

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 5
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TITLE (4) Operation Outside of Technical Specification 3.5.3.1.b.2 Due to a Clearance Which Resulted in the Coincident Inoperability of CS and LPCI

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 3	1 7	8 9	8 9	0 0 8	0 0	0 4	1 4	8 9			0 5 0 0 0																							
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:15%;">OPERATING MODE (8) 4</td> <td style="width:15%;">20.402(b)</td> <td style="width:15%;">20.405(c)</td> <td style="width:15%;">50.73(a)(2)(iv)</td> <td style="width:15%;">73.71(b)</td> </tr> <tr> <td rowspan="5">POWER LEVEL (10) 0 0 0</td> <td>20.405(a)(1)(ii)</td> <td>50.36(e)(1)</td> <td>50.73(a)(2)(v)</td> <td>73.71(e)</td> </tr> <tr> <td>20.405(a)(1)(iii)</td> <td>50.36(e)(2)</td> <td>50.73(a)(2)(vii)</td> <td rowspan="4">OTHER (Specify in Abstract below and in Text, NRC Form 365A)</td> </tr> <tr> <td>20.405(a)(1)(iii)</td> <td>X 50.73(a)(2)(ii)</td> <td>50.73(a)(2)(viii)(A)</td> </tr> <tr> <td>20.405(a)(1)(iv)</td> <td>50.73(a)(2)(iii)</td> <td>50.73(a)(2)(viii)(B)</td> </tr> <tr> <td>20.405(a)(1)(v)</td> <td>50.73(a)(2)(iii)</td> <td>50.73(a)(2)(ix)</td> </tr> </table>												OPERATING MODE (8) 4	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)	POWER LEVEL (10) 0 0 0	20.405(a)(1)(ii)	50.36(e)(1)	50.73(a)(2)(v)	73.71(e)	20.405(a)(1)(iii)	50.36(e)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 365A)	20.405(a)(1)(iii)	X 50.73(a)(2)(ii)	50.73(a)(2)(viii)(A)	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)(ix)
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THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)

LICENSEE CONTACT FOR THIS LER (12)

NAME Theresa M. Jones, Regulatory Compliance Specialist	TELEPHONE NUMBER AREA CODE: 9 1 1 9 4   5 1 7 1 - 1 2 1 0 1 3 1 9
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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)

<input type="checkbox"/> 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)

The Unit 1 Reactor was shut down in approximately the fourth month of the 1988/1989 refueling and maintenance outage. On March 17, 1989, a clearance was hung in preparation for the Unit 1 Hydrostatic Test. This clearance resulted in the coincident inoperability of both the Core Spray and the Residual Heat Removal Low Pressure Coolant Injection systems for 6 hours and 34 minutes, thus placing the unit outside of Technical Specifications for 2 hours and 34 minutes (see ACTION statement 3.5.3.1.b.2).

The personnel who developed the clearance failed to adequately plan and research it. The personnel who approved the clearance failed to follow up on their concern that both low pressure systems were being removed from service due to a belief that the regulatory issues had previously been addressed. Guidance in the clearance procedure that hydro boundaries should be cleared was a contributing factor to this event.

The hydro test procedures will be revised to provide clearance requirements. Training will be given on the event.

This event had minimal safety significance. The reactor had a low heat load and sufficient time existed to reenergize the injection valve breakers prior to core uncover or fuel damage if a leak or break developed.

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NOTE: If more space is required, use additional NRC Form 306A's (17)

Event

Core Spray and Low Pressure Coolant Injection were made inoperable while performing the reactor vessel hydrostatic test.

Initial Conditions

Unit 1 was in the 1988/1989 refuel and maintenance outage. Preparations for a reactor pressure vessel hydrostatic test were in progress per Periodic Test (PT)-80.1. The A and B loops of the Core Spray (CS) system (EIIS/BM) were operable and in standby readiness. The A and B loops of the Residual Heat Removal/Low Pressure Coolant Injection system (RHR/LPCI) (EIIS/BO) were inoperable under Limiting Conditions for Operation (LCO) A-1-88-2257 and A-1-88-1933, respectively. Since the unit was in Mode 4, Cold Shutdown, the High Pressure Coolant Injection system (HPCI) (EIIS/BJ), the Reactor Core Isolation Cooling system (RCIC) (EIIS/BN), and the Automatic Depressurization System (ADS) (EIIS/\*) were not required, by Technical Specifications (T.S.), to be operable.

