



October 18, 2007

SERIAL: BSEP 07-0107

10 CFR 50.73

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

Subject: Brunswick Steam Electric Plant, Unit No. 2
Docket No. 50-324/License No. DPR-62
Licensee Event Report 2-2007-003, Supplement 1

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 supplement.

Please refer any questions regarding this submittal to Mr. Randy C. Ivey,
Manager - Support Services, at (910)457-2447.

Sincerely,

A handwritten signature in black ink, appearing to read "Terry D. Hobbs".

Terry D. Hobbs
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
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U. S. Nuclear Regulatory Commission **(Electronic Copy Only)**
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LICENSEE EVENT REPORT (LER)

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

Estimated burden per response to comply with this mandatory information collection request: 50 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 infocollect@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.

1. FACILITY NAME Brunswick Steam Electric Plant (BSEP), Unit 2	2. DOCKET NUMBER 05000324	3. PAGE 1 OF 5
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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
06	26	2007	2007	-- 003 --	01	10	18	2007	FACILITY NAME	DOCKET NUMBER
										05000
										05000

9. OPERATING MODE 1	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more)									
10. POWER LEVEL 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 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 A. Turkal, Lead Engineer - Licensing	TELEPHONE NUMBER (Include Area Code) (910) 457-3066
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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

14. SUPPLEMENTAL REPORT EXPECTED				15. EXPECTED SUBMISSION DATE		MO	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO						

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

On June 26, 2007, the Brunswick Steam Electric Plant received the results of as-found testing of 11 safety/relief valves (SRVs); which had been removed from Unit 2 during the spring 2007, refueling outage (i.e., B218R1). These results indicated that four of the 11 valves mechanically actuated at pressures outside of the 3 percent tolerance allowed by Technical Specification 3.4.3, "Safety/Relief Valves." 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 valves 2-B21-F013B and 2-B21-F013D was an incomplete understanding of proper lapping techniques when the BSEP SRV rebuild program began; leading to improper lapping of the pilot disc. The cause for the setpoint drift for valve 2-B21-F013F was misalignment between the pilot rod and set spring causing mechanical binding between the pilot rod and guide. The cause for the setpoint drift for valve 2-B21-F013K was lack of maintenance on the pilot valve assembly, which allowed the accumulation of deposits/tarnish on the pilot disc and lead to the formation of an oxide bond between the pilot disc and seat. Corrective actions for these items include: (1) incorporation of additional industry guidance into the SRV Rebuild Program, (2) rebuilding of the 2-B21-F013F pilot valve assembly, and (3) allowing a pilot valve assembly to be recertified as-found only one time before a mandatory rebuild is performed.

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FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
Brunswick Steam Electric Plant (BSEP), Unit 2	05000324	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 5
		2007	-- 003	-- 01	

NARRATIVE (If more space is required, use additional copies of NRC Form 366A) (17)

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

Introduction

On June 26, 2007, the Brunswick Steam Electric Plant received the results of as-found testing of 11 safety/relief valves (SRVs) [SB/RV]; which had been removed from Unit 2 during the spring 2007, refueling outage (i.e., B218R1). These results indicated that four of the 11 valves actuated at pressures outside of the 3 percent tolerance allowed by Technical Specification 3.4.3, "Safety/Relief Valves."

Event Description

Initial Conditions

At the time the condition was identified, Unit 2 was in Mode 1, at approximately 100 percent of rated thermal power.

Discussion

During the spring 2007, Unit 2 refueling outage, the 11 Model 7567F Target Rock Two-Stage pilot valve assemblies were replaced with certified spares. The removed SRVs were sent to Wyle Laboratories for set pressure testing. On June 26, 2007, Engineering personnel received the results of the as-found testing which indicated that four of the 11 valves actuated at pressures outside of the 3 percent tolerance allowed by Technical Specification 3.4.3. The test data is provided in the following table.

Valve Identification	As-Found (psig)	Technical Specification Setpoint (psig)	Percent Difference
2-B21-F013B	1206	1150 ± 34.5	+4.9%
2-B21-F013D	1200	1140 ± 34.2	+5.3%
2-B21-F013F	1171	1130 ± 33.2	+3.6%
2-B21-F013K	1247	1140 ± 34.2	+9.4%

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.

