

# CP&L

Carolina Power & Light Company

Brunswick Nuclear Project  
P. O. Box 10429  
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January 10, 1990

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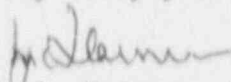
U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D. C. 20555

BRUNSWICK STEAM ELECTRIC PLANT UNIT 1  
DOCKET NO. 50-325  
LICENSE NO. DRP-71  
LICENSEE EVENT REPORT 1-90-028

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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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.

# LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) **Brunswick Steam Electric Plant Unit 1**

DOCKET NUMBER (2)  
**05000325**

PAGE (3)

**01 OF 04**

TITLE (4) **UNEXPECTED AUTOMATIC CLOSURE OF THE HPCI TURBINE EXHAUST VACUUM BREAKER ISOLATION VALVE WHEN THE ALTERNATE SAFE SHUTDOWN SUPPLY BREAKER WAS OPENED WITH THE NORMAL SUPPLY BREAKER CLOSED WITH A SEALED IN CLOSURE SIGNAL PRESENT.**

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	15	90	90	- 028	- 00	01	10	91			

OPERATING MODE (9) <b>5</b>	POWER LEVEL (10) <b>000</b>	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)(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

SUPPLEMENTAL REPORT EXPECTED (14)

EXPECTED SUBMISSION DATE (15)

MONTH DAY YEAR

YES (If yes, complete EXPECTED SUBMISSION DATE)

NO

**04 15 91**

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

On 12-15-90, at approximately 0530, the High Pressure Coolant Injection system turbine exhaust vacuum breaker, 1-E41-F079, stroked closed when its alternate safe shutdown power supply breaker was opened to restore it to its required position. The breaker had been found closed at approximately 0400 along with its normal supply breaker. When no reason was found for the alternate breaker being on, an auxiliary operator was directed to open the breaker. Coincident with the opening of the breaker the valve stroked closed. This event is believed to have resulted from a sealed in closure signal in the valve's normal supply breaker logic. With the alternate breaker supplying power to the valve motor, no automatic closure signal or manual operation of the valve from the control room or local operation from the normal supply breaker is available, per design. The event is still being investigated and a supplement will be submitted by April 15, 1991. The valve was restored to the open position. Corrective actions will be determined. This is an isolated event with no safety significance as the Unit was shutdown and primary containment isolation system (PCIS) operability was not required. If PCIS operability had been required the redundant isolation valve and secondary containment would have been available to mitigate the event.

# LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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FACILITY NAME (1) Brunswick Steam Electric Plant Unit 1	DOCKET NUMBER (2)	LER NUMBER (E)				PAGE (3)
	05000325	YEAR		SEQUENTIAL NUMBER		02 OF 04
		90	-	028	-	

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

## EVENT

Primary Containment Isolation Valve (PCIS) (E11S/JM) 1-E41-F079, High Pressure Coolant Injection (HPCI) (E11S/BJ) Turbine (E11S/BJ/TRB) Exhaust Vacuum Breaker (E11S/BJ/TRB/VACB), unexpected closure when the Alternate Safe Shutdown (ASSD) (E11S/not found) breaker was turned off.

## INITIAL CONDITIONS

The Unit 1 reactor was shutdown for the 1990/91 scheduled refuel/maintenance outage with the reactor defueled. The Emergency Core Cooling Systems (ECCS) and the Primary Containment Isolation System (PCIS) were not required to be operable.

## EVENT DESCRIPTION

At approximately 0400 on 12-15-90, the Shift Manager noted that the ASSD breaker for the 1-E41-F079 was turned "on" and the valve indicated open. The normal position for this breaker is "off". The Shift Manager informed the unit Control Operator (CO) and Senior Control Operator (SRO). An investigation did not reveal a reason for the breaker to be closed and an Auxiliary Operator (AO) was dispatched to restore the breaker to its required position (ie; de-energized). When the AO opened the breaker, the CO observed the valve stroke from full open to full close. The CO attributed the closure to a characteristic of an automatic bus transfer (ABT) with no Engineered Safety Feature (ESF)/PCIS significance and reopened the valve from the control room control switch. The CO did not inform the SRO of the valve stroking closed or of his reopening it. The CO did inform the Shift Manager of the valve closure when questioned by him prior to the shift turnover at approximately 0700. The Shift Manager informed his relief, however no follow-up occurred during the day shift. At approximately 2000, the Shift Manager who discovered the valve ASSD breaker on approached the Operations Shift Foreman and found he was not aware of the occurrence. The Shift Foreman questioned the CO and SRO. After a discussion with the CO and SRO, he consulted the Shift Technical Advisor and determined that a 10CFR50.72 reportable ESF actuation had occurred. The report was made at 2316 on 12-15-90.

