

# CATEGORY 1

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9705060022    DOC. DATE: 97/04/28    NOTARIZED: NO    DOCKET #  
 FACIL: 50-397 WPPSS Nuclear Project, Unit 2, Washington Public Powe    05000397  
 AUTH. NAME    AUTHOR AFFILIATION  
 ARBUCKLE, J.D.    Washington Public Power Supply System  
 BEMIS, M.R.    Washington Public Power Supply System  
 RECIP. NAME    RECIPIENT AFFILIATION

SUBJECT: LER 97-005-00: on 970327, valid reactor scram signal received due to low water level condition during preparations for SRV testing. Caused by risks & consequences of decisions not completely identified. Restored water level. W/970428 ltr.

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WASHINGTON PUBLIC POWER SUPPLY SYSTEM

P.O. Box 968 • Richland, Washington 99352-0968

April 28, 1997  
GO2-97-082

Docket No. 50-397

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

Gentlemen:

Subject: **NUCLEAR PLANT WNP-2, OPERATING LICENSE NPF-21  
LICENSEE EVENT REPORT NO. 97-005-00**

Transmitted herewith is Licensee Event Report No. 97-005-00 for WNP-2. This report is submitted pursuant to 10 CFR 50.73 and discusses the items of reportability, corrective action taken, and action to preclude recurrence.

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

Respectfully,

P.R. Bemis  
Vice President, Nuclear Operations  
Mail Drop PE23

Enclosure

cc: EW Merschhoff - NRC RIV  
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TG Colburn - NRR  
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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   9   7	1 of 4

TITLE (4) VALID REACTOR SCRAM SIGNAL WHILE SHUTDOWN WITH CONTROL RODS FULLY INSERTED DUE TO REACHING LOW WATER LEVEL SETPOINT DURING PREPARATIONS FOR SAFETY RELIEF VALVE TESTING

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	27	97	97	- 0   0   5	- 0   0	04	28	97	N/A	0   5   0   0   0	
										0   5   0   0   0	

OPERATING MODE (9)	3	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR: (11)									
POWER LEVEL (10)	0   0   0	20.402(b)		20.405c		X   50.73(a)(2)(iv)		73.71(b)			
		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)		TELEPHONE NUMBER	
J.D. Arbuckle, Licensing Technical Specialist		AREA CODE 509	377-4601

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)											
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS		

SUPPLEMENTAL REPORT EXPECTED (14)	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (if yes, complete EXPECTED SUBMISSION DATE)	X   NO			

**ABSTRACT (16)**  
 On March 27, 1997 at 1247 hours with the plant shutdown in Mode 3 (Hot Shutdown), a valid reactor scram signal was received due to a low water level condition during preparations for safety relief valve testing. The low level condition occurred following closure of a safety relief valve that had been open for pressure control. Closure of the valve resulted in a large drop in reactor pressure vessel water level.

During the time the valve was open, vessel pressure decreased from 1030 psig to about 880 psig. When the valve was closed, vessel level dropped rapidly from an initial value of +61 inches to +20 inches in approximately 20 seconds. Vessel level continued to decrease to +13 inches, the Reactor Vessel Water Level - Low (Level 3) setpoint, over the next 30 seconds.

Plant operators responded immediately to the low level condition and promptly restored vessel water level to within normal limits. The scram signal was reset at 1249 hours.

The root cause of this event was risks and consequences of decisions not completely identified and assessed. The attempt to set up for safety relief valve testing without a contingency plan contributed significantly to the event. Further corrective action includes coaching the Operations crew involved, developing expectations for plant shutdown schedules, and providing simulator training on safety relief valve actuation at normal level and pressure with the plant shutdown.

This event posed no threat to the health and safety of the public or plant personnel. The Reactor Protection System functioned as designed to cause a reactor scram signal and plant operator actions to recover level were prompt and correct. The lowest vessel level reached during the event was +13 inches, before being recovered to the normal operating level. All control rods were fully inserted throughout this event.

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						2	OF 4

TEXT (17)

## Event Description

On March 27, 1997 at 1247 hours with the plant in Mode 3 (Hot Shutdown) and approximately four hours after a manual scram (LER 97-004-00), a valid reactor scram signal was received due to a low water level condition during preparations for safety relief valve testing. The low level condition occurred following closure of a safety relief valve that had been open for pressure control. Closure of the valve resulted in a larger-than-anticipated "shrink" in reactor pressure vessel water level.

