

Carolina Power & Light Company P.O. Box 10429 Southport, NC 28461-0429

MAR 0 9 1995

SERIAL: BSEP-95-0131 10 CFR 50.73

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

BRUNSWICK STEAM ELECTRIC PLANT UNIT 1 DOCKET NO. 50-325/LICENSE NO. DRP-71 SUPPLEMENTAL LICENSEE EVENT REPORT 1-94-009

Gentlemen:

In accordance with the Code of Federal Regulations, Title 10, Part 50.73, Carolina Power & Light Company submits the enclosed Supplemental Licensee Event Report. The original report fulfilled the requirement for a written report within thirty (30) days of a reportable occurrence and was submitted in accordance with the format set forth in NUREG-1022, September 1983.

Please refer any questions regarding this submittal to Mr. M. A. Turkal at (910) 45 -3066.

Very truly yours,

le BG

J. Cowan, Director-Site Operations Brunswick Nuclear Plant

SFT/

Enclosures

- 1. Supplemental Licensee Even, Report
- 2. Summary of Commitments

Mr. S. D neter, Regional Administrator, Region II
Mr. D. imble, NRR Project Manager (Acting) - Brunswick Units 1 and 2
Mr. C. A. atterson, Brunswick NRC Senior Resident Inspector
The Honorable H. Wells, Chairman - North Carolina Utilities Commission

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U.S. NUCLEAR REGULATORY COMMISSION (5/92)					APPROVED OMB NO. 3150-0104 EXPIRES: 5/31/95 ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THI INFORMATION COLLECTION REQUIST: 50.0 HRS. FORWARI COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATIO AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEA REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND T THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE C MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.								
FACILITY	NAME (1) INSWICK	Steam	n Elect	ric Plant,	Unit	1			DÖC	KET NUMBER (2) 0500032	5		PAGE (3) 1 of 4
TITLE (4) High	Pressu	re Co	olant 1	Injection S	ystem (Cooling	y Water	Val	lve	Rendered Ino	perable	and the second	
EV	ENT DATE	(5)		LER NUMBER (6)	RE	PORT DAT	E (7)		OTHER FAC	ILITIES IN	OLVE	0 (8)
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEA	R	FACILITY NAME		DOCKET NUMBER	
05	13	94	94	- 09 -	01	03	09	95	5	FACILITY NAME	DOCKET NUMBER		
OPER	ATING		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF						OF 10	CFR &. (Check one or	more of the	tellowin	g)(11)
MODE (9)		1	20.402(b)			20.405(c)			50.73(a)(2)(iv)		73.71(b)		
POWER LEVEL (10)		100	20.	400(a)(1)(i)		50.36(c)(1)		X	50.73(a)(2)(v)		73.71(c)	
		100	20.405(a)(1)(ii)			50.36(c)(2)			50.73(a)(2)(vii)		OTHER		
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			20.	405(a)(1)(iv)		50.73(a)(2	!)(ii)			50.73(a)(2)(viii)(B)		and Tex	t)
			20.405(a)(1)(v) 5			50.73(a)(2	50.73(a)(2)(iii)			50.73(a)(2)(x)			
				l	ICENSEE	CONTACT	FOR THIS	LER	(12)				1.1
NAME Ster	ven F.	Tabor	, Regul	latory Affa	irs Sp	ecialis	it			TELEPHONE NUMBER) 457-3	2842	
			COMPLET	E ONE LINE FOR	REACH CO	MPONEN	FAILURE	DESC	CRIBE	D IN THIS REPORT	(13)		
CAUSE	SYSTEM	CO	APONENT	MANUFACTUR	ER REPOR	PRDS	CAUSE	SYS	STEM	COMPONENT MANUFACTURER		TURER	REPORTABLE TO NPRDS
Х	BJ		IL	S521		N		-					
	1	l	SUPPLE	MENTAL REPOR	T EXPECTE	D (14)				EXPECTED	MONT	H D	AY YEAR
	YES (If yes, camp)	ete EXPECT	ED SUBMISS	ION DATE)	X NO					SUBMISSION DATE (15)	4		

