

# ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9205280162 DOC. DATE: 92/05/21 NOTARIZED: NO DOCKET #  
 FACIL: 50-397 WPPSS Nuclear Project, Unit 2, Washington Public Powe 05000397  
 AUTH. NAME AUTHOR AFFILIATION  
 SWANK, D.A. Washington Public Power Supply System  
 BAKER, J.W. Washington Public Power Supply System  
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 92-016-00: on 920424, review of RCIC sys re 48 VDC power supply for RCIC not transferred from CR to RSP. Caused by misapplication of design not properly implemented. Sys modified. W/920521 ltr.

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EXTERNAL:	EG&G BRYCE, J.H		3	3		L ST LOBBY WARD		1	1
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WASHINGTON PUBLIC POWER SUPPLY SYSTEM

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

May 21, 1992  
G02-92-128

Docket No. 50-397

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U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

**SUBJECT: NUCLEAR PLANT WNP-2, OPERATING LICENSE NPF-21  
LICENSEE EVENT REPORT NO. 92-016**

Transmitted herewith is Licensee Event Report No. 92-016 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.

Sincerely,



J. W. Baker  
WNP-2 Plant Manager (Mail Drop 927M)

Enclosure

cc: Mr. John B. Martin, NRC - Region V  
Mr. C. Sorensen, NRC Resident Inspector (Mail Drop 901A, 2 Copies)  
INPO Records Center - Atlanta, GA  
Mr. D. L. 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 5

TITLE (4)

REACTOR CORE ISOLATION COOLING SYSTEM NOT ADEQUATELY TRANSFERABLE TO THE REMOTE SHUTDOWN PANEL

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)					
0	4	2	4	9	2	9	2	0	1	6	0	0	0	0	0
											0	5	0	0	0

OPERATING MODE (9) 5 THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)

POWER LEVEL (10)	0	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)	X 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 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)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
D. A. Swank, Compliance Engineer	AREA CODE 5 0 9 3 7 7 - 4 4 5 1

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)

MONTH DAY YEAR

☐ YES (If yes, complete EXPECTED SUBMISSION DATE) ☒ NO

ABSTRACT (16)

During a review of the Reactor Core Isolation Cooling System (RCIC) it was determined that the 48 VDC power supply for the RCIC turbine controls, and the position signal for the RCIC turbine steam inlet valve were not transferred out of the main Control Room (CR) when control of RCIC was transferred to the remote shutdown panel (RSP). These signals are required to be transferred to the RSP due to a postulated CR flood. The Plant was in a refueling condition and RCIC was not required at the time this condition was discovered.

The root cause of this event was misapplication of design inputs in that the transfer requirements were not properly implemented. The 48 VDC power supply for the RCIC control system, and the position signal for valve RCIC-V-45, will be modified so that they are transferred from the CR to the RSP, along with the other RCIC controls, when RCIC transfer to the RSP is made.

Flooding in the CR and subsequent cable shorting are extremely low probability events. This event did not impact the operation of RCIC from the CR. Even if RCIC were lost due to a CR flood, however, the low pressure emergency core cooling systems would have been available and controllable from outside the CR to safely shutdown the Plant. This event had no safety significance.

There were no structures, systems, or components inoperable prior to the start of this event that contributed to the event.

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							9   2	0   1   6	0   0	2 OF 5	
TITLE (4) REACTOR CORE ISOLATION COOLING SYSTEM NOT ADEQUATELY TRANSFERABLE TO THE REMOTE SHUTDOWN PANEL											

### Plant Conditions

Power Level - 0%  
Plant Mode - 5 (Refueling)

### Event Description

On April 22, 1992, during a review of the Reactor Core Isolation Cooling System (RCIC) a Supply System Engineer determined that the 48 VDC power supply for the RCIC turbine controls was not transferred out of the main Control Room when control of RCIC was transferred to the remote shutdown panel (RSP). The WNP-2 RCIC design, as stated in FSAR section 7.4.1.4, includes transfer of all necessary power supplies and control logic to the RSP when the CR must be evacuated. On April 24, 1992, this event was determined to be reportable and a verbal notification to the NRC was made. This condition did not affect RCIC operation from the CR.

### Immediate Corrective Action

Since the Plant was shut down at the time this determination was made and RCIC was not required to be operable, no immediate corrective action was required.

### Further Evaluation and Corrective Action

#### A. Further Evaluation

RCIC is a high pressure injection system where the pump is driven by a steam turbine. Steam for the turbine is supplied from the Main Steam System. The RCIC pump supplies water to the reactor taking suction from either the safety grade suppression pool or the nonsafety grade condensate storage tank. The RCIC components other than the steam driven turbine are powered from DC busses. RCIC is thus capable of maintaining reactor water level within a given range post scram, even during a loss of all AC power event.