Event Description

On March 17, 1989, at 1650 hours, LCO A-1-89-0360 was initiated for both the A and B loops of CS. The CS loops were made inoperable due to the closing of their associated outboard injection valves (1-E21-F004A and B) per Clearance 1-497. The inoperability of both loops of the CS system, coincident with the inoperability of both loops of the LPCI system, placed the unit in T.S. action statement 3.5.3.1.b.2 and required that operations with the potential for draining the vessel be suspended and that at least one LPCI loop be restored to operable status within 4 hours. At 2324 hours on March 17, 1989, clearance tags were removed from the 480-volt breakers associated with the CS injection valves, thus restoring the ability of the system to automatically inject. CS and LPCI were unavailable for a total time of 6 hours and 34 minutes, thus placing the unit outside of T.S. and requiring this 30-day report per 10CFR50.73(a)(2)(i)(B).

Event Investigation

The Reactor Pressure Vessel Leakage Test, PT-80.0, was scheduled to be performed at the conclusion of the Unit 1 outage. As a result of a commitment to hydrostatically test the Control Rod Drive system (CRD) (EIIS/AA), the applicable portions of the earlier referenced test, PT-80.1, were performed to satisfy the requirements of both PT-80.0 and the commitment.

\*EIIS component identifier not found.

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TEXT (If more space is required, use additional NRC Form 386A's) (17)

Prior to the start of the Unit 1 outage, the Inservice Inspection (ISI) group submitted a draft clearance to the planning and scheduling group per Administrative Instruction (AI)-58, Equipment Clearance Procedure. The draft clearance indicated the requested cleared position of the boundary isolation valves as they had been cleared during the previous U-2 hydrostatic test. It did not indicate the method for clearing the valves and was accompanied by system prints showing the associated boundaries, as well as a copy of the lineup per PT-80.1 Attachment 3.

The Unit 1 Operations (Ops.) Engineer (a licensed Senior Reactor Operator) discussed the clearance with the specialist writing it. The Ops. Engineer was concerned about the possibility of water hammer if the outboard isolation valves were to open when the reactor was at pressure. At the time, the Ops. Engineer did not recall that the CS and LPCI injection valve design logic prevents their opening above approximately 400 psig. Due to his concern, he decided to place the valve control switches and the valve breakers under clearance. The clearance was written in the latter part of December 1988 and placed in the outage file until it was required.

On March 17, 1989, the Unit 1 day shift Senior Control Operator (SCO) and the day shift Operations Outage Coordinator (coordinator) (both licensed Senior Reactor Operators) discussed the fact that both the CS and LPCI systems were going to be out of service, which would place them outside of T.S. when the clearance was hung. The SCO assumed that any T.S. concerns had been resolved (i.e., that a 30-day written report was planned). The coordinator saw the SCO speaking with a member of Regulatory Compliance on the telephone. He assumed the discussion was in reference to the clearance and that the SCO had made his decision to hang the clearance as a result of the conversation. Thus, the coordinator also assumed that the T.S. implications were addressed. No communications took place between the coordinator and SCO concerning the topic of the telephone conversation. In addition, the day shift Shift Operating Supervisor (SOS) was not aware of both CS and LPCI inoperability.

The oncoming night-shift SCO, at 1900 hours on March 17, 1989, questioned the fact that CS and LPCI were both inoperable and was led to believe that the issue had been addressed by the off-going day-shift SCO. After shift turnover, the night-shift SCO informed the oncoming night-shift Operations Outage Coordinator of his concerns and continued to question the condition. The night-shift coordinator conferred with the night-shift Shift Operating Supervisor who attempted to contact the day-shift SOS. Night-shift was unable to contact the day-shift SOS but did contact the day-shift coordinator, who informed them that he thought the issue had been resolved by the day-shift SCO who had talked with Regulatory Compliance earlier that day. Night-shift was unable to contact the day-shift SCO and then contacted Regulatory Compliance. They were informed that Regulatory Compliance had spoken with the day-shift SCO earlier that day, but the conversation had not been in reference to the potential inoperability of both the CS and LPCI systems. During the night-shift conversation, it was decided that the removal of the valve breakers from

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the clearance and their restoration to the "on" position would render CS operable. Efforts were initiated to get permission from the ISI group (the clearance holder) to remove the valve breakers from the clearance. ISI indicated that they had originally only expected the valve control switches to be cleared and agreed to the removal of the valve breakers from the clearance. At 2324 hours, the foreman had the clearance removed from the CS and LPCi injection valve breakers to restore their automatic injection capability. At 0111 hours on March 18, 1989, LCO A-1-89-0360 was cancelled. In addition, a memo was written to Regulatory Compliance informing them of the need to write a 30-day report.

