

CP&L

Carolina Power & Light Company

Brunswick Nuclear Project
P. O. Box 10429
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December 21, 1990

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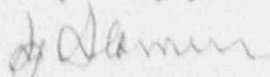
U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555

BRUNSWICK STEAM ELECTRIC PLANT UNIT 2
DOCKET NO. 50-324
LICENSE NO. DPR-62
LICENSEE EVENT REPORT 2-90-018

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)

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)
05000324

PAGE (3)

01 OF 05

TITLE (4) Manual Isolation of the HPCI System when a Relay Burned Up in the Steam Leak Detection System.

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	
11	23	90	90	- 018	- 00	12	21	90			

OPERATING MODE (9) POWER LEVEL (10) 100	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)									
	20.402(b)	20.405(c)	<input checked="" type="checkbox"/>	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)(vi)	OTHER (Specify in Abstract and Text)					
	20.405(a)(1)(iii)	50.73(a)(2)(i)		50.73(a)(2)(vii)(A)						
	20.405(a)(1)(iv)	50.73(a)(2)(ii)		50.73(a)(2)(vii)(B)						
	20.405(a)(1)(v)	50.73(a)(2)(iii)		50.73(a)(2)(viii)						

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 NPROS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS
<input checked="" type="checkbox"/>	IJ	RLY	G066	<input checked="" type="checkbox"/>					

SUPPLEMENTAL REPORT EXPECTED (14)

EXPECTED SUBMISSION

MONTH DAY YEAR

YES (If yes, complete EXPECTED SUBMISSION DATE)

NO

DATE (15)

02 28 90

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

On November 23, 1990, the Unit 2 reactor was at 100% power. The ECCS systems were operable in standby readiness. At 0501, the fuse is for the Unit 2 HPCI Steam Leak Detection Channel B logic blew. The HPCI Steam Leak Detection Channel B logic bus power monitor relay had a burned up coil and was the probable cause of the blown fuse. The HPCI system was manually isolated in accordance with Technical Specification 3.3.2. A loose wire was found which could have caused the relay coil to overheat, and blow its associated fuse. The relay and fuse were replaced and the HPCI system was returned to service. During the investigation it was determined that the same event occurred on Unit 1 five days prior to this event. Unit 1 is currently in a refuel outage with the reactor defueled, therefore, HPCI is not required to be operable. A work request has been initiated to replace the Unit 1 relay and fuse. An investigation into the cause of the failed relay and the loose wire is continuing and a supplement to this report will be submitted by February 28, 1991. This event had minimal safety significance.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)				PAGE (3)
Brunswick Steam Electric Plant Unit 2	05000324	YEAR		SEQUENTIAL NUMBER		02 OF 05
		90	-	018	-	

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

EVENT

Manual isolation of the HPCI system when a relay burned up in the steam leak detection system.

INITIAL CONDITIONS

On November 23, 1990, the Unit 2 reactor was at 100% power. The HPCI, ADS, RCIC, A and B CS loops and A and B RHR/LPCI loops were operable in standby readiness.

EVENT DESCRIPTION

At 0501, on November 23, 1990, the HPCI LOGIC POWER FAILURE and STEAM LEAK DETECTION AMBIENT TEMPERATURE HIGH alarms (Annunciator 2-A-2, windows 4-7 and 5-7) annunciated simultaneously in the Unit 2 control room. Follow up investigation revealed that the annunciations were caused when fuse 2-B21-F2B on control panel 2-H12-P614 blew. The fuse is for the Unit 2 HPCI Steam Leak Detection Channel B logic. Further investigation revealed that the 2-B21-K2B relay, HPCI Steam Leak Detection Channel B logic bus power monitor relay, had a burned up coil and was the probable cause of the blown fuse. LCOs A2-90-2372 and 2373 were initiated on the PCIS system and Isolation Actuation Instrumentation, respectively, and work request/job order 90-AUXS1 was initiated to replace the blown fuse. At 0630, LCO A2-90-2371 was initiated on the HPCI system and the system was isolated in accordance with Technical Specification 3.3.2. At 1300, the relay and fuse were replaced. At 1442, the HPCI system was returned to standby readiness.

INVESTIGATION

The involved relay is a General Electric (GE) HG11 (Hinged-armature Auxiliary Relay Standard Pickup) which has a voltage or current pickup value of 80% and a dropout value of 40 to 50% of its rated voltage and amperes. The fuse which blew is a Bussman MIN-5.

