

# CATEGORY 1

## REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9711190086      DOC. DATE: 97/11/10      NOTARIZED: NO      DOCK  
 FACIL: 50-397 WPPSS Nuclear Project, Unit 2, Washington Public Power 0500  
 AUTH. NAME      AUTHOR AFFILIATION  
 POWELL, T.J.      Washington Public Power Supply System  
 BEMIS, P.R.      Washington Public Power Supply System  
 RECIP. NAME      RECIPIENT AFFILIATION

SUBJECT: LER 97-011-00: on 971010, HPCS battery charger failed. Caused by failure of "A" phase firing control circuit board due to aging during 7 yrs of use. HPCS sys was immediately declared inoperable. W/971110 ltr.

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WASHINGTON PUBLIC POWER SUPPLY SYSTEM

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

November 10, 1997  
GO2-97-206

Docket No. 50-397

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

Gentlemen:

Subject: **WNP-2, OPERATING LICENSE NPF-21  
LICENSEE EVENT REPORT NO. 97-011-00**

Transmitted herewith is Licensee Event Report No. 97-011-00 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 pertaining to this letter, please call me or Mr. P. J. Inserra at (509) 377-4147.

Respectfully,

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

IE-221

Attachment

cc: EW Merschoff - NRC RIV  
KE Perkins, Jr. - NRC RIV, WCFO  
TG Colburn - NRR  
INPO Records Center - Atlanta, GA

NRC Senior Resident Inspector - MD927N (2)  
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9711190086 971110  
PDR ADOCK 05000397  
S PDR



# LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) <b>Washington Nuclear Plant - Unit 2</b>	DOCKET NUMBER (2) <b>50-397</b>	PAGE (3) <b>1 OF 3</b>
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TITLE (4)  
**HIGH PRESSURE CORE SPRAY (HPCS) BATTERY CHARGER FAILURE RESULTING IN HPCS SYSTEM INOPERABILITY**

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV. NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
10	10	97	97	011	00	11	10	97	N/A	05000

OPERATING MODE (9) <b>1</b>	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more) (11)									
POWER LEVEL (10) <b>81</b>	20.402(b)			20.405(c)			50.73(a)(2)(iv)			73.71(b)
	20.405(a)(1)(i)			50.36(c)(1)			X 50.73(a)(2)(v)			73.71(c)
	20.405(a)(1)(ii)			50.36(c)(2)			50.73(a)(2)(vii)			OTHER
	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 <b>T.J. Powell, Licensing Technical Specialist</b>	TELEPHONE NUMBER (Include Area Code) <b>(509) 377-4161</b>

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
X	BG	BYC	C173	Y						

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED	MONTH	DAY	YEAR
YES (If yes, completed EXPECTED SUBMISSION DATE).		NO <b>X</b>					

**ABSTRACT:**  
On October 10, 1997 at 2057 hours with the plant in Mode 1, the High Pressure Core Spray (HPCS) Battery Charger (HPCS-C1-1) failed resulting in degraded 125 VDC bus voltage. The HPCS System was immediately declared inoperable. Concurrent with the HPCS failure, the Reactor Core Isolation Cooling (RCIC) System was inoperable due to system testing. With both HPCS and RCIC inoperable, Technical Specification LCO 3.5.1 Action D.1 (be in Mode 3 within 12 hours) was entered. The RCIC System was declared operable approximately 17 minutes later and LCO 3.5.1 Action D.1 was exited.

The HPCS Battery Charger tested satisfactorily following installation of new control circuit boards and was declared operable on October 15, 1997 at 0150. The root cause of this event was failure of the "A" phase firing control circuit board due to component degradation (aging) after seven (7) years of reliable operation.

At all times, adequate core cooling was assured by the operability of the redundant and diverse low pressure Emergency Core Cooling System (ECCS) injection/spray in conjunction with the Automatic Depressurization System (ADS); therefore, this event had no safety significance.



