

## LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Brunswick Steam Electric Plant Unit 1										DOCKET NUMBER (2) 0 5 0 0 0 3 2 5					PAGE (3) 1 OF 0 3										
TITLE (4) Loss of Residual Heat Removal Service Water Cooling System																									
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 NUMBER(S)												
0	1	1	9	8	4	8	4	0	0	1	0	1	0	3	1	2	8	4	0	5	0	0	0		
OPERATING MODE (9)			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)																						
POWER LEVEL (10)			20.402(b)				20.405(c)				50.73(a)(2)(iv)				73.71(b)										
			20.405(a)(1)(i)				50.38(c)(1)				X 50.73(a)(2)(v)				73.71(c)										
			20.405(a)(1)(ii)				50.38(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)(ix)														
LICENSEE CONTACT FOR THIS LER (12)																									
NAME M. J. Pastva, Jr., Regulatory Technician										TELEPHONE NUMBER 9 1 9 4 5 7 - 9 5 2 1															
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																									
CAUSE	SYSTEM	COMPONENT	MANUFAC- Turer	REPORTABLE TO NPDs		CAUSE	SYSTEM	COMPONENT	MANUFAC- Turer	REPORTABLE TO NPDs															
B	B	I	I	P	S	X	B	4	5	0	No														
SUPPLEMENTAL REPORT EXPECTED (14)										EXPECTED SUBMISSION DATE (15)			MONTH DAY YEAR												
YES (If yes, complete EXPECTED SUBMISSION DATE)										X NO															

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

During Unit 1 power operation at 100 percent, an attempt to initiate suppression pool cooling using the A loop of the Residual Heat Removal Service Water (RHRSW) System revealed that both loop pumps, A and C, when started, ran for approximately five seconds and tripped on low suction pressure lockout. At the time, the redundant RHRSW loop (B) was out of service for maintenance and unavailable. The inoperability of both RHRSW loops renders reactor shutdown cooling and suppression pool cooling inoperable. Entrapped air in the A loop suction header piping caused low suction header pressure trips of the pumps. The air resulted from inadequate venting of the suction header that occurred due to the orientation of the suction header vent line on the suction piping. The air was subsequently vented by establishing conventional Service Water System header flow through the A loop piping for approximately five minutes. The loop pumps were started and returned to service within 15 minutes of the event. Appropriate plant modifications on Units 1 and 2 will be developed and implemented to alleviate the venting problem. In order to help preclude future similar events, the A RHRSW loop on each unit will be flushed on a weekly basis in the interim to prevent the recurrence of an air pocket in the loops until the plant modifications are installed.

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## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

EXPIRES 8/31/85

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Brunswick Steam Electric Plant Unit 1	0 5 0 0 0 3 2 5 8 4 -	0 0 1	-	0 1	0 2	OF	0 3

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

During the ongoing performance of an operability test of the Unit 1 High Pressure Coolant Injection (HPCI) System, PT-09.2, an attempt was made to establish suppression pool cooling prior to actual running of the HPCI System turbine, which exhausts to the suppression pool. At the time, the unit was operating at 100 percent power and the B loop of the Residual Heat Removal Service Water (RHRSW) System was out of service and under equipment clearance for maintenance since January 16, 1984. Pump 1C of the redundant RHRSW Loop A was started, and within five seconds, it tripped concurrent with a loop low suction header pressure alarm annunciation. A check of the loop suction header pressure indicator revealed a pressure of 60 psig. Pump 1A of the loop was then started, and it too tripped within five seconds of starting, concurrent with a loop low suction header pressure alarm annunciation. Another attempt was made to start the loop 1C pump. It again ran for approximately five seconds and tripped.

The RHRSW System pump low suction pressure trip setpoint is 20 psig  $\pm$  2 psig. The setpoint works in conjunction with a five-second pump motor trip time delay relay, which allows establishing adequate pump suction pressure during pump startup. Following the incurred pump trips, it was suspected at the time that a problem existed with the loop suction header pressure sensing switch 1-E11-PS-1175. The pressure switch drain line of PS-1175 was flushed by a plant Auxiliary Operator and left in an operable condition. A small amount of line crud was noted during the flush, but it did not appear to be of sufficient quantity to have caused the switch to function improperly. At 0445 on January 19, 1984, a limiting condition for operation (LCO) was established for the loop. The inoperability of both RHRSW loops renders the suppression pool cooling and shutdown cooling modes of the Residual Heat Removal (RHR) System inoperable.

The plant Service Water System, which is composed of two separate headers (the conventional service water (CSW) header and the nuclear service water (NSW) header), respectively, supplies the A and B RHRSW System loops' suction headers. In addition, each plant Service Water System header is capable of supplying adequate cooling water flow through the respective RHRSW loop's suction and discharge piping to the loop's corresponding RHR System heat exchanger, A or B.

Within approximately ten minutes of establishing the LCO on the A RHRSW loop, CSW System flow through the loop RHR heat exchanger was begun. This was done to ensure that, if needed, the capability to provide the RHR System cooling did exist. Approximately five minutes later, the loop 1A pump was successfully started, and the loop was returned to service within 15 minutes of the incurred pump trips.

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

Subsequent investigation and evaluation of this event determined the incurred pump trips resulted from an air pocket in the A loop suction header piping. The entrapped air was then sensed by PS-1175 as a low pressure condition in accordance with the switch design and the pump trips resulted. This occurred because the suction header vent line is positioned at 135 degrees from top dead center of the piping. Inadequate venting of the suction header piping resulted. The same vent line orientation also applies to the Unit 2 A RHRSW loop. On both units, the B RHRSW loop vent line is oriented at top dead center of the suction piping.

As a result of this event, appropriate plant modifications to the RHRSW suction loop piping on both units will be developed and implemented. As part of these modifications, the A RHRSW loop suction piping vent lines on both units will be appropriately repositioned. In the interim period, until installation of the required modifications, weekly venting of the A RHRSW loop suction piping on both units will be performed to ensure the loops are properly vented. A periodic test procedure to be used for this weekly venting is presently being developed.



Carolina Power & Light Company

Brunswick Steam Electric Plant  
P. O. Box 10429  
Southport, NC 28461-0429  
April 12, 1984

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SERIAL: BSEP/84-0958

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

BRUNSWICK STEAM ELECTRIC PLANT, UNIT 1  
DOCKET NO. 50-325  
LICENSE NO. DPR-71  
SUPPLEMENT TO LICENSEE EVENT REPORT 1-84-1

Gentlemen:

In accordance with Title 10 to the Code of Federal Regulations, the enclosed Supplemental Licensee Event Report is submitted. The original report was submitted in accordance with the format set forth in NUREG-1022, September 1983.

Very truly yours,

C. R. Dietz, General Manager  
Brunswick Steam Electric Plant

MJP/pms/LETPS1

Enclosure

cc: Mr. J. P. O'Reilly

IE-22  
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