While trouble shooting the cause of the burned up relay coil a loose wire was identified on the power supply side of fuse 2-B21-F1B. The fuse which blew, 2-B21-F2B, is connected in parallel with fuse 2-B21-F1B. Three additional fuses are also connected in parallel with fuse 2-B21-F1B. Work request 90-AUXW1 was initiated to properly connect the hot side wiring to the subject fuse. At 0941, tightening of the power supply wire was complete. At 1300, the relay and fuse were successfully replaced. An initial search for the cause of the loose wire was unsuccessful. The subject wiring is part of the originally installed GE equipment and is connected to the terminal board by a screw and spade lug. In this case, the

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FACILITY NAME (1) Brunswick Steam Electric Plant Unit 2	DOCKET NUMBER (2) 05000324	LER NUMBER (5)			PAGE (3) 03 OF 05
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
		90	-	018	-
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screw was not fully inserted and the spade lug was being held in place by the natural twisting of the wire. It is possible that the loose wire created a degraded voltage condition close to the 80% of rated volts pickup value for the relay. This could have caused the relay coil to "chatter" near its pickup point and potentially, over an undefined time period, overheat the coil causing its epoxy coating to breakdown. The breakdown would result in a electrical short within the coil and blowing of its associated fuse. However, if a degraded voltage condition existed it would also have effected the other steam leak detection instrumentation which, in general, does not tolerate degraded voltage to the extent that the relay does. No indication has been found that an instrumentation problem or abnormality was noted prior to the event.

During the event investigation it was determined that the same event occurred on Unit 1 five days prior to this event. On 11-18-90, at 1025, the corresponding Unit 1 annunciators were received. An initial investigation determined that the 1-B21-K2A relay coil had burned up causing its associated fuse to blow. Unit 1 is currently in a refuel outage with the reactor defueled, therefore, HPCI steam leak detection instrumentation is not required to be operable. Tracking LCOs T1-90-1915 and the T1-90-1718 have been initiated to track the return to service of the instrumentation prior to its required operability. Work request 90-AUQW1 has been initiated to replace the 1-B21-K2A relay and the 1-B21-F2A Fuse. The work request is currently planned awaiting parts. When the parts are procured, the relay and fuse will be replaced and the failed relay will be forwarded to engineering for a comparison with the failed Unit 2 relay. Component engineering is currently planning to focus its investigation of the relays on determining if the failures were "end of life" and if a potential exists for these type relay coils to burn up and fail to open. In addition, thermography of the equipment potentially affected by degraded voltage will be performed. An investigation into the cause of the failed relay and the loose wire is continuing.

ROOT CAUSE

The cause of the event is being investigated.

CORRECTIVE ACTIONS

The fuse and relay were replaced on Unit 2 and the HPCI Steam Leak Detection System and HPCI were returned to service.

The Unit 1 HPCI Steam Leak Detection will be restored to service prior to returning the Unit to service following the refueling outage.

An investigation is continuing and a supplement to this report will

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FACILITY NAME (1) Brunswick Steam Electric Plant Unit 2	DOCKET NUMBER (2) 05000324	LER NUMBER (8)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
		90	-	018	-
				00	04 OF 05

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

be submitted by February 28, 1991.

EVENT ASSESSMENT

This event had minimal safety significance. Equipment operated as designed to alert the Operators of the power supply failure to the HPCI Steam Leak Detection Logic and corrective actions were taken in accordance with Technical Specifications. If the wire which was found to be loose had actually lost contact it would have been necessary to isolate the RWCU system but the consequences of the event would not have been more severe.

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TEXT CONTINUATION**

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	05000324	YEAR		SEQUENTIAL NUMBER		REVISION NUMBER
		90	-	018	-	00

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<u>ACRONYM</u>	<u>TERM</u>	<u>EIS CODE</u>
ADS	Automatic Depressurization System	*
	Bussman MIN-5	FU
CS	Core Spray	BM
ECCS	Emergency Core Cooling Systems	B
HGAll Hinged	armature Auxiliary Relay	RLY
	Standard Pickup	
HPCI	High Pressure Coolant Injection	BJ
RCIC	Reactor Coolant Injection System	BN
RHR/LPCI	Residual Heat Removal/Low Pressure	BO
	Coolant Injection	