Prior to the event and in preparation for safety relief valve testing, auxiliary steam loads were secured and the Auxiliary Boiler [BLR] was placed in service to provide seal steam. Pressure had decreased to approximately 650 psig by the time all steam loads, with the exception of a single Reactor Feedwater (RFW) System [JB] pump, were secured. Vessel level was raised to between +40 and +45 inches and the decision was made to close the Main Steam Isolation Valves (MSIVs) [ISV] to increase reactor pressure. Prior to valve closure, a test run of the Reactor Core Isolation Cooling (RCIC) System [BN] was successfully performed to ensure that the system would be available if needed for level control.

When the MSIVs were closed, vessel level was being controlled with a combination of Reactor Water Cleanup (RWCU) System [CE] blowdown flow and Control Rod Drive System [AA] injection flow. At the time, pressure was increasing at a rate of approximately five psig/minute and level was increasing approximately one inch/minute.

Approximately seven minutes after closing the MSIVs and with vessel pressure at approximately 700 psig, a Reactor Vessel Water Level - High (Level 8) trip signal was received. Control rod drive flow was reduced and RWCU system blowdown was maximized in an effort to slow the level increase.

Reactor level was subsequently stabilized and slightly decreasing. At the time the safety relief valve was opened, vessel level was approximately +58 inches and reactor pressure was approximately 1030 psig. During the time the valve was open, vessel pressure decreased to about 880 psig. When the valve was closed, vessel level dropped rapidly from an initial value of +61 inches to +20 inches in approximately 20 seconds. Vessel level continued to decrease to +13 inches, the Reactor Vessel Water Level - Low (Level 3) setpoint, over the next 30 seconds.

The RCIC system was manually started to raise water level, but not in time to avoid the scram signal. The system was started about 15 seconds prior to the scram signal. The lowest vessel level reached during the event was +13 inches, before being recovered to the normal operating level.

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## Immediate Corrective Action

Plant operators responded to the low level condition and promptly restored vessel water level to within normal limits. The scram signal was reset approximately two minutes after it was received.

## Further Evaluation

1. Pursuant to 10 CFR 50.73(a)(2)(iv) this event is reportable as, "Any event or condition that resulted in a manual or automatic actuation of any Engineered Safety Feature, including the Reactor Protection System."
2. During the evolution, some shrinkage in vessel water level was anticipated by the Operations crew. However, the crew did not anticipate the amount of vessel level decrease which occurred.
3. Following a scram, pressure typically decreases to the 600 to 700 psig range. This decrease occurs regardless of rapid operator actions to secure auxiliary steam loads. Normal post-scram operations involve securing steam loads and then starting a cooldown. The RFW system pumps are the preferred source of water to the vessel, but draw too much steam to maintain a high pressure condition.

To maintain rated pressure it is usually necessary to close the MSIVs or Main Steam (MS) System Valve MS-V-146 [V], which effectively removes the preferred feed and pressure control (turbine bypass valves) sources. The RCIC system can then be used for level and pressure control.

4. The decision to conduct the safety relief valve testing following a scram did not evaluate the crew members previous experience with the plant in these conditions. No detailed contingency planning was conducted prior to establishing the plant conditions to perform safety relief valve testing.

There is procedural guidance for conditions where high pressure is maintained following a scram. However, the crew did not adequately use this guidance for control of pressure and level with the MSIVs closed. This led to the high level condition and the inability to use the RCIC system for pressure and level control.

# LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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## Root Cause

The root cause of this event was risks and consequences of decisions not completely identified and assessed. A contributing cause was documents not followed.

Safety relief valve testing is usually performed with the reactor on line at low power which allows for normal pressure and level control. In this event, the attempt to set up for this test without a contingency plan to perform this test following a scram contributed significantly to the transient. The effects of the transient may have been minimized had the Operations crew used applicable steps of the normal shutdown-to-hot shutdown procedure and maintained the RCIC system in operation prior to closing the MSIVs.

## Further Corrective Action

Expectations will be developed for plant shutdown schedules to provide guidance pertaining to actions that will be performed if a scram or other transient occurs prior to performance of a scheduled activity.

Specific simulator training, unique to this event, will be performed. The training will cover pressure and level control, during hot shutdown conditions, and the effects of safety relief valve actuation at normal level and pressure.

The lessons learned from this event have been discussed with the Operations crews.

The Operations crew involved was coached on maintaining focus of all critical plant parameters during transient conditions.

## Assessment of Safety Consequences

The safety consequences of this event are minimal. At the time of the event, the reactor was in a shutdown condition. All control rods had already been fully inserted prior to the scram signal. The Reactor Protection System functioned as designed to cause a reactor scram signal and plant operator actions to recover level were prompt and correct. Therefore, the event posed no threat to the health and safety of the public or plant personnel.

## Similar Events

There have been no recent similar events where not completely identifying and assessing the risks and consequences of decisions resulted in a low-level scram signal while in a shutdown condition.