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

On May 13, 1994, Unit 1 was operating at 100 percent power. Following completion of a partial performance of the HPCI System Operability Test, an Auxiliary Operator noted that the position indication light for valve 1-E41-F059, "HPCI cooling water supply valve" was not illuminated. Expecting a blown bulb, the operator proceeded with replacing the bulb. Upon removal of the green lamp lens, but prior to removal of the bulb, the glass portion of the bulb blow out of the socket while the metal portion remained in the socket. This resulted in two blown control power fuses, rendering "HPCI cooling water supply valve" 1-E41-F059 inoperable. A loss of the cooling water valve removes the ability to cool the HPCI System lubrication oil, thus rendering the HPCI System inoperable. The bulb, bulb socket, and fuses were replaced, valve 1-E41-F059 was tested, and the system was returned to service. The system was out of service for 2 hours, 39 minutes, which is within the allowable out-of-service time of 14 days permitted by Technical Specification 3.5.1 During this time, 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 operable. As such, the safety significance of this event was minimal. To prevent the recurrence of this event the incandescent lights installed on selected motor control center compartments have been replaced to the extent possible, with light-emitting diodes. The cause classification for this event per the criteria of NUREG-1022 is "Other".

NRC FORM 366A

U. S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104 EXPIRES: 5/31/95

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 INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0° 04), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

FACILITY NAME (1)	DOCKET NUMBER (2)		PAGE (3)			
Brunswick Steam Electric Plant	05000325	YEAR	YEAR SEQUENTIAL PEVISION NUMBER NUMBER		2 of 4	
Unit 1		94	- 09 -	01		

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

TITLE

High Pressure Coolant Injection System Cooling Water Valve Rendered Inoperable

INITIAL CONDITIONS

On May 13, 1994, Unit 1 was operating at 100 percent 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 operable.

EVENT NARRATIVE

At 0337 on May 13, 1994, following a partial performance of OPT-09.2 (High Pressure Coolant Injection System Operability Test), an Auxil ary Operator noted that the Motor Control Center (MCC) 1XDA, compartment B15, "HPCI cooling water supply valve," 1-E41-F059 green indicating light was not illuminated. Expecting a blown bulb, the operator proceeded to attempt replacement of the bulb. Upon removal of the green lamp lens, but prior to removal of the bulb, the bulb blew out of the socket with an accompanying flash. Upon examination, it was noted that the glass portion of the bulb had blown out of the socket, the metal portion of the bulb remained in the socket, and the control power fuses had blown. These indications support that the initial fault occurred within the bulb. The bulb was verified to be the correct bulb for the application. Due to the blown control power fuses 1FU and 2FU, valve 1-E41-F059 "HPCI cooling water supply valve" was rendered inoperable. A loss of the cooling water valve removes the ability to cool the High Pressure Coolant Injection (HPCI) System lubrication oil, thus rendering the HPCI System inoperable. Replacement of the bulb, bulb socket, and fuses was initiated. These items were replaced, the 1-E41-F059 valve was successfully stroked, and the HPCI System was declared operable at 0616.

This event is being reported in accordance with 10 CFR 50.73(a)(2)(v) in that failure of the HPCI cooling water supply valve control power fuses caused by the failed valve position indicator bulb could have prevented the High Pressure Coolant Injection System from mitigating the consequences of an accident.

CAUSE OF EVENT

The most probable cause of the event was a short within the 1-E41-F059 valve position indication bulb which resulted in the "blowing" of control power fuses 1FU and 2FU for HPCI System cooling water valve. It has previously been determined that these bulbs are susceptible to failure of the cement which bonds the glass bulb to the metal base. If this occurs, and an attempt is made to unscrew the bulb from its base, a short circuit path can be set up through the twisting of the filament leads inside the bulb. In this case, the short circuit occurred while removing the lens cover. It is most probable that the rotating action of the lens cover was being transferred to the bulb due to bulb's position. This would have set up a typical failure pattern assuming the U. S. NUCLEAR REGULATORY COMMISSION

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Unit 1		94	- 09 -	01		

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

bonded joint of the bulb yielded during the process. The Auxiliary Operator noted the glass portion of the bulb shot out of the socket while the metal base remained.

The failure mechanism described above has been previously addressed. Corrective actions included adding lamp socket inspection to the motor control center compartment preventive maintenance procedure, inspection of bulbs in stock to verify their integrity and disposal of those bulbs found bad, and inspection of bulbs upon their receipt. These previously implemented corrective actions reduced, but did not totally eliminate, the occurrence of these bulb failures.

CORRECTIVE ACTIONS

NRC FORM 366A

(5/92)

The bulb, bulb socket, and control power fuses have been replaced.

