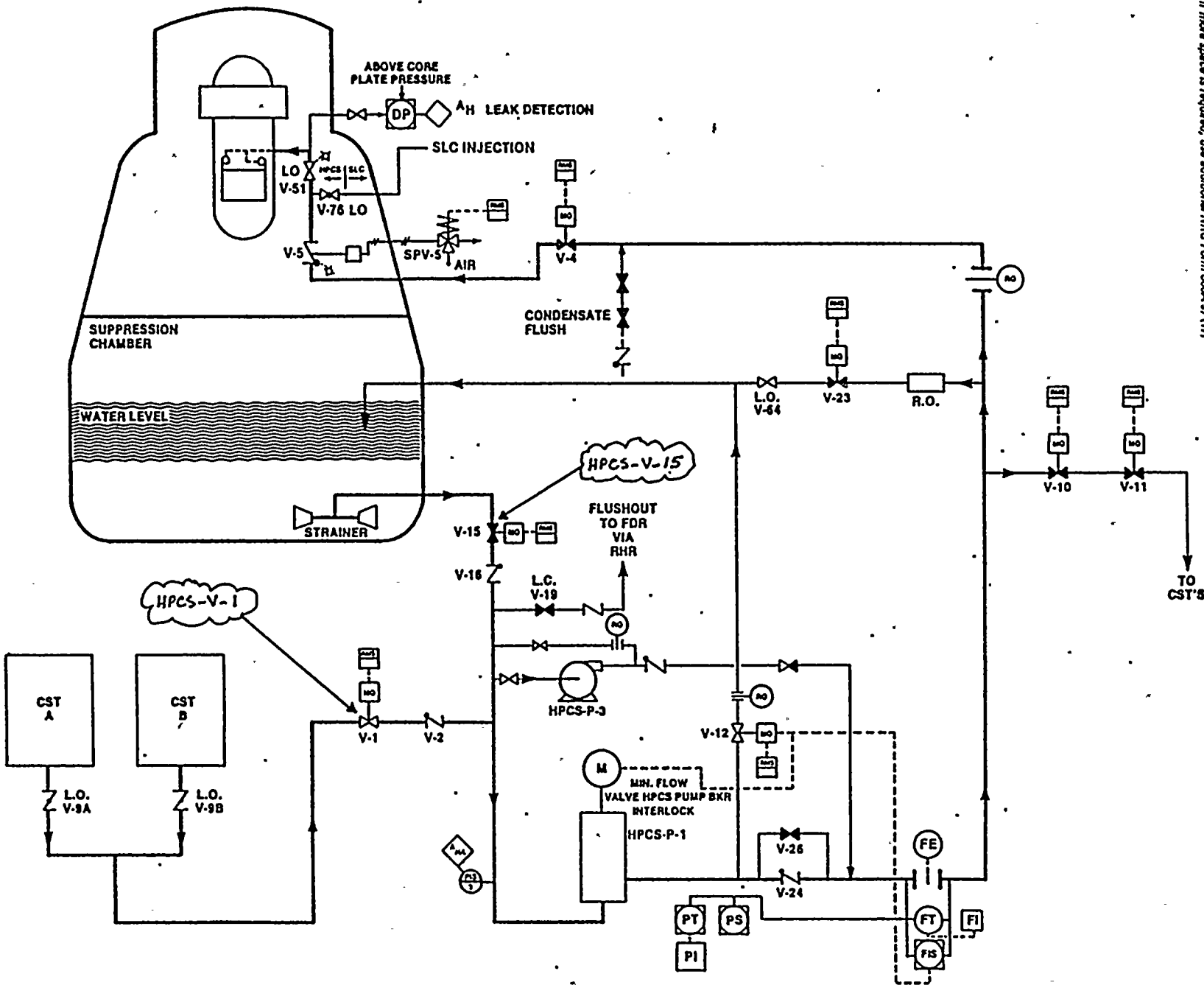


FIGURE 1. HPCS