



Carolina Power & Light Company  
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OCT 27 1995

SERIAL: BSEP-95-0564  
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  
LICENSEE EVENT REPORT 1-95-018

Gentlemen:

In accordance with the Code of Federal Regulations, Title 10, Part 50.73, Carolina Power & Light Company submits the enclosed Licensee Event Report. 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.

Please refer any questions regarding this submittal to Mr. K. A. Harris at (910) 457-3312.

Sincerely,

W. Levis, Director-Site Operations  
Brunswick Nuclear Plant

SFT/

Enclosures

1. Licensee Event Report
2. Summary of Commitments

cc: Mr. S. D. Ebnetter, Regional Administrator, Region II  
Mr. D. C. Trimble, Jr., NRR Project Manager - Brunswick Units 1 and 2  
Mr. C. A. Patterson, Brunswick NRC Senior Resident Inspector  
The Honorable H. Wells, Chairman - North Carolina Utilities Commission

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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 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)

Brunswick Steam Electric Plant, Unit 1

DOCKET NUMBER (2)

05000325

PAGE (3)

1 of 4

TITLE (4)

Unit 1 Automatic Reactor Shutdown Due To Condensate/Feedwater Transient

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 NAME	DOCKET NUMBER
09	30	95	95	- 18 -	00	10	27	95	FACILITY NAME	DOCKET NUMBER
										05000
									FACILITY NAME	DOCKET NUMBER
										05000

OPERATING MODE (9)	1	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)		
POWER LEVEL (10)	58	20.405(a)(1)(ii)		50.36(c)(1)		50.73(a)(2)(v)		73.71(c)		
		20.405(a)(1)(iii)		50.36(c)(2)		50.73(a)(2)(vii)		OTHER		
		20.405(a)(1)(iii)		50.73(a)(2)(ii)		50.73(a)(2)(viii)(A)		(Specify in Abstract and Text)		
		20.405(a)(1)(iv)		50.73(a)(2)(iii)		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

Steve F. Tabor, Regulatory Affairs Specialist

TELEPHONE NUMBER

(910) 457-2178

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
D	SG	CE/SEAL	L130	Y					

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/>	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR

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

On September 30, 1995, at 0700 hours, the Unit 1 reactor automatically shutdown from 58% power. Automatic isolation and/or actuation of the Primary Containment Isolation System groups 2,3,6, and 8 also occurred. In addition, the Reactor Building Ventilation System isolated and the Standby Gas Treatment System initiated. Just prior to the event, maintenance technicians removed a conductivity cell installed on the condensate pump suction piping in support of corrective maintenance activities. Air in-leakage occurred during the conductivity cell replacement, resulting in vapor binding of the operating condensate pumps. Subsequent loss of pressure and flow in the condensate and feedwater systems decreased reactor water level below the low level 1 and 2 trip setpoints. The High Pressure Coolant Injection (HPCI) and Reactor Core Isolation Cooling (RCIC) systems initiated as designed. RCIC injected and reactor water level recovered before HPCI automatically injected. Event investigation determined that uneven packing distribution around the shaft of the conductivity cell resulted in excessive air inleakage during the conductivity cell replacement. This event has minimal safety significance in that the plant responded as designed. The NUREG-1022 cause classification for this event is D, Defective Procedures.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Brunswick Steam Electric Plant Unit 1	05000325	95	- 18 -	00	2 of 4

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

TITLE

Unit 1 Automatic Reactor Shutdown Due To Condensate/Feedwater Transient

INITIAL CONDITIONS

On September 30, 1995, Unit 1 was operating at a reduced power of 58% to support planned maintenance and surveillance activities. The 1B and 1C condensate pumps were operating with the 1A condensate pump in standby. The Emergency Core Cooling Systems were operable.

EVENT NARRATIVE

On September 30, 1995, at approximately 0656 hours, Maintenance technicians removed the 1A north condensate header conductivity cell in support of planned maintenance. While removing the cell, the technicians heard air inrushing into the condensate header. Within approximately one minute the cell was removed, allowing the technicians to close the conductivity cell isolation valve.

At approximately 0659 hours, the Condensate Low Pressure, Condensate Booster Pump Suction Pressure Low, and Reactor Feed Pump Suction Pressure Low control room annunciators were received. Control room operators immediately observed reactor water level decreasing. At 0700 hours, a full Reactor Protection System (RPS) trip occurred due to a decrease in reactor water level below the low level 1 setpoint (162.5"). Reactor water level decreased below the low level 2 setpoint of 112" following the scram due to shrinkage.

