Progress Energy

APR 2 7 2010

SERIAL: BSEP 10-0047 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
Renewed Facility Operating License No. DPR-71
Docket No. 50-325
Licensee Event Report 1-2010-001

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,

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

LJG/ljg

Enclosure:

Licensee Event Report

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

IE22
NRR

cc (with enclosure):

U. S. Nuclear Regulatory Commission, Region II
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NRC FORM 366 (9-2007) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 08/31/2010

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)

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4. TITLE

Reactor Core Isolation Cooling (RCIC) Manually Started to Maintain RPV Level Following Pre-planned Scram.

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
										05000
02	27	2010	2010	– 001	– 00	04	27	2010	FACILITY NAME	DOCKET NUMBER 05000

9. OPERATING MODE

3

10. POWER LEVEL

000

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check all that apply)*

☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☒ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ OTHER
☐ 20.2203(a)(2)(vi)	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER *(Include Area Code)*
Lee Grzeck, Senior Engineer - Licensing	(910) 457-2487

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

☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

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

On February 27, 2010, at approximately 0116 hours Eastern Standard Time (EST), Control Room Operators manually inserted a Reactor Protection System (RPS) trip to shutdown the reactor from approximately 21 percent of rated thermal power to begin a planned refuel outage. The 1B Reactor Feedwater Pump (RFP) had been removed from service at approximately 61% rated thermal power and isolated to support scheduled maintenance activities. Following the insertion of the RPS trip, the 1A RFP was shutdown due to high RFP turbine casing drain level. At 0158 hours, Unit 1 Control Room Operators manually started the Reactor Core Isolation Cooling (RCIC) system to maintain reactor pressure vessel (RPV) coolant level following the pre-planned reactor scram. The RCIC system maintained RPV coolant level until the 1B RFP could be returned to service. The RCIC system was shutdown at 0306 hours. All systems functioned as designed.

The safety consequences of this event were minimal. The RPV level remained in the normal band while RCIC was being used for level control during the transient. All Emergency Core Cooling Systems (ECCS) were operable and available to provide adequate core cooling if needed. The root cause of this event was that Operators made the redundant RFP unavailable while still above the reactor pressure at which a RFP is required to feed the RPV. The corrective actions to prevent recurrence for this event are to revise operating procedures cautioning that a Reactor Feedwater Pump should not be made unavailable before reactor pressure is less than 350 psig.

LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET

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NARRATIVE

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

Introduction

Initial Conditions

At the time of the event, Unit 1 was in Mode 3 (i.e., Hot Shutdown) with all rods inserted, at zero percent of rated thermal power (RTP). In addition to the Reactor Core Isolation Cooling system (RCIC) [BN], the Emergency Core Cooling Systems (ECCS), along with the Automatic Depressurization (ADS) system, were operable and available to provide adequate core cooling if needed.

Reportability Criteria

This event resulted in manual actuation of the RCIC system. As such, this event is being reported in accordance with 10 CFR 50.73(a)(2)(iv)(A), as an event or condition that resulted in manual or automatic actuation of any of the systems listed in paragraph (a)(2)(iv)(B). The NRC was initially notified of this event on February 27, 2010 (i.e., Event Number 45732).

Event Description

On February 26, 2010, at 1400 hours with Unit 1 at approximately 95 percent of RTP, Control Room Operators commenced activities to shut down Unit 1 as part of a pre-planned sequence of events to begin the B118R1 refuel outage. At 1630 hours, with RTP at approximately 61 percent, the 1B Reactor Feed Pump (RFP) [SK] was secured from service in accordance with plant procedures to begin maintenance activities. Current operating practice at the start of a refuel outage is to remove one of the RFPs from service as soon as only one RFP is required, to begin scheduled maintenance activities.

In addition, at 1703 hours, Operators removed the Condenser Hotwell A-South Waterbox [SG] from service to aid in troubleshooting a potential tube leak in the Waterbox. With the A-South Waterbox isolated, level increased in the Waterbox when the 1A RFP minimum flow valve (i.e., FW-FV-V46) was opened, diverting flow away from the reactor vessel and into the "A" Hotwells. This is a normal occurrence during shutdown, in accordance with plant operating procedure 0GP-05, "Unit Shutdown."

On February 27, 2010, at 0116 hours, Unit 1 Control Room Operators manually inserted a Reactor Protection System (RPS) [JC] trip to shutdown the reactor from approximately 21 percent of rated thermal power. All control rods fully inserted. An expected reactor pressure vessel (RPV) coolant level shrink resulted in the coolant level decreasing below the Low Level 1 setpoint, which resulted in a Primary Containment Isolation System (PCIS) [JM] isolation signal to Group 2 primary containment isolation valves (PCIVs) (i.e., Drywell Equipment and Floor Drain