



September 8, 2009

SERIAL: BSEP 09-0086

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 1-2009-002

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 Ms. Annette Pope, Supervisor - Licensing/Regulatory Programs, at (910) 457-2184.

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

JE22
NPR

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. Philip B. O'Bryan, 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

LICENSEE EVENT REPORT (LER)

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

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.

1. FACILITY NAME Brunswick Steam Electric Plant (BSEP), Unit 1	2. DOCKET NUMBER 05000325	3. PAGE 1 of 5
--	-------------------------------------	--------------------------

4. TITLE
Valid System Actuations due to Loss of Power to Emergency Bus E2

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	08	2009	2009 - 002 - 00			09	08	2009	BSEP, Unit 2	05000324
									FACILITY NAME	DOCKET NUMBER
										05000

9. OPERATING MODE 1	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)									
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)(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)(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 checked="" 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 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

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

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

On July 8, 2009, at 1013 hours Eastern Daylight Time (EDT), during planned preventive maintenance activities, electrical power was lost to the 4160V emergency bus E2. Emergency Diesel Generator 2 automatically started and re-energized the E2 bus. The loss of power to E2 resulted in Unit 1 Primary Containment Isolation System Groups 2, 3, 6, and 10 isolations. Per design, no Unit 2 safety system group isolations or actuations occurred. Other Unit 1 actuations included the Reactor Building Ventilation System isolation (i.e., Secondary Containment isolation), automatic start of both trains of the Standby Gas Treatment System and automatic start of both trains of the Control Room Emergency Ventilation System. The affected equipment responded as designed.

This event occurred during activities associated with instrument calibration of an emergency bus E2 voltage transducer. Technicians performing the activity opened the wrong test switch. As a result, arcing occurred when test equipment was connected to an energized circuit. This caused the blown fuse in the C phase of emergency bus E2, which in turn caused a loss of power to the emergency bus and the E2 master/slave breaker to trip. The root cause of this event is inadequacies associated with procedure OPIC-CNV023 and the associated work order used to perform the preventive maintenance task. Corrective actions to prevent recurrence will correct identified problems with these documents.

**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 5
		2009 -- 002 -- 00			

NARRATIVE

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

Introduction

Initial Conditions

At the time of the event, Units 1 and 2 were in Mode 1, operating at approximately 100 percent of Rated Thermal Power (RTP). The Unit 1 B loop of the Low Pressure Coolant Injection (LPCI) system [BO] was under clearance for planned maintenance. No other Unit 1 or Unit 2 major equipment was inoperable.

Reportability Criteria

This event resulted in the automatic actuation of Emergency Diesel Generator 2 (EDG 2) [EK] and various Primary Containment Isolation System (PCIS) [JM] isolations. As such, this event is being reported in accordance with 10 CFR 50.73(a)(2)(iv)(A) as an event that resulted in valid actuation of systems listed in 10 CFR 50.73(a)(2)(iv)(B). The NRC was initially notified of this event on July 8, 2009 (i.e., Event Number 45190). Due to the shared configuration of the onsite AC Electrical Distribution System [EB], this event is applicable to both Units 1 and 2.

Event Description

On July 7, 2009, technicians began a preventive maintenance activity, in accordance with plant procedure OPIC-CNV023, "Calibration of Westinghouse & Scientific Columbus Teleductors." The activity was to calibrate six emergency bus E2 voltage transducers. The activity was expected to be a two day evolution.

On July 8, 2009, at 1013 hours Eastern Daylight Time (EDT), during calibration of the 1-E2-AG6-VTR transducer (i.e., the last of the transducers to be calibrated), electrical power was lost to the 4160V emergency bus E2 [EB]. EDG 2 automatically started and re-energized the E2 bus.

The loss of power to emergency bus E2 resulted in isolation signals to Unit 1 PCIS Group 2 (i.e., Drywell Equipment and Floor Drain, Residual Heat Removal (RHR) Discharge to Radwaste, RHR Process Sample, and Traversing Incore Probe), Group 3 (i.e., Reactor Water Cleanup), Group 6 (i.e., Containment Atmosphere Control/Dilution, Containment Atmosphere Monitoring, and Post Accident Sampling Systems), and Group 10 (i.e., Drywell Pneumatics). Appropriate primary containment isolation valves closed.

Other Unit 1 actuations included the Reactor Building Ventilation System [VA] isolation (i.e., Secondary Containment isolation), automatic start of both trains of the Standby Gas Treatment System [BH] and automatic start of both trains of the Control Room Emergency Ventilation System [VI]. The affected equipment responded as designed.

Per design, no Unit 2 isolations or actuations occurred.

**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 5
		2009 -- 002 -- 00			

NARRATIVE

Event Description (continued)

It has been determined that the loss of power to emergency bus E2 occurred as a result of a blown fuse in the C phase of emergency bus E2, which in turn caused a loss of power to the emergency bus E2 and the E2 master/slave breaker to trip. In preparation for calibrating the 1-E2-AG6-VTR transducer, 0PIC-CNV023 called for the opening of knife switch TS-1, however, the technicians incorrectly opened knife switch TS-2. As a result, arcing occurred when test equipment was connected to an energized circuit. This caused the blown fuse in the C phase of emergency bus E2.

