



Progress Energy

DEC 29 2006

SERIAL: BSEP 06-0137

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
Docket Nos. 50-325 and 50-324/License Nos. DPR-71 and DPR-62
Licensee Event Report 1-2006-007

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.

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

Sincerely,

B. C. Waldrep
Plant General Manager
Brunswick Steam Electric Plant

MAT/mat

Enclosure:

Licensee Event Report

cc (with enclosure):

U. S. Nuclear Regulatory Commission, Region II
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Ms. Jo A. Sanford
Chair - North Carolina Utilities Commission
P.O. Box 29510
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1. FACILITY NAME Brunswick Steam Electric Plant (BSEP), Unit 1	2. DOCKET NUMBER 05000325	3. PAGE 1 of 5
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4. TITLE
Operations Prohibited by Technical Specifications Due to Inoperable Emergency Diesel Generator 1

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
11	02	2006	2006	-- 007 --	00	12	29	2006	Brunswick Unit 2	05000324
									FACILITY NAME	DOCKET NUMBER
										05000

9. OPERATING MODE I	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more)									
	<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)						
10. POWER LEVEL 100	<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	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED				15. EXPECTED SUBMISSION DATE	MO	DAY	YEAR
X	YES (If yes, complete EXPECTED SUBMISSION DATE).		NO		01	26	2007

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

On November 2, 2006, at approximately 0400 EST, Emergency Diesel Generator (EDG) 1 tripped on low lube oil pressure. The EDG had automatically started at approximately 1823 EST on November 1, 2006, due to a loss of Unit 2 Startup Auxiliary Transformer and had been running unloaded. The direct cause of the EDG 1 trip has been determined to be a latent procedural weakness for refilling a cleaned lube oil duplex strainer basket with the process lube oil while an EDG is in operation. However, a cleaning towel was left in the EDG 1 lube oil sump during maintenance activities performed October 23 through October 27, 2006. This towel was found at the EDG 1 engine driven lube oil pump suction strainer. As a result, EDG 1 is being considered inoperable from the time it was removed from service, for routine maintenance, on October 23, 2006, at 0208 EDT, until it was returned to service on November 7, 2006, at approximately 2125 EST. This constitutes approximately 15 days, 20 hours and 17 minutes of inoperability. The Technical Specifications (TS) allowed out of service time for an inoperable EDG is 7 days. This condition is being reported in accordance with 10 CFR 50.73(a)(2)(i)(B) as operation prohibited by the plants' TS.

The extended inoperability of EDG 1 was a result of inadequate post-maintenance closeout, which resulted in foreign material being left in the lube oil system. Corrective actions will include establishment of increased foreign material exclusion controls for the EDG lube oil systems. As such, EDG 1 is being considered inoperable due to the presence of the cleaning towel in the lube oil sump.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
Brunswick Steam Electric Plant (BSEP), Unit 1	05000325	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 of 5
		2006	-- 007	-- 00	

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

Initial Conditions

At the time of this event, Unit 1 was in Mode 1, at approximately 100 percent of rated thermal power. Unit 2 was in Mode 3. The Unit 2 Startup Auxiliary Transformer (SAT) [EA] was inoperable; having previously been lost at approximately 1823 EST on November 1, 2006. The four Emergency Diesel Generators (EDGs) [EK] appropriately started and ran until the time of the event. EDGs 3 and 4 were supplying the Unit 2 emergency buses. EDGs 1 and 2 started and were running unloaded, consistent with plant design. EDGs 2, 3, and 4, as well as the remaining offsite power was not adversely affected by the trip of EDG 1.

Reportability Criteria

EDG 1 is being considered inoperable from the time it was removed from service, for routine maintenance, on October 23, 2006, at 0208 EDT until it was returned to service on November 7, 2006, at approximately 2125 EST. This constitutes approximately 15 days, 20 hours and 17 minutes of inoperability, applicable to Unit 1. Unit 2 entered Mode 4 at approximately 0624 EST on November 4, 2006, exiting the Mode of Applicability for Limiting Condition for Operation (LCO) 3.8.1, "AC Sources - Operating," for Unit 2 (i.e., approximately 12 days, 5 hours and 16 minutes of inoperability, applicable to Unit 2). The Technical Specification (TS) 3.8.1 allowed out of service time for an inoperable EDG is 7 days. This condition is being reported in accordance with 10 CFR 50.73(a)(2)(i)(B) as operation prohibited by the plants' Technical Specifications. Though EDG 1 is being considered inoperable from the start of the maintenance period on October 23, 2006, it was functional and available from 0005 hours EDT on October 30, 2006 up until the time that it tripped on November 2, 2006.

Event Description

Sequence of Events

At approximately 1823 EST on November 1, 2006, the Unit 2 SAT was lost. As a result, the four EDGs appropriately started and ran. EDGs 3 and 4 were supplying the Unit 2 emergency buses. EDGs 1 and 2 continued to run unloaded, per design, until, at approximately 0400 EST on November 2, 2006 (i.e., after approximately 9 hours and 37 minutes of run time), EDG 1 tripped.