Except as indicated below, the incandescent light bulbs installed on selected Unit 1 and 2 motor control center compartments have been replaced with light-emitting diodes (LEDs). The LEDs are more reliable than incandescent bulbs and operate for up to 10 years. LEDs do not generate significant heat and, therefore, cause less physical damage to themselves and the associated light socket. Operations and Engineering personnel have indicated the use of LEDs is an acceptable alternative to the current incandescent bulbs.

Unit 1	Motor Control Centers	Unit 2 Motor Control Centers					
1XDA 1XDB 1XA 1XB	All compartments (Note 1) All compartments Compartments DE4, DE2 Compartment DQ0	2XDA All compartments 2XDB All compartments 2XA Compartment DE4 2XB Compartments DL5, DQ0					
1XC	Compartments DS4 (Note 2), DS1,DT2	2XC Compartment DS4 (Note 2)					
1XD	Compartments DW2, DW1	2XD Compartment DW1 (Note 3)					

- Note 1: The Unit 1 MCC 1XDA compartment B25 is a spare compartment and as such indication is not required. Consequently LEDs were not installed in this compartment. However, LEDs were installed on the other 1XDA compartments.
- Note 2: During initial installation of LEDs on MCC 1XC compartment DS4 and MCC 2XC compartment DS4 proper indication was not received. Follow-up investigation revealed that induced voltage was causing the LEDs to glow slightly when the LED should not have been illuminated. To eliminate possible operator confusion the LEDS were removed from these compartments and standard incandescent lamps installed.
- Note 3: LEDs were not installed on MCC 2XD compartment DWl because the compartment has been replaced with a Westinghouse compartment which uses a different type of indicating light fixture. The Westinghouse sockets, being of a different design, do not appear susceptible to the failure mechanism identified in this event.

The original commitment delineated in Revision 0 to this LER was to replace the incandescent light bulbs in MCCs listed above with LEDs. Due to the circumstances described above, 138 of 146 incandescent light bulbs were replaced with LEDs. The action taken significantly reduces the probability of bulb failure causing a repeat event and, therefore, meets the intent of the original commitment.

U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

TEXT CONTINUATION

APPROVED OMB NO. 315C-0104 EXPIRES: 5/31/95

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF

	MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.					
FACILITY NAME (1)	DOCKET NUMBER (2)		LER NUMBER (6)		PAGE (3)	
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Unit 1		94	- 09 -	01		

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

SAFETY ASSESSMENT

NRC FORM 366A

(5/92)

The safety significance of the event was minimal. All equipment operated as designed. As a result of this event, a loss of the cooling water valve removed the ability to cool the HPCI System lubrication oil, thus rendering the HPCI System inoperable. The facility is analyzed for a HPCI System failure. At the time of the event, the HPCI System had been returned to service following planned system surveillance testing. The Core Spray System, Automatic Depressurization System, and Low Pressure Coolant Injection System were available for operation as a back-up.

PREVIOUS SIMILAR EVENTS

Previous similar events include LER 2-90-020 and 1-89-020.

EIIS COMPONENT IDENTIFICATION

System/Component

EIIS Code

BJ/V/MCC/72/JC/FU

HPCI cooling water supply valve motor control center control power fuse

Indicating light

Light socket

IL

IL/*

(*) EIIS component identifier not found

Enclosure List of Regulatory Commitments

The following table identifies those actions committed to by Carolina Power & Light Company in this document. Any other actions discussed in the submittal represent intended or planned actions by Carolina Power & Light Company. They are described to the NRC for the NRC's information and are not regulatory commitments. Please notify the Manager-Regulatory Affairs at the Brunswick Nuclear Plant of any questions regarding this document or any associated regulatory commitments.

	Commitment	Committed date or outage
1.	Replace the affected bulb, bulb socket, and control power fuses.	Complete
2.	Install LEDs in the following Unit 1 Motor Control Center locations: IXDA All compartments IXDB All compartments IXA Compartments DE4, DE2 IXB Compartment DQ0 IXC Compartments DS4, DS1, DT2 IXD Compartments DW2, DW1	Complete
3.	Install LEDs in the following Unit 2 Motor Control Center locations: 2XDA All compartments 2XDB All compartments 2XA Compartment DE4 2XB Compartments DL5, DQ0 2XC Compartment DS4 2XD Compartment DW1	Complete