



**Progress Energy**

**JAN 30 2012**

SERIAL: BSEP 12-0009

10 CFR 50.73

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555-0001

Subject: Brunswick Steam Electric Plant, Unit Nos. 1 and 2  
Renewed Facility Operating License Nos. DPR-71 and DPR-62  
Docket Nos. 50-325 and 50-324  
Licensee Event Report 1-2011-003

Ladies and Gentlemen:

In accordance with the Code of Federal Regulations, Title 10, Part 50.73, Carolina Power & Light Company, now doing business as Progress Energy Carolinas, Inc., submits the enclosed Licensee Event Report (LER). This report fulfills the requirement for a written report within sixty (60) days of a reportable occurrence.

Please refer any questions regarding this submittal to Mr. Lee Grzeck, Acting Supervisor - Licensing/Regulatory Programs, at (910) 457-2487.

Sincerely,

Joseph M. Frisco, Jr.  
Plant General Manager  
Brunswick Steam Electric Plant

LJG/ljg

Enclosure:

Licensee Event Report

JE22  
NPR

cc (with enclosure):

U. S. Nuclear Regulatory Commission, Region II  
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Chair - North Carolina Utilities Commission  
P.O. Box 29510  
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**LICENSEE EVENT REPORT (LER)**

(See reverse for required number of digits/characters for each block)

<b>1. FACILITY NAME</b> Brunswick Steam Electric Plant (BSEP), Unit 1						<b>2. DOCKET NUMBER</b> 05000325			<b>3. PAGE</b> 1 of 4			
<b>4. TITLE</b> Loss of Control Room Air Conditioning and Emergency Ventilation												
<b>5. EVENT DATE</b>			<b>6. LER NUMBER</b>			<b>7. REPORT DATE</b>			<b>8. OTHER FACILITIES INVOLVED</b>			
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME BSEP, Unit 2		DOCKET NUMBER 05000324	
12	01	2011	2011 - 003 - 00			01	30	2012	FACILITY NAME		DOCKET NUMBER	
<b>9. OPERATING MODE</b>  1			<b>11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)</b>									
<b>10. POWER LEVEL</b>  100			<input type="checkbox"/> 20.2201(b)			<input type="checkbox"/> 20.2203(a)(3)(i)			<input type="checkbox"/> 50.73(a)(2)(i)(C)			<input type="checkbox"/> 50.73(a)(2)(vii)
			<input type="checkbox"/> 20.2201(d)			<input type="checkbox"/> 20.2203(a)(3)(ii)			<input type="checkbox"/> 50.73(a)(2)(ii)(A)			<input type="checkbox"/> 50.73(a)(2)(viii)(A)
			<input type="checkbox"/> 20.2203(a)(1)			<input type="checkbox"/> 20.2203(a)(4)			<input type="checkbox"/> 50.73(a)(2)(ii)(B)			<input type="checkbox"/> 50.73(a)(2)(viii)(B)
			<input type="checkbox"/> 20.2203(a)(2)(i)			<input type="checkbox"/> 50.36(c)(1)(i)(A)			<input type="checkbox"/> 50.73(a)(2)(iii)			<input type="checkbox"/> 50.73(a)(2)(ix)(A)
			<input type="checkbox"/> 20.2203(a)(2)(ii)			<input type="checkbox"/> 50.36(c)(1)(ii)(A)			<input type="checkbox"/> 50.73(a)(2)(iv)(A)			<input type="checkbox"/> 50.73(a)(2)(x)
			<input type="checkbox"/> 20.2203(a)(2)(iii)			<input type="checkbox"/> 50.36(c)(2)			<input type="checkbox"/> 50.73(a)(2)(v)(A)			<input type="checkbox"/> 73.71(a)(4)
<input type="checkbox"/> 20.2203(a)(2)(iv)			<input type="checkbox"/> 50.46(a)(3)(ii)			<input type="checkbox"/> 50.73(a)(2)(v)(B)			<input type="checkbox"/> 73.71(a)(5)			
<input type="checkbox"/> 20.2203(a)(2)(v)			<input type="checkbox"/> 50.73(a)(2)(i)(A)			<input type="checkbox"/> 50.73(a)(2)(v)(C)			<input type="checkbox"/> OTHER			
<input type="checkbox"/> 20.2203(a)(2)(vi)			<input type="checkbox"/> 50.73(a)(2)(i)(B)			<input checked="" type="checkbox"/> 50.73(a)(2)(v)(D)			Specify in Abstract below or in NRC Form 366A			
<b>12. LICENSEE CONTACT FOR THIS LER</b>												
FACILITY NAME Lee Grzeck, Senior Engineer - Licensing								TELEPHONE NUMBER (Include Area Code) (910) 457-2487				
<b>13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT</b>												
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX			
<b>14. SUPPLEMENTAL REPORT EXPECTED</b>								<b>15. EXPECTED SUBMISSION DATE</b>		MONTH	DAY	YEAR
<input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO												
ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)												
<p>On December 1, 2011, at 1344 hours Eastern Standard Time (EST), the Control Building (CB) instrument air dryer failed resulting in loss of control air. As a result, the three Control Room Air Conditioning subsystems required by Technical Specification (TS) 3.7.4, "Control Room Air Conditioning (AC) System," and the two Control Room Emergency Ventilation subsystems required by TS 3.7.3, "Control Room Emergency Ventilation (CREV) System," became inoperable. Because Brunswick has a shared control room, Unit 1 and Unit 2 entered TS 3.7.3 Required Action B.1, for two CREV subsystems inoperable (i.e., be in Mode 3 within 12 hours) and TS 3.7.4, Required Action E.1, for three Control Room (CR) AC subsystems inoperable (i.e., enter LCO 3.0.3 immediately). At 1410 hours, operability of two Control Room AC subsystems and one CREV subsystem was restored, and LCO 3.0.3 was exited, when the CB instrument air dryer was bypassed. No power reduction took place as a result of the LCO 3.0.3 entry.</p> <p>The failure of the CB instrument air dryer was due to low refrigerant pressure leading to ice blockage of the instrument air supply line. The cause was inadequate monitoring to detect the low refrigerant pressure. Corrective actions include replacing the instrument air dryer and a procedure revision to bypass the dryer when low refrigerant pressure conditions exist.</p>												