Previously, at approximately 0200 on November 2, 2006, an EDG 1 lube oil duplex strainer high differential pressure (dP) alarm was received. The strainer dP was locally observed to be 9 psid compared with an alarm setpoint of 10 psid. Operations personnel swapped the duplex strainer from the west basket to the east basket. At approximately 0300, a second high dP alarm was received with differential pressure across the east basket at 18 psid. The strainer was swapped back to the west basket and the east basket was removed for cleaning. Following cleaning and reassembly, maintenance personnel commenced the process

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Event Description (continued)

of filling the east basket by partially diverting flow from the in-service basket in accordance with plant procedure OPM-FLT515, "Diesel Generator Lube Oil Strainer Cleaning and Servicing." During this activity, the outlet pressure of the strainer dropped below the low pressure trip setpoint of 28.2 psig. Operators, who were present at the time, observed pre-trip pressures of approximately 58 to 60 psig at the pump outlet and 38 to 40 psig downstream of the duplex strainers.

EDG 1 tripped during the lube oil duplex strainer swapping evolution. The current duplex swapping instructions require the empty basket to be filled slowly with the process fluid by opening the vent valve on the empty basket lid and then slowly adjusting the valve handle to allow a portion of the process flow to fill the empty basket; while maintaining flow through the in-service strainer to the lube oil header. The diverting of the oil flow to the path of least resistance (i.e. the empty strainer basket versus the high dP strainer) results in a momentary drop in lube oil header pressure. This pressure drop was sufficient to result in a low lube oil header pressure trip.

Subsequently, it was determined that the cause of the elevated duplex strainer dPs experienced prior to the EDG 1 trip was a result of: (1) fibrous material accumulating on the strainers, combined with (2) bearing babbitt material released as a result of failure of EDG 1 bearing #9.

Fibrous Material

The source of the fibrous material found on the EDG 1 duplex strainer was a cleaning towel which had been left in the EDG 1 lube oil sump during the maintenance activity performed from October 23 through 27, 2006. This towel was found at the EDG 1 engine driven lube oil pump suction strainer.

A 72-month preventive maintenance (PM) activity was performed on EDG 1 from October 23 through October 27, 2006. This PM included draining of the EDG lube oil with the subsequent cleaning and inspection of the lube oil sump. This was followed by a closeout inspection prior to filling of the lube oil system with new oil. The PM also replaced a number of lube oil hoses, performed bearing lift checks, and inspected visible sections (i.e., no disassembly or removal was performed) of the bearings. A three hour loaded run was conducted at 3500 kw at the completion of the PM.

Subsequent to the PM, problems not affecting the lube oil system required corrective maintenance to be performed on October 27 and 28, and again on October 28 and 29. These activities required runs of EDG 1 on October 28 and 29. Including the post-PM activities, five runs were required to satisfy maintenance testing and operability requirements. This provided a cumulative run time of approximately 15.5 hours prior to declaring EDG 1 operable on October 30, 2006 at approximately 0005 EDT. As discussed above, EDG 1 then ran for approximately 9.5 hours in response to the loss of the Unit 2 SAT. Thus, EDG 1 accumulated approximately 25 hours of total run time with the cleaning towel at the engine driven lube oil pump suction strainer with no indications of degradation from the pump and only marginally high dPs, remaining at or below the alarm setpoint of 10 pisd, at the lube oil duplex strainer.

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

Event Description (continued)

Bearing #9

The source of the bearing material found on the EDG 1 duplex strainer was the failure of EDG 1 bearing #9. The evaluation and apparent cause investigation for this condition is currently in-progress, and can be found in NCR 00211236.

Conclusion

Although the direct cause of the November 2, 2006, trip of EDG 1 was a momentary drop in lube oil header pressure during duplex strainer manipulation, the longer term impact of the presence of the cleaning towel has not been fully evaluated with respect to the ability of EDG 1 to operate for an extended period of time (i.e., at minimum for greater than 24 hours, the Mitigating System Performance Index (MSPI) mission time) without operator intervention. As such, EDG 1 is being considered inoperable due to the presence of the cleaning towel in the lube oil sump.

Event Cause

The extended inoperability of EDG 1 was a result of inadequate post-maintenance closeout, which resulted in foreign material (i.e., the cleaning towel) being left in the lube oil system. The impact of the cleaning towel as a continued source of fibrous material on the duplex strainers has not been fully evaluated with respect to long-term operability of EDG 1. As such, the ability of EDG 1 to operate for an extended period of time without operator intervention has not been established.

Safety Assessment

The safety significance of this condition is considered minimal.

The safety significance of this event was minimal since, upon the trip of EDG 1, the associated emergency bus remained energized via offsite power. Failure of one DG is within the design basis of the plant and is not anticipated to have jeopardized plant safety. The diesel generator was available during this period.

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

Corrective Actions

The following corrective actions to prevent recurrence will be established as a result of this event.

- Maintenance will establish increased foreign material exclusion controls for the EDG lube oil systems.
- Additional corrective actions, as appropriate, may be implemented after the completion of the root cause investigation in NCR 00211236.

Previous Similar Events

A review of LERs for the past three years identified no similar events of TS operability being impacted by foreign material left in a system. LERs 1-2004-001, dated March 4, 2004, and 1-2004-003, dated October 13, 2004, dealt with operation prohibited by TSs due to EDG inoperability, however, the root causes and corrective actions associated with these events could not have been expected to prevent the event reported in this LER (i.e., LER 1-2006-007).

Commitments

No regulatory commitments are contained in this report.