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FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
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Event Cause

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

SRVs 2-B21-F013B and 2-B21-F013D

SRV 2-B21-F013B

Inspections of the 2-B21-F013B pilot valve assembly identified steam cutting on the pilot disc and seat. This exposed the stellite base material and locally reduced the diameter of the pilot disc which, in turn, allowed the disc to jam into the seat creating a pinch. Also, the exposed stellite base material allowed the formation of a weak oxide bond between the disc and seat. The steam cutting was caused by improper lapping of the pilot disc to the seat that allowed the pilot to leak.

SRV 2-B21-F013D

Inspections of the 2-B21-F013D pilot valve assembly identified multiple indications of misalignment between the pilot disc, the pilot rod, and the set spring. When the valve was lapped, a non-uniform seat band was formed as evidenced by ditched seating area predominately on one side of the disc. This resulted in improper seating of the pilot disc; causing the misalignment in the pilot rod and spring retainer which ultimately caused the pilot disc to develop a pinch in the pilot seat. Additionally, removal of a portion of the disc's platinum coating may have allowed a weak oxide bond to be formed.

Starting in 2000, BSEP personnel have performed the SRV maintenance without vendor support. A group of three mechanics were trained and qualified to perform the maintenance. The cause of the setpoint drift for both valve 2-B21-F013B and valve 2-B21-F013D was an incomplete understanding of proper lapping techniques when the BSEP SRV rebuild program began. This led to improper lapping of the pilot disc to the seat. This is the same cause as reported in LER 1-2006-004, Supplement 1, dated November 17, 2006 for valves 1-B21-F013H and 1-B21-F013K.

SRV 2-B21-F013F

Inspections of the 2-B21-F013F pilot valve assembly identified multiple indications of misalignment between the pilot rod and set spring, with the pilot rod being scored on one side. The scoring combined with the misalignment created excessive friction between the pilot rod and pilot guide. In addition, the pilot seat was slightly ditched which caused a pinch between the pilot disc and seat. These two factors combined caused the setpoint drift. The cause of the SRV 2-B21-F013F setpoint drift was misalignment causing mechanical binding between the pilot rod and guide.

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Event Cause (continued)

SRV 2-B21-F013K

SRV pilot discs at BSEP are coated with platinum using the ion beam assisted deposition (IBAD) process. The purpose of the coating is to eliminate the oxide bonding between the stellite disc and the stellite seat. The oxide bond was responsible for significant setpoint drift issues across the industry.

The pilot disc for valve 2-B21-F013K was platinum coated during a rebuild in 1996. The pilot valve assembly was rebuilt again in 1999; without platinum recoating. The pilot valve assembly for SRV 2-B21-F013K was installed in Unit 1 and operated for one cycle until it was certified during as-found testing on March 14, 2002. It was recertified on July 20, 2004, without being rebuilt. The pilot valve assembly was installed in Unit 2 in the spring 2005 refueling outage.

The duration of time between the platinum coating application and the complete rebuilding of the pilot valve assembly allowed the accumulation of deposits/tarnish on the pilot disc which lead to the formation of an oxide bond between the pilot disc and seat. The cause of the valve 2-B21-F013K setpoint drift was lack of maintenance on the pilot valve assembly.

Safety Assessment

The safety significance of this condition is considered minimal. The as-found condition of the Unit 2 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 B218R1 refueling outage.

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

To address the mechanical binding of the 2-B21-F013F pilot valve assembly, the pilot valve assembly has been rebuilt.

To address concerns with rebuild intervals for pilot valve assemblies, OCM-VSR509 will be revised to allow a pilot valve assembly to be recertified as-found only one time before a mandatory rebuild is performed. This revision is expected to be completed by January 4, 2008.

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Previous Similar Events

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

- LER 1-2006-004, dated July 26, 2006, as supplemented on November 17, 2006, documents operation prohibited by TSs that occurred as a result of as-found testing which indicated that four of the 11 valves actuated at pressures outside of the 3 percent tolerance allowed by Technical Specification 3.4.3. Since this was the first Unit 2 refueling outage after LER 1-2006-004, the corrective actions associated with LER 1-2006-004 could not have reasonably been expected to prevent the condition reported in this LER.

Commitments

No regulatory commitments are contained in this report.