

CP&L

Carolina Power & Light Company

Brunswick Nuclear Project
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January 24, 1991

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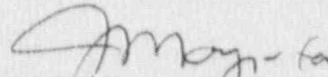
U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555

BRUNSWICK STEAM ELECTRIC PLANT UNIT 2
DOCKET NO. 50-324
LICENSE NO. DRP-62
LICENSEE EVENT REPORT 2-90-020

Gentlemen:

In accordance with Title 10 of the Code of Federal Regulations, the enclosed Licensee Event Report is submitted. This report fulfills the requirement for a written report within thirty (30) days of a reportable occurrence and is submitted in accordance with the format set forth in NUREG-1022, September 1983.

Very truly yours,


J. L. Harness, General Manager
Brunswick Nuclear Project

TMJ/

Enclosure

cc: Mr. S. D. Ebnetter
Mr. N. B. Le
BSEP NRC Resident Office

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Brunswick Steam Electric Plant Unit 2

DOCKET NUMBER (2)
05000324

PAGE (3)

01 OF 04

TITLE (4) HPCI SYSTEM MINIMUM FLOW VALVE INOPERABLE BECAUSE OF A BLOWN CONTROL POWER FUSE WHEN MCC COMPARTMENT POSITION INDICATING LIGHT BULB SHORTED.

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQ. NO.	REV. NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
12	26	90	90	- 020	- 00	01	24	91		
OPERATING MODE (9)		1		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)						
POWER LEVEL (10)		100		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)(vi)	OTHER (Specify in Abstract and Text)			
				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 THERESA M. JONES, REGULATORY COMPLIANCE SPECIALIST

TELEPHONE NUMBER

(919) 457-2039

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	BJ	IL	G080	Y					

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)	X	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
	X	NO				

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

On December 26, 1990, the Unit 2 reactor was at 100% power; the Emergency Core Cooling Systems were operable. The High Pressure Coolant Injection (HPCI) system was removed from service for surveillances and maintenance. While returning the system to service, the minimum flow valve control power fuse was determined to be blown. This would prevent the valve from opening automatically. The HPCI system was prevented from automatically initiating and the fuse was replaced. The fuse blew because of a short within the valves motor control center compartment position indicating bulb when the filament twisted within the glass while the bulb base remained stationary. The filament eventually crossed over itself causing the short. An interview with the CO determined that valve indication was present on the control board prior to the hanging of the clearance verifying that the control power fuse was not blown prior to this event. The fuse was replaced and the system was returned to service. The system was out of service for 13 hours and 33 minutes, approximately 4 hours were as a result of this event. The event will be reviewed with appropriate personnel, examples of bulbs which have separated from their base will be provided to help in the identification of potential problems. This event was of minimal safety significance and would not have been more severe under reasonable and credible alternative conditions. The plant is analyzed for a HPCI failure.

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

FACILITY NAME (1) Brunswick Steam Electric Plant Unit 2	DOCKET NUMBER (2)	LER NUMBER (6)				PAGE (3)
	05000324	YEAR		SEQUENTIAL NUMBER		REVISION NUMBER
		90	-	020	-	00

TEXT (IF MORE SPACE IS REQUIRED, USE ADDITIONAL NRC FORM 366A'S) (17)

EVENT

Loss of low flow protection for the High Pressure Coolant Injection (HPCI) system pump when the control power fuse blew.

INITIAL CONDITIONS

On December 26, 1990, the Unit 2 reactor was at 100% power. The Automatic Depressurization System (ADS), Reactor Core Isolation Cooling (RCIC) system, Residual Heat Removal/Low Pressure Coolant Injection (RHR/LPCI) system and the Core Spray (CS) system were in standby readiness. At 0736 on 12-26-90, Limiting Condition for Operation (LCO) A2-90-2495 was initiated and the HPCI system was removed from service and isolated for surveillance testing and maintenance.

EVENT DESCRIPTION

At 1705 on 12-26-90, maintenance personnel had completed maintenance on the 2-E41-V95, HPCI Keepfill Station Outlet Isolation Valve, and satisfactorily completed four maintenance surveillance tests. The involved tests were HPCI Steam Leak Detection, HPCI Steam Line Break High Differential Pressure Trip Unit Calibration, HPCI Steam Leak Detection Channel Calibration (A channel) and HPCI Steam Leak Detection Channel Calibration (B channel) (ie; 2MST-HPCI14M, 21M, 24Q and 25Q respectively). While removing the clearance the Auxiliary Operator (AO) noted that the closed position indicating light on the HPCI minimum flow valve motor control center (MCC) 2XDA, compartment B24, did not illuminate. The AO had verified the position of the valve locally prior to closing its associated breaker and knew that the closed indication should be illuminated. He attempted to change the bulb but the glass turned within its metal base. The AO decided to write a work request to have Instrumentation and Control (I&C) personnel remove and replace the bulb. The AO signed off restoring the minimum flow breaker to the "ON" position on the clearance and proceeded to vent the HPCI system. During this time, the Control Operator (CO) noted that the HPCI minimum flow valve did not have indication on the control board and sent a second AO to investigate. The AO managed to replace the bulb but there was still no indication. The second AO was dispatched to locally verify the closed position of the valve and I&C personnel were contacted. At 1820, the valve was reported to be closed. At 1830, the HPCI standby line up was completed and, at 1835, the HPCI auxiliary oil pump was "pulled to lock" to prevent the automatic initiation of HPCI for pump protection purposes. HPCI was still available for manual operation. Work request 90-AKRL1 determined that the control power fuse FU2 was blown by a defective light bulb that had twisted in its base and caused a short. The control power fuses were replaced and the valve was cycled satisfactorily from the control room at 1850. The system was returned to standby line up and available for automatic operation at 1852. The LCO was canceled at 2109.