**LICENSEE EVENT REPORT (LER)**  
TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Washington Nuclear Plant - Unit 2	50-397	97	011	00	2 OF 3

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

Event Description

On October 10, 1997 at 2057 hours with the plant in Mode 1, the HPCS [BG] Battery Charger (HPCS-C1-1) failed resulting in degraded 125 VDC bus voltage and Technical Specification LCO 3.8.4 Action B.1 was entered. The HPCS System was immediately declared inoperable. Concurrent with the HPCS failure, the RCIC [BN] System was inoperable due to system testing. With both HPCS and RCIC inoperable, Technical Specification LCO 3.5.1 Action D.1 (be in Mode 3 within 12 hours) was entered. RCIC System testing was completed and the system was declared operable at 2114 hours, approximately 17 minutes after the HPCS Battery Charger initially failed, and Technical Specification LCO 3.5.1 Action D.1 was exited. Shortly after the HPCS Battery Charger failed, the 125 VDC bus voltage stabilized at 118 VDC with the HPCS Battery supplying the load.

The HPCS Battery Charger shut itself down due to a high DC output voltage. The High Voltage Shut Down (HVSD) relay was found to be in a tripped condition. In accordance with an approved trouble shooting plan, the high voltage relay was reset. On October 11, 1997 at 0349 hours, the HPCS Battery Charger was re-energized and the HPCS 125 VDC bus voltage returned to 130 VDC with the HPCS Battery Charger supplying the load. The HPCS Battery Charger was functioning at this time but further troubleshooting was required to determine the cause of the original failure prior to its return to operability.

Testing determined the "A" phase firing control circuit board produced an unstable output voltage. All three (3) firing control circuit boards were replaced. Following satisfactory completion of post maintenance testing, HPCS-C1-1 was declared operable on October 15, 1997 at 0150 hours and Technical Specification 3.8.4 Action B.1 was exited.

Immediate Corrective Action

The HPCS System was immediately declared inoperable and Technical Specification LCOs 3.8.4 Action B.1 and 3.5.1 Action D.1 were entered. Plant operators responded promptly to restore RCIC System operability and Technical Specification LCO 3.5.1 Action D.1 was exited.

Further Evaluation

This event is being reported per the requirement of 10CFR50.73(a)(2)(v)(D) as a condition that alone could have prevented the fulfillment of the safety function of structures or systems that are needed to mitigate the consequences of an accident. The inoperability of the HPCS System is a unique event at WNP-2. Unlike the other Emergency Core Cooling Systems, HPCS System inoperability is reportable even though all requirements of Technical Specification LCO action statements are being complied with. As HPCS is a "single train" Emergency Core Cooling System, inoperability is reportable any time it is unable to perform its safety function when it is required to be able to do so by plant conditions.

**LICENSEE EVENT REPORT (LER)**  
**TEXT CONTINUATION**

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Root Cause

The cause of the HPCS Battery Charger failure was failure of the "A" phase firing control circuit board due to component degradation (aging) during seven (7) years of operation.

Further Corrective Action

Performed an infrared survey of the HPCS Battery Charger and cleaned and retightened connections.

A Scheduled Maintenance System task for the replacement of all three (3) firing control circuit boards at intervals of five (5) years or less has been instituted to prevent recurrence.

A review of the preventative maintenance programs for other battery chargers and inverters to verify adequate inspection requirements and acceptable replacement intervals for key components has been implemented to ensure similar failures are avoided in other plant equipment.

Assessment of Safety Consequences

Offsite power remained available while HPCS-C1-1 was inoperable. Thus, HPCS was capable of performing its emergency core cooling safety function at all times using offsite power. Also, the HPCS design backup systems of ADS [SB] and the Low Pressure Core Spray (LPCS) [BM] were available to provide low-pressure spray to the reactor.

RCIC was available as an alternate high-pressure injection system approximately 17 minutes after the HPCS Battery Charger failed. Although Safety Related, the RCIC System is not an Engineered Safety Feature (ESF) System and no credit is taken in the safety analyses for RCIC System operation. However, based on the RCIC System contribution to the reduction of overall plant risk, with RCIC and HPCS inoperable the plant must be brought to at least Mode 3 within 12 hours. Plant operators responded quickly to restore RCIC operability, avoiding the 12 hour plant shutdown required by Technical Specification LCO 3.5.1 Action D.1. The actions of the plant operators were prompt and correct to ensure the plant was maintained within the bounds of the Technical Specifications and; therefore, within the bounds of the operational safety analysis. Adequate core cooling was ensured. This event had no safety significance.

Similar Events

There have been no recent LERs involving equipment inoperability as a result of degraded circuit boards.

The corrective actions listed above will preclude recurrence of similar events.