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Brunswick Steam Electric Plant (BSEP), Unit 1	05000325	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 of 4
		2011 -- 003 -- 00			

**NARRATIVE**

Energy Industry Identification System (EIIIS) codes are identified in the text as [XX].

Introduction*Initial Conditions*

At the time of the event, Unit 1 was in Mode 1, operating at approximately 100 percent of rated thermal power (RTP). Unit 2 was in Mode 2, operating at approximately 5 percent of RTP following a scheduled maintenance outage.

*Reportability Criteria*

This event is being reported in accordance with 10 CFR 50.73(a)(2)(v)(D), as an event or condition that could have prevented the fulfillment of the safety function that is needed to mitigate the consequences of an accident. The NRC was initially notified of this event on December 1, 2011 (i.e., Event Number 47493).

Event Description

The BSEP Control Building Heating, Ventilation, and Air Conditioning (HVAC) control air system includes two safety-related instrument air compressors. These air compressors provide control air for the CB HVAC pneumatic controllers. If all control air is lost, the Control Room isolation dampers fail closed, rendering the CREV system [VI] inoperable. In addition, the control room Air Conditioning (AC) subsystems are lost.

On December 1, 2011, at 1344 hours Eastern Standard Time (EST), the Control Building (CB) instrument air dryer failed resulting in a loss of control air. As a result, the three Control Room Air Conditioning subsystems required by Technical Specification (TS) 3.7.4, "Control Room Air Conditioning (AC) System," and the two Control Room Emergency Ventilation subsystems required by TS 3.7.3, "Control Room Emergency Ventilation (CREV) System," became inoperable. Because Brunswick has a shared control room, Unit 1 and Unit 2 entered TS 3.7.3 Required Action B.1, for two CREV subsystems inoperable (i.e., be in Mode 3 within 12 hours) and TS 3.7.4, Required Action E.1, for three Control Room AC subsystems inoperable (i.e., enter LCO 3.0.3 immediately). Approximately 26 minutes later, at 1410 hours, in accordance with operating procedure 00P-37, "Control Building Ventilation System Operating Procedure," operations personnel bypassed the CB Instrument Air Dryer, returning the required CREV and Control Room AC subsystems to operable status. No power reduction took place as a result of the LCO 3.0.3 entry.