Root Cause Analysis

The cause of the event is a personnel error on the part of the Ops. Engineer, the day-shift SOG, the day-shift SCO, and the day-shift Operations Outage Coordinator.

The Ops. Engineer was concerned with the possibility that a boundary isolation valve might open or close, in response to a spurious isolation or initiation signal, and cause water hammer damage to systems. This concern resulted from the isolation of the Unit 1 shutdown cooling suction valve (1-E11-F009) (EIIS\*/ISV) during the performance of the Reactor Pressure Vessel Leakage Test (PT-80.0) in the previous Unit 1 refuel and maintenance outage in May 1987. (This referenced isolation was a design isolation on reactor vessel high pressure less than or equal to 140 psig.) The Ops. Engineer decided that the placement of a clearance on both the valve control switch and the associated valve breaker was appropriate to preclude a water hammer event. In making this decision, he failed to recognize that such a clearance would disable the required low pressure injection paths.

Neither the day-shift SCO nor the day-shift coordinator followed up on their initial concern and assumed that the regulatory issues had been addressed. The day-shift Shift Operating Supervisor failed to recognize the plant condition during his reviews of the shift logs and plant conditions.

A contributing cause to this event was inappropriate procedural guidance in the clearance procedure, AI-58, which led the day-shift SCO to believe that the clearance on the valve breakers was appropriate. On April 4, 1986, Revision 10 of AI-58 was approved. The revision added the following statement in response to an INPO good practice item:

All system hydro boundaries shall be tagged with the exception of those valves necessary to perform the hydro. Under no circumstances should system interfaces be left untagged.

\*EIIS component identifier not found.

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On April 11, 1986, the procedure was again revised to prevent having to clear the insert and withdraw lines on the 137 Control Rod Drive units. The revision changed the statement to read:

All system hydro boundaries should be tagged with the exception of those valves necessary to perform the hydro.

The intent of this revision is believed to have been to direct the clearing of the valve control switches to prevent inadvertent operation, but it does not specify the method of clearing to be used. PT-80.0 provides a valve lineup but does not dictate that valves positioned for the hydro be placed under clearance.

Corrective Actions

The Hydrostatic and Leakage Test procedures will be revised to provide clear, concise guidance on clearance requirements prior to their next use. This guidance will include the need to assure low pressure injection capability per T.S.

Training on this event will be conducted for Operations personnel involved in the establishment of clearances.

Event Assessment

An assessment of this event under reasonable and credible alternative conditions would indicate that the event would not have been more severe. The hydro test took place approximately four months after shutdown for refueling activities; thus, the decay heat load was low. In addition, the hydro is a carefully monitored test from a standpoint of leakage detection; thus, should a leak or break develop, sufficient time would be available to reenergize the injection valve breakers and initiate a low pressure injection flow to the vessel prior to core uncover or fuel damage.

Available records indicate that the Unit 2 pressure vessel hydrostatic test, completed in March 1988, and the Unit 1 pressure vessel leakage test, completed in May 1987, did not involve the placing of a clearance on the low pressure coolant injection isolation valve breakers. CP&L believes this to be an isolated event.



Carolina Power & Light Company

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

April 14, 1989

FILE: B09-13510C  
SERIAL: BSEP/89-0321

10CFR50.73

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

BRUNSWICK STEAM ELECTRIC PLANT UNIT 1  
DOCKET NO. 50-325  
LICENSE NO. DPR-71  
LICENSEE EVENT REPORT 1-89-008

Gentlemen:

In accordance with Title 10 to 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 in accordance with the format set forth in NUREG-1022, September 1983.

Very truly yours,

J. L. Harness, General Manager  
Brunswick Nuclear Project

TMJ/jee

Enclosure

cc: Mr. S. D. Ebnetter  
Mr. E. G. Tourigny  
BSEP NRC Resident Office

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