The Supply System has an additional CR/RSP requirement in addition to GDC 19 and fire. The flooding analysis for the CR deals with postulated moderate energy line failures of the fire protection and potable water lines. The planned response to a failure of one of these lines is, when required, to evacuate the CR and to control the Plant from the RSP. This action is to mitigate the consequences of water initiated shorts due to the flooding.





LICENSEE EVENT REPORT (LER) TEXT CONTINUATION														
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TITLE (4) REACTOR CORE ISOLATION COOLING SYSTEM NOT ADEQUATELY TRANSFERABLE TO THE REMOTE SHUTDOWN PANEL														

In the discussion of the remote shutdown systems (RSS) in NUREG-0892, Safety Evaluation related to the operation of WPPSS Nuclear Project No. 2, the NRC stated:

The RSS is provided to enable control of the systems needed to bring the reactor to a cold shutdown condition from a location other than the main control room (GDC 19, "Control Room"). The applicant has provided this capability on a remote shutdown panel, where the necessary instrumentation, controls, and control transfer switches are located...

The conditions generally postulated for GDC 19 design are events such as smoke, hazardous chemical spills, etc., which result in a loss of control room habitability. It is the Supply Systems understanding that in order to satisfy GDC 19, those systems required to attain hot shutdown and subsequent cold shutdown must be controllable from remote locations without unacceptable interaction from CR equipment. The conditions identified in this LER did not result in RCIC system control interference from the CR or impact the ability to successfully operate RCIC from the RSP.

#### B. Further Corrective Action

The 48 VDC power supply for the RCIC control system, and the position signal for valve RCIC-V-45, will be modified so that they are transferred from the CR to the RSP, along with the other RCIC controls, when the RCIC transfer to the RSP is made. These design changes will be completed no later than June 30, 1992.

#### Safety Significance

As stated in the further evaluation section above, the RCIC condition reported in this LER did not impact Plant implementation of the GDC 19 or fire required remote shutdown capabilities. The condition did, however, potentially affect the Plant response to a CR flood.

The flood in the CR would result from a crack of the moderate energy fire protection or potable water lines. A fire protection sprinkler line passes over control panels. These control panels are not designed to prevent water intrusion and thus shorting to ground could result. It was determined that the most effective method for dealing with this postulated pipe crack was to evacuate the CR. This overhead sprinkler pipe, however, is not in a position where water leakage could impact the RCIC controls. In fact, the cables described in this LER are located in a panel in the rear of the CR approximately 60 feet away from the overhead sprinkler piping.

A second concern from flooding is the buildup of water in the cable routing area located under the CR false floor. The area under the CR is approximately 8000 ft<sup>2</sup>. The maximum estimated flow from the fire protection system crack is 24 gallons per minute, while the maximum flow from the potable water system crack is 11 gpm. It has been conservatively estimated that isolation of the fire protection system

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								Year	Number		Rev. No.				
								9   2	0   1   6	0   0	5	OF	5		
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would take no longer than 5 minutes, while shutdown of the potable water system would take no more than 10 minutes. The maximum estimated water leakage into the CR is thus 120 gallons. Distributed evenly over the sub-floor area, the water depth would be 0.6 mm. This estimation does not take into account the time it might take to discover a leak. Since the piping in question is hidden from view and would not trigger an alarm if a leak occurred, an unknown period of time could pass prior to discovery. The area in question is within the CR boundary, however, and is passed frequently by Plant personnel. It is estimated that no more than 30 minutes would elapse between personnel passing this area.

The 48 VDC power and valve position signal cables in question are Quality Class I and are required to meet strict requirements. These cables should not be affected by short term exposure to water caused by a control room flood.

A flood in the CR is an extremely low probability event. Given the postulated level of water in the control room sub-floor, and the relative location of the subject RCIC cables, the probability of damage to the cables in a flood is also extremely low. This event did not impact the operation of RCIC from the CR. Even if RCIC were lost due to a CR flood, however, the low pressure emergency core cooling systems would have been available and controllable from outside the CR to safely shutdown the Plant. This event had no safety significance.

### Similar Events

There are no known instances where power or control signals were not transferred out of the CR to the RSP to protect against a CR flood.

### EIIS Information

#### Text Reference

Reactor Core Isolation Cooling  
System (RCIC)  
48 VDC  
Remote Shutdown Panel (RSP)  
Alternate Remote Shutdown Panel  
RCIC Turbine Steam Inlet Valve,  
RCIC-V-45  
Main Steam System  
RCIC Pump  
RCIC Steam Turbine  
Reactor  
Suppression Pool  
Condensate Storage Tank  
Fire Protection Pipe  
Potable Water Pipe  
Safety Relief Valve  
Residual Heat Removal System (RHR)

#### EIIS Reference System      Component

BN	---
EI	---
---	---
BN	SHV
SB	---
BN	P
BN	TRB
AC	RCT
BT	TK
KA	TK
FP	PSP
LV	PSP
SB	RV
BO	---