Event Cause

The investigation determined that the air tube supplying instrument air to the air dryer was blocked with ice. This blockage caused a significant loss of CB HVAC instrument air pressure that resulted in the CR isolation dampers closing, and a total loss of CB air conditioning and emergency filtration capability.

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Event Cause (continued)

The temperature in the area of the dryer (i.e., the CB mechanical equipment room) was estimated to be approximately 60 degrees Fahrenheit (F) at the time of the failure of the instrument air system. This temperature is above the minimum operating temperature for the dryer, which is approximately 45 degrees F to 50 degrees F. Additionally, the ambient air temperature of the CB mechanical equipment room is checked once per shift, in accordance with the auxiliary operator daily rounds procedure. Ambient temperatures were not low enough to initiate any severe weather actions.

The investigation determined that the refrigerant pressure was at the bottom of the acceptable operating range at the time of the failure. The low refrigerant pressure is believed to be due to a very slight leak of the seals in the refrigerant circuit. Though temperature in the CB mechanical equipment room is checked once a shift, the refrigerant pressure of the dryer is monitored only once a quarter, as part of the System Engineers system trending. The slow leak in the refrigerant circuit over time caused the pressure in the dryer refrigerant system to decrease to the point that the saturation temperature of the refrigerant in the air dryer reached the freezing point. The combination of the lower room temperatures that occur in the winter months (i.e., in the CB mechanical equipment room) with the low pressure in the air dryer refrigerant system was enough to freeze the condensate that forms in the instrument air line. This caused an ice blockage in the supply instrument air line, resulting in a loss of control air and the CR isolation dampers failing closed. This rendered the CREV and Control Room AC systems inoperable.

Safety Assessment

The safety significance of this event is minimal. The condition existed for approximately 26 minutes. Plant staff took immediate actions to return the equipment to service. For the brief time the Control Room AC and CREV systems were inoperable, performance of plant personnel and equipment in the Control Room was not adversely affected. The maximum Control Room back panel temperature during this event was approximately 68 degrees Fahrenheit.

Corrective Actions

The following actions have been completed.

- Replaced the Control Building HVAC instrument air dryer with a new unit.
- As an interim action, a supplemental check has been added to the Operators daily rounds to verify adequate refrigerant pressure in the CB HVAC instrument air dryer.

The following corrective actions will be taken.

- Revise operating procedure 2OI-03.4.3, "Unit 2 Turbine Building Auxiliary Operator Daily Check Sheets," to check CB instrument air dryer refrigerant system pressure once per shift, and bypass the dryer if a low pressure condition exists. This action is expected to be complete by June 28, 2012.

## LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

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#### Previous Similar Events

A review of LERs and corrective action program condition reports (CRs) for the past three years identified the following similar previous occurrence.

- LER 1-2009-001, dated March 22, 2009, reported a loss of Control Room Air Conditioning and Emergency Ventilation System due to blockage of air flow through the Control Building instrument air dryer due to freezing of condensate within the cooling coil. The corrective actions to prevent recurrence included procedure revisions to ensure proper operation of the CB HVAC system during cold weather operation.

The resulting corrective action plan from the 2009 event did not prevent this event due to the fact that the direct cause was determined to be blockage of air flow through the Control Building instrument air dryer due to low temperatures in the CB mechanical equipment room. Corrective actions to prevent recurrence included revising appropriate procedures to include guidance for low temperature operation. Ambient temperatures on December 1, 2011, were not low enough to initiate this guidance.

- LER 1-2011-001, dated June 2, 2011, reported a loss of CREV following a trip of the 480 VAC Emergency Bus E-7 main feeder breaker. The cause was determined to be a spurious actuation of the solid state trip unit on the E-7 breaker. The corrective action was to replace the E-7 breaker.

#### Commitments

No regulatory commitments are contained in this report.