



SEP 10 2008

SERIAL: BSEP 08-0119

10 CFR 50.73

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

Subject: Brunswick Steam Electric Plant, Unit No. 1  
Docket No. 50-325/License No. DPR-71  
Licensee Event Report 1-2008-005

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. Philip A. Leich, Manager - Support Services, at (910) 457-2271.

Sincerely,

A handwritten signature in black ink, appearing to read "Edward L. Wills, Jr.", written in a cursive style.

Edward L. Wills, Jr.  
Plant General Manager  
Brunswick Steam Electric Plant

MAT/mat

Enclosure: Licensee Event Report

Progress Energy Carolinas, Inc.  
Brunswick Nuclear Plant  
PO Box 10429  
Southport, NC 28461

IE22  
NRR

cc (with enclosure):

U. S. Nuclear Regulatory Commission, Region II  
ATTN: Mr. Luis A. Reyes, Regional Administrator  
Sam Nunn Atlanta Federal Center  
61 Forsyth Street, SW, Suite 23T85  
Atlanta, GA 30303-8931

U. S. Nuclear Regulatory Commission  
ATTN: Mr. Joseph D. Austin, NRC Senior Resident Inspector  
8470 River Road  
Southport, NC 28461-8869

U. S. Nuclear Regulatory Commission (Electronic Copy Only)  
ATTN: Mrs. Farideh E. Saba (Mail Stop OWFN 8G9A)  
11555 Rockville Pike  
Rockville, MD 20852-2738

Chair - North Carolina Utilities Commission  
P.O. Box 29510  
Raleigh, NC 27626-0510

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

# 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
--	-------------------------------------	--------------------------

**4. TITLE**  
As-Found Values for Safety/Relief Valve Lift Setpoints Outside Technical Specification Allowed Tolerance

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
07	16	2008	2008	005	00	09	10	2008	FACILITY NAME	DOCKET NUMBER
										05000
										05000

<b>9. OPERATING MODE</b>  1	<b>11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §:</b> (Check all that apply)									
<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)(vii)(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)(vii)(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 checked="" type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A						

**12. LICENSEE CONTACT FOR THIS LER**

FACILITY NAME Mark Turkal, Lead Engineer - Licensing	TELEPHONE NUMBER (Include Area Code) (910) 457-3066
---	--

**13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT**

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

<b>14. SUPPLEMENTAL REPORT EXPECTED</b> <input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO	<b>15. EXPECTED SUBMISSION DATE</b>	MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On July 16, 2008, the Brunswick Steam Electric Plant as-found testing of 11 safety/relief valves (SRVs), which had been removed from Unit 1 during the spring 2008, refueling outage (i.e., B117R1) was completed. The testing indicated that two of the 11 valves were found to lift at greater than 3 percent tolerance allowed by Technical Specification 3.4.3, "Safety/Relief Valves." A third SRV pilot valve was unable to be pressurized to obtain as-found data because of excessive disc-to-seat leakage. Since Technical Specification 3.4.3 requires 10 of the 11 installed SRVs to be operable, this condition is being reported in accordance with 10 CFR 50.73(a)(2)(i)(B) as operation prohibited by the plant's Technical Specifications.

The cause for the setpoint drift for SRV pilot valves 1-B21-F013F and 1-B21-F013J was an incomplete understanding of proper lapping techniques when the BSEP SRV rebuild program began and corrosion bonding. In addition, misalignment caused mechanical binding between the pilot rod and guide assembly for valve 1-B21-F013F. The failure of SRV pilot valve 1-B21-F013G to open was an incomplete understanding of proper lapping techniques when the BSEP SRV rebuild program began. Corrective actions for these items include: (1) incorporation of additional industry guidance into the SRV Rebuild Program, and (2) refurbish and recertify each pilot valve.

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

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Brunswick Steam Electric Plant (BSEP), Unit 1	05000325	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 of 4
		2008 -- 005 -- 00			

**NARRATIVE**

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

Introduction

On July 16, 2008, the Brunswick Steam Electric Plant as-found testing of 11 safety/relief valves (SRVs), which had been removed from Unit 1 during the spring 2008, refueling outage (i.e., B117R1) was completed. These results of the testing indicated that two of the 11 valves were found to lift at greater than 3 percent tolerance allowed by Technical Specification 3.4.3, "Safety/Relief Valves." A third SRV pilot valve was unable to be pressurized to obtain as-found data because of excessive disc-to-seat leakage.

Event Description

*Initial Conditions*

At the time of the event, Unit 1 was in Mode 1, operating at approximately 100 percent of rated thermal power.