EVENT INVESTIGATION/ROOT CAUSE

The FU2 fuse blew because of a short within the bulb when the filament twisted within the glass while the bulb base remained stationary. The filament eventually crossed over itself causing the short. An interview with the CO

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)				PAGE (3)
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		90	-	020	-	
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TEXT (IF MORE SPACE IS REQUIRED, USE ADDITIONAL NRC FORM 366A'S) (17)

determined that valve indication was present on the control board prior to the hanging of the clearance verifying that the control power fuse was not blown prior to this event. The indicating light bulb is a General Electric (GE) model 6S6 and the indicating light socket is a GE model CR2940. A similar event was reported in LER 1-89-20 when the control power fuse for the Unit 1 HPCI Injection Valve, 1-E41-F006, blew when it shorted between the positive tab of the light bulb socket and the negative coil of the socket. The negative coil is used as the thread for the light socket and it was determined that if inward pressure was applied and maintained while removing a bulb the coil may be distorted inward, closer to the positive tab creating a short if it actually contacted the tab. As a result of that event, a field inspection of in-service sockets noted that the presence of corrosion on the socket coil/tab areas or the lamp base makes removal of the bulb difficult, often requiring inward force to be applied to the lamp during removal. As a corrective action to LER 1-89-20, Technical Support personnel evaluated the feasibility of replacing the currently stocked General Electric model CR2940 socket with a Westinghouse bayonet type socket and determined that it was prudent to continue using the GE CR2940 socket and to pursue identification and replacement of degraded sockets. This decision was based on the fact that the Westinghouse sockets would require two different styles for either AC or DC application and only have a qualified life of 21 years. The presently installed sockets have not exhibited problems until approximately 17 years. Therefore, changing to the Westinghouse sockets would not add much overall improvement. An additional LER 1-89-20 corrective action was the inspection of safety related MCC compartments which could produce a loss of a safety function due to a single socket failure. This inspection, which was conducted in each Unit, was conservative in nature, and required the replacement of approximately fifty percent of the sockets inspected. The replacement of identified sockets in Unit 2 is complete. The completion of the sockets identified in Unit 1 is expected by April 1, 1991. The socket involved in this event was inspected in January 1990 under work request 90-ABI11 and replaced in February 1990 under work request 90-ACAL1. At first it was suspected that the bulb's detachment from its metal base may have been aggravated by a distorted coil in the lamp socket. However, given that the socket was replaced ten months prior to this event, the bulb detachment in this event is considered to be a problem independent of socket distortion.

CORRECTIVE ACTIONS

The bulb and fuse have been replaced.

This event will be reviewed with appropriate personnel along with another review of LER 1-89-20. The review will include examples of distorted sockets and defective bulbs to help personnel identify potential problems and actions to take in the event a problem is suspected.

A task force evaluating MCC compartment and breaker preventative maintenance is ongoing and existed prior to this event. It will address the socket coil distortion problem to determine appropriate preventative maintenance.

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FACILITY NAME (1) Brunswick Steam Electric Plant Unit 2	DOCKET NUMBER (2) 05000324	LER NUMBER (6)			PAGE (3) 04 OF 04
		YEAR 90	-	SEQUENTIAL NUMBER 020	REVISION NUMBER - 00

TEXT (IF MORE SPACE IS REQUIRED, USE ADDITIONAL NRC FORM 366A'S) (17)

EVENT ASSESSMENT

This event was of minimal safety significance and would not have been more severe under reasonable and credible alternative conditions. The plant is analyzed for a HPCI failure. As a result of this event, the minimum flow valve would not have automatically opened if the HPCI system were initiated and the pump could have possibly been damaged and rendered inoperable. However, at the time of this event the HPCI system was removed from service and the ADS and LPCI systems were available for operation as a back up. If this event occurred while the system was not removed from service it would have been identified by an AO on daily shift MCC walk downs or during a walk down of the control board by the CO.

EIIS CODES

HPCI pump minimum flow valve motor control center DC breaker control power fuse	BJ/PMP/V/MCC/72/JC/FU
Indicating light	IL
Light socket	IL/*
ADS	*
RCIC	BN
RHR/LPCI	BO
CS	BM
2-E41-V95	EJ/*/ISV

(*) EIIS component identifier not found