After completing replacement of the blown fuse, emergency bus E2 was re-aligned to its normal offsite power source at 2307 hours EDT on July 8, 2009.

Event Cause

The root cause of this event is inadequacies associated with procedure 0PIC-CNV023 and the associated work order used to perform the preventive maintenance (PM) task.

The investigation identified the following weaknesses in procedure 0PIC-CNV023: (1) the procedure contained less than adequate information for craft personnel to adequately assess risk significance of the task, (2) the component tag number labeling in the procedure does not match the tag number labeling on the cabinet in the field, (3) multiple-action steps are not written in the order of task performance, and (4) steps that must be performed have been omitted, (i.e., removing and installing test switch covers). Additionally, the associated PM model work order is written in a manner that creates a pattern matching bias. For instance, all but one instrument on the PM model work order uses the same test switch. As such, the procedure and associated work order were inadequate to ensure successful completion of the task.

The investigation of this event also identified other human performance weaknesses that took place during the calibration effort. The technicians performing this calibration had very limited experience in calibration of instruments on the emergency busses. It was determined that before work began, the supervisor decided not to perform a full pre-job briefing per plant procedure 0AI-122, "Pre-Job Briefings & Post Job Critiques," but rather allowed the technicians to perform a Simple Task Brief. A full pre-job briefing would have been more appropriate and could have identified some of the work package deficiencies as well as provided an opportunity to re-enforce expectations concerning the use of human performance tools. Although the event occurred as a result of procedure and work order inadequacies, a contributing cause has been attributed to supervisory oversight.

Safety Assessment

The safety significance of this event is considered minimal. EDG 2 started and loaded per design. All other automatic actuations functioned properly upon the interruption of power to emergency bus E2.

**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 5
		2009 -- 002 -- 00			

NARRATIVE

Corrective Actions

The following corrective actions to prevent recurrence have been identified.

- Procedure OPIC-CNV023 will be revised to address inadequacies identified during the investigation of this event. This revision will be completed by December 2, 2009.
- The PM model work order will be revised to address pattern matching bias concerns. This revision will be completed by December 2, 2009.

In addition, the following corrective actions have been identified.

- Human performance has been recognized as an area requiring improvement at BSEP. As a result, a Human Performance Improvement Plan has been developed. This plan strives for event-free performance through reducing the frequency of errors and strengthening defenses, thereby optimizing the performance of individuals, leaders, and the organization. The Human Performance Improvement Plan will improve individual behaviors by communicating established standards and expectations, monitoring and coaching performance to the established standards and expectations, then making adjustments as they are identified for continuous improvement. The Human Performance Improvement Plan is specifically focused on addressing weaknesses in (1) site leadership's practices with respect to recognizing and reinforcing human performance behaviors and standards, (2) risk identification and establishment of mitigation barriers, (3) procedure use and adherence, and (4) work control and implementation of human performance barriers. Implementation of the plan is being tracked by Nuclear Condition Report (NCR) 340674.

Previous Similar Events

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

- LER 2-2006-002 dated January 10, 2007, "Manual Scram Due to Conductivity Increase," documents a conductivity excursion which lead to a manual scram. The root cause of the event was determined to be failure to have procedural guidance to inspect the condenser water boxes for missing tube plugs following a Loss of Offsite Power (LOOP) event. The corrective actions associated with LER 2-2006-002 were focused on improving the post-trip review procedure and condenser tube plug improvements. As such, they could not have reasonably been expected to prevent the condition reported in this LER.
- LER 2-2006-003, dated February 23, 2007, "Automatic Reactor Scram due to Trip from Neutron Monitoring System," documents a reactor scram generated by the Neutron Monitoring System Oscillation Power Range Monitors. The root cause of the event was inadequate incorporation of Operating Experience into plant procedures and training. The corrective actions to prevent

**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	5 of 5
		2009 -- 002 -- 00			

NARRATIVE

Previous Similar Events (continued)

recurrence included development of a formal process to evaluate correspondence from non-typical sources, such as Boiling Water Reactor Owners Group committees, and improvement of procedures associated with single loop operation. As such, they could not have reasonably been expected to prevent the condition reported in this LER.

- LER 2-2007-001, dated May 22, 2007, "Operation Prohibited by Technical Specification 3.3.1.2, Source Range Monitor Instrumentation," documents an event where a control rod was withdrawn a single notch in a fueled quadrant of the core where there was not an operable source range monitor. The root cause of this event was inadequate procedures. The corrective action to prevent recurrence implemented enhancements to the control rod drive operating procedures. As such, they could not have reasonably been expected to prevent the condition reported in this LER.
- LER 1-2009-001, dated March 22, 2009, " Loss of Control Room Air Conditioning and Emergency Ventilation System," documents a loss of Control Room Emergency Ventilation and Control Room Air Conditioning due to loss of control air. The root cause of this event was determined to be the failure to incorporate system operating parameters for temperature into the associated operating procedures. The corrective action to prevent recurrence implemented enhancements to appropriate operating and annunciator procedures. As such, they could not have reasonably been expected to prevent the condition reported in this LER.

Commitments

No regulatory commitments are contained in this report.