*Discussion*

During the spring 2008, Unit 1 refueling outage, the 11 Model 7567F Target Rock Two-Stage pilot valve assemblies were replaced with certified spares. The removed SRV pilot valves were sent to Wyle Laboratories for set pressure testing. On July 16, 2008, as-found testing of the SRV pilot valves was completed. The testing indicated that two of the 11 valves actuated at pressures outside of the 3 percent tolerance allowed by Technical Specification 3.4.3. A third SRV pilot valve was unable to be pressurized to obtain as-found data because of excessive disc-to-seat leakage. The test data is provided in the following table.

Valve Identification	As-Found (psig)	Technical Specification Setpoint (psig)	Percent Difference
1-B21-F013F	1177	1130 ± 33.9	+4.16%
1-B21-F013G	Did Not Open	1130 ± 33.9	N/A
1-B21-F013J	1185	1150 ± 34.5	+3.04%

Since Technical Specification 3.4.3 requires 10 of the 11 installed SRVs to be operable, this condition is being reported in accordance with 10 CFR 50.73(a)(2)(i)(B) as operation prohibited by the plant's Technical Specifications.

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

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Brunswick Steam Electric Plant (BSEP), Unit 1	05000325	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	3 of 4
		2008 -- 005 -- 00			

**NARRATIVE**

Event Cause

The root cause of each SRV is discussed separately due to the individual nature of the findings.

**SRV 1-B21-F013F**

Inspections of the 1-B21-F013F pilot valve assembly identified indications of pilot rod misalignment. Additionally, the valve was lapped for 120 seconds, which is longer than the typical limitation of 90 seconds. When the valve was lapped, a non-uniform or non-concentric seat band may have been formed. This allowed the pilot disc to get cocked in the seat causing the misalignment in the pilot rod. Based on industry operating experience, pilot rod binding is known to cause setpoint drift. The root cause for this valve failure was an incomplete understanding of proper lapping techniques when the BSEP SRV rebuild program began and corrosion bonding resulting in setpoint drift.

**SRV 1-B21-F013G**

The excessive disc-to-seat leakage of this pilot valve caused steam cutting of the pilot disc and seat. The root cause for this valve failure was an incomplete understanding of proper lapping techniques when the BSEP SRV rebuild program began which allowed the pilot to leak.

**SRV 1-B21-F013J**

The leakage of this pilot valve caused steam cutting of the pilot disc and seat. The pilot seat was slightly ditched which causes a pinch between the pilot disc and seat. Corrosion bonding was also present. These factors combined to cause the setpoint drift. The root cause for this valve failure was an incomplete understanding of proper lapping techniques when the BSEP SRV rebuild program began which allowed the pilot to leak.

Safety Assessment

The safety significance of this condition is considered minimal. The as-found condition of the Unit 1 SRVs was compared to the current overpressure analysis prepared in support of extended power uprate and it was concluded that this analysis remained bounding. As such, the applicable acceptance criteria for design basis events would have been met and the SRVs remained capable of performing their intended safety function.

Corrective Actions

The 11 SRV pilot valve assemblies were replaced with certified spares during the B117R1 refueling outage.

To address lapping concerns, guidance from the Electric Power Research Institute (EPRI) Target Rock SRV Model 67F Maintenance Guide was incorporated into the SRV pilot rebuild procedure (i.e., OCM-VSR509).

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

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Brunswick Steam Electric Plant (BSEP), Unit 1	05000325	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	4 of 4
		2008 -- 005 -- 00			

**NARRATIVE**

Corrective Actions (continued)

This was completed as a corrective action for LER 1-2006-004, Supplement 1. Use of the lapping practices outlined in the guide will minimize ditching of the pilot disc to preclude failures as well as minimize pilot leakage.

The SRV pilot valves removed during the B117R1 refueling outage will be refurbished and recertified prior to reinstallation.

Previous Similar Events

A review of LERs and corrective action program condition reports for the past three years identified the following similar event.

- LER 2-2007-003, dated August 16, 2007, as supplemented on October 18, 2007, and LER 1-2006-004, dated July 26, 2006, as supplemented on November 17, 2006, both document operation prohibited by TSs due to as-found testing which indicated that four SRVs actuated at pressures outside of the 3 percent tolerance allowed by Technical Specification 3.4.3. The failures observed following B117R1 are consistent with those experienced during the 2006 and 2007 refueling outages. These failures have been previously investigated (i.e., Nuclear Condition Reports (NCRs) 196311 and 237575. The root causes for those investigations remain valid and the previously identified corrective actions had not been completed for the set of pilot valves removed in 2008. As such, the current failures do not call into question the effectiveness of the prior corrective actions.

Commitments

No regulatory commitments are contained in this report.