## EVENT INVESTIGATION

Efforts to determine exactly when and why the ASSD breaker was turned on have not been successful. To date, it has been determined that, on 11-10-90, the ASSD breaker was "off" as specified by the restored position for tag number 5 of clearance 1-90-1070. This clearance was in place to allow for work on the 1-E41-F079 torque switches. Other work involving the breaker has been performed during this outage but it was completed prior to 11-10-90 and therefore could not have caused this event. Research into the cause for the breaker misalignment is continuing.

The 1-E41-F079 fails "as-is" on a loss of power. Therefore, the valve closure which occurred when the ASSD breaker was opened had to be caused by a sealed in closure signal in the normal power supply. The valve's power is from the normal power supply breaker when the ASSD breaker is turned off. However, the ABT

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FACILITY NAME (1) Brunswick Steam Electric Plant Unit 1	DOCKET NUMBER (2) 05000325	LER NUMBER (6)				PAGE (3) 03 OF 04
		YEAR 90	-	SEQUENTIAL NUMBER 028	-	

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

circuitry is designed such that the ABT seeks the ASSD feed if it is turned on. This design assumes that if the ASSD breaker is on, a condition has occurred which could cause a short in the normal power supply and circuitry, therefore, it separates itself from the normal power supply and associated circuitry and provides power to the valve motor directly from the ASSD breaker. In this configuration, there is no automatic logic circuitry to isolate the valve, only the open or closed position control switch at the ASSD breaker will stroke the valve. It also assumes that the ASSD breaker has been turned on in accordance with an ASSD procedure and that the control room staff are aware that the breaker is on. If this ASSD breaker is turned on without the knowledge of the control room staff, until it is discovered, there is no indication change or other flag in the control room to alert the CO to the fact that the valve motor is being powered from the ASSD source. In this instance, with both the normal and ASSD power supply on, the normal control circuitry remained energized. Thus, a closure signal in this circuitry would seal in but would not reposition the valve because the ABT is powering the valve motor from the ASSD breaker. However, when the ABT returned to the normal supply breaker, coincident with the opening of the ASSD breaker, the sealed in closure signal would close the valve. The sealed in signal could have come from three possible sources. The remote control switch located in the control room may have been taken to close by an operator while the ASSD breaker was on. This would result in the circuitry sealing in the closure signal but the valve would not stroke. If this were the case, it is reasonable to assume that the CO would have initiated efforts to determine why the valve did not close and the ASSD breaker position would have been discovered. The second possibility is that the local control switch at the normal 480 volt power could have been utilized in an attempt to close the valve. As in the possibility, it is reasonable to assume that an investigation into the cause of the valve's failure to stroke would have been initiated and the mispositioned ASSD breaker would have been discovered. The third possibility is that a PCIS isolation signal was received which sealed in the closure circuitry. To isolate the 1-E41-F079 automatically a high drywell pressure signal coincident with a HPCI steam supply line low pressure is required. With the reactor vessel at zero pounds of pressure the low steam supply pressure signal is present. A change out of the associated Rosemount transmitter which monitors drywell pressure is planned for this outage and may have caused a drywell high pressure signal. This would account for the unexpected isolation and is being investigated further.

This has been determined to be an isolated event. Valve mispositioning events have occurred in the past but no events involving breaker mispositioning were found.

A supplement to this report will be provided by April 15, 1991.

### ROOT CAUSE

The reason the ASSD breaker was closed has not been determined.

The cause of the valve closure coincident with the opening of the ASSD breaker is the circuitry design combined with a sealed in closure signal associated with

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FACILITY NAME (1)

Brunswick Steam Electric Plant Unit 1

DOCKET  
NUMBER (2)

05000325

LER NUMBER (5)

YEAR

90

-

SEQUENTIAL  
NUMBER

028

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NUMBER

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PAGE (3)

04 OF 04

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

the normal power supply breaker.

The cause of the sealed in closure signal is being investigated further.

### CORRECTIVE ACTIONS

The breaker and valve line up were restored to that required by the operating procedure.

Corrective actions to prevent breaker mispositioning will be determined when the cause has been found.

When the cause of the closure signal has been determined, corrective actions will be initiated as appropriate.

The ABT preference for the ASSD breaker without control room knowledge will be evaluated and corrective actions will be determined.

### SAFETY SIGNIFICANCE

This event had no safety significance since the Unit was shutdown and the PCIS capability was not required. If the reactor had been at power, the closing of the ASSD breaker would have prevented the valve from performing its PCIS function and would have resulted in a more safety significant event. However, such an event would be mitigated by the closure of the redundant isolation valve 1-E41-P075 or, in the event of its failure, by secondary containment.