



Carolina Power & Light Company

Brunswick Nuclear Project  
P. O. Box 10429  
Southport, N.C. 28461-0429

April 15, 1991

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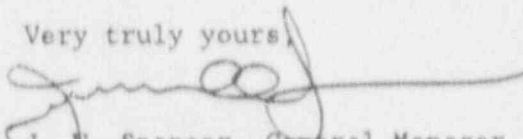
U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D. C. 20555

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

Gentlemen:

In accordance with Title 10 of the Code of Federal Regulations, the enclosed Supplemental Licensee Event Report is submitted. 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.

Very truly yours,



J. W. Spencer, General Manager  
Brunswick Nuclear Project

TMJ/

Enclosure

cc: Mr. S. J. 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 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	- 01	04	15	91			

OPERATING MODE (9) 5

POWER LEVEL (10) 000

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)	50.73(a)(2)(iv)	73.71(b)
		<input checked="" type="checkbox"/>	
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 NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC

SUPPLEMENTAL REPORT EXPECTED (14)

EXPECTED SUBMISSION

MONTH

DAY

YEAR

YES (If yes, complete EXPECTED SUBMISSION DATE)

☒

NO

DATE (15)

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

On 12-15-90, at approximately 0530, the alternate breaker supplying power to the High Pressure Coolant Injection system turbine exhaust vacuum breaker, 1-E41-F079, was switched off to restore it to its required position. Coincident with the opening of the breaker the valve stroked closed. The valve closure resulted from a sealed in closure signal present in the valve logic after the performance of 1MST-RHR21 on 12-1-90. The valve did not close at that time because, 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 normal supply breaker is available, per design. The reason the ASSD breaker was "on" is indeterminate. The valve was restored to the open position. This event will be reviewed during Operations and Maintenance Real Time Training. This is an isolated event with minimal safety significance. The Unit was shutdown, Primary Containment Isolation System (PCIS) operability was not required, and the valve and electrical line-ups would have restored the breaker to its required position prior to the unit being in a condition which required the PCIS function to be operable. Had PCIS operability been required, the redundant isolation valve and secondary containment would have been available to mitigate the event.

EXPIRES: 4/30/92

**LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION**

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FACILITY NAME (1)

Brunswick Steam Electric Plant Unit 1

DOCKET  
NUMBER (2)

05000325

LER NUMBER (5)

YEAR

90

-

SEQUENTIAL  
NUMBER

28

REVISION  
NUMBER

01

PAGE (3)

02 OF 04

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

EVENT

Unexpected closure of the PCIS (EIIS/JM) valve 1-E41-F079 [High Pressure Coolant Injection (HPCI) Turbine Exhaust Vacuum Breaker (EIIS/BJ/TRB/VACB)] when the Alternate Safe Shutdown (ASSD) (EIIS/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 on and an Auxiliary Operator (AO) was dispatched to restore the breaker to its required position (ie: off). When the AO turned the breaker off, 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 could not have caused this event. An extensive investigation of work associated with the 1-E41-F079 valve, its normal power supply breaker, and its ASSD power feed was conducted. The exact cause for the breaker being "on" is indeterminate.

# **LICENSEE EVENT REPORT (LER)** **TEXT CONTINUATION**

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (5)				PAGE (3)
Brunswick Steam Electric Plant Unit 1	05000325	YEAR		SEQUENTIAL NUMBER	REVISION NUMBER	03 OF 04
		90	-	28	- 01	

TEXT (IF MORE SPACE IS REQUIRED, USE ADDITIONAL NRC FORM 306A) (17)

The 1-E41-F079 fails "as-is" on a loss of power. Therefore, the valve closure which occurred when the ASSD breaker was turned off 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 circuitry is designed such that the ABT seeks the ASSD feed if it is turned on. The purpose of this design is to provide a separate power supply to the valve when conditions exist which could create electrical short circuits in the normal power supply and circuitry. In accordance with this design, when the valve is powered from the ASSD feed there is no automatic logic circuitry to isolate the valve; only the open or closed valve position control switch at the ASSD breaker will stroke the valve. When an 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. 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. The Rosemount transmitter which monitors drywell pressure was replaced during the outage, and the sealed in closure signal has been determined to have occurred during acceptance testing performed after its replacement. The acceptance testing was performed in accordance with maintenance surveillance test 1MST-RHR21R (RHR-LPCI, CSS, TIC, and HPCI HI Drywell Pressure Instrument Channel Calibration) on December 1990. The test recognizes that when it is performed while reactor pressure less than 114 psig, it will cause the 1-E41-F079 to go closed. At the end of the test procedure, personnel performing the test notify the Operations Shift Foreman that the test is complete and the valve may be realigned if it was repositioned by the test. In this case, the valve indicated that it was open (ie; had not repositioned) and no realignment was necessary.

Given that the reactor was below 114 psig when the test was performed, it has been determined that:

- the closure signal was initiated and sealed in at the normal power supply breaker as a result of the acceptance testing.
- the ASSD breaker was "on" at the time of this testing, which prevented the valve from repositioning.

Therefore, when the ASSD breaker was turned "off", the ABT powered the valve from the normal feed, allowing the sealed in closure signal to close the valve.

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



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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)				PAGE (3)
Brunswick Steam Electric Plant Unit 1	05000325	YEAR		SEQUENTIAL NUMBER	REVISION NUMBER	04 OF 04
		90	-	28	- 01	

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

## ROOT CAUSE

The valve closure resulted from a sealed in closure signal present in the valve when the ABT powered the valve from the normal feed on December 15, 1990, after the ASSD feed was turned off. The sealed in signal resulted from the performance of 1MST-RHR21R on December 1, 1990.

The reason the ASSD breaker was "on" is indeterminate.

## CORRECTIVE ACTIONS

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

The closure signal was in accordance with the design of the valve's circuitry and the procedure which resulted in the closure signal is correct. The cause of the breaker mispositioning has not been determined and; therefore, no corrective actions can be implemented. It should be noted that, prior to returning the HPCI system and the PCIS to operation after an extensive outage, an entire valve and electrical line-up is performed. These line ups were completed prior to the February 27, 1991 start up of the unit and would have restored the ASSD breaker to the "off" position had it not already been identified. When the unit is operating, a thorough check of the MCC breaker compartments is completed twice a day by the Auxiliary Operators and the breaker misposition would have been promptly identified. In addition, the ABT preference for the ASSD breaker without control room indication of the transfer has been investigated and has been determined to be prudent. Indication in the control room could not be done without compromising the ASSD function. The ASSD breaker is administratively required to be "off" unless being manipulated in accordance with an ASSD procedure. The ASSD procedures return the ASSD breaker to the "off" position when conditions allow. Therefore, no corrective actions are required.

This event will be reviewed in Operations and Maintenance Real Time Training.

## SAFETY SIGNIFICANCE

This event had minimal 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-F075 or, in the event of its failure, by secondary containment.