As designed, the low level 1 signal resulted in a Primary Containment Isolation System (PCIS) Group 2 (Drywell Floor and Equipment Drains), Group 6 (Containment Atmospheric Control) valve isolations. A PCIS Group 8 (Shutdown Cooling) isolation actuation also occurred; however, the valves were in the closed position so valve movement did not occur. The reactor water level low level 2 trip signal resulted in the initiation of the High Pressure Coolant Injection (HPCI) system, initiation and automatic injection of the Reactor Core Cooling Isolation (RCIC) system, Group 3 isolation (Reactor Water Cleanup), Reactor Building Ventilation System isolation, Standby Gas Treatment System initiation, and the trip of the reactor recirculation pumps. Reactor water level recovered before HPCI automatically injected. RCIC continued to inject until reactor water level increased above the RCIC pump high level trip setpoint of 208".

Once reactor water level was established below the feedpump high water level trip setpoint (208") and the entrapped air was vented via the normal condensate system vent paths, the condensate/feedwater system flow returned to normal with the reactor feedpump maintaining vessel level. The condensate/feedwater system transient occurred for approximately 40 seconds. During the transient neither the condensate or reactor feedpumps tripped. By 0722 hours the RPS trip signal and Engineered Safety Feature (ESF) actuations were reset, the 1A Reactor Recirculation Pump was restarted, and forced circulation reestablished.

During the event, the 1A condensate pump, which was in the standby condition, failed to auto-start on the condensate system low pressure permissive. Had the standby pump auto-started, the transient may have been precluded.

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

This event is being reported in accordance with the requirements of 10 CFR 50.73 (a)(2)(iv) in that an automatic actuation of ESF systems including the RPS occurred.

CAUSE OF EVENT

During the removal of the conductivity cell, air inleakage to the condensate pump suction piping occurred. The air inleakage caused air binding of both operating condensate pumps. The loss of condensate pumps resulted in a loss of pressure and flow in the condensate and feedwater systems and a subsequent decrease in reactor water level below the low level 1 RPS trip setpoint.

Investigation into the cause of the excess air inleakage determined that uneven distribution of the packing installed around the shaft of the conductivity cell provided inadequate sealing and resulted in excessive air inleakage. The deformation of the packing is believed to have occurred during previous maintenance and surveillance activities related to the conductivity cell. The work controls established for those activities did not require inspection and validation of packing integrity prior to completion of the activity.

In addition, investigation into the failure of the 1A condensate pump to start determined that the pressure switch for auto start of the pump was wired incorrectly, preventing the pump from starting on a low pressure permissive. A revision to the pressure switch wiring drawings in 1977 changed the pressure switch wiring configuration to satisfy a pump start permissive when the associated condensate pump discharge header pressure decreased below a specific setpoint; however, for undetermined reasons, the plant configuration at the time of this event did not match the drawing configuration that resulted from the 1977 plant drawing revision.

CORRECTIVE ACTIONS

The 1A north condensate conductivity cell gasket was replaced with a "Viton" grommet style gasket which is less susceptible to deformation.

An external visual inspection was performed on the remaining Unit 1 condensate system conductivity cells to determine whether further repairs were warranted due to packing installation concerns.

The condensate system conductivity cell procedure will be revised by January 31, 1996, to incorporate technical manual and technical representative recommendations for tightening stuffing box and packing inspection.

The Equipment Database System will be revised by November 30, 1995, to incorporate the lessons learned from this event. This database is used by Maintenance planners during the planning of conductivity cell work activities. The EDBS enhancement will heighten the awareness of planners to the need for conductivity cell packing inspection and proper maintenance techniques.

The 1A condensate pump low pressure switch wiring configuration was corrected and the start logic tested to ensure automatic pump start on low pressure.

The condensate pump and condensate booster pump auto start logic was validated for both units.

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

SAFETY ASSESSMENT

This event is of minimal safety significance in that the plant responded as designed and consistent with the analyses presented in the Updated Final Safety Report.

PREVIOUS SIMILAR EVENTS

No previous events involving a full RPS trip due to a loss of condensate/feedwater flow during conductivity cell replacement were identified.

EIIS COMPONENT IDENTIFICATION

System/Component

EIIS Code

Condensate System  
Feedwater System  
Reactor Protection System  
Primary Containment Isolation System  
Conductivity Cell Seal

SG  
SJ  
JD  
JM  
CE/SEAL

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. The condensate system conductivity cell procedure will be revised to incorporate technical manual and technical representative recommendations for tightening stuffing box and packing inspection.	1/31/96
2. The Equipment Database System will be revised to incorporate the lessons learned from this event.	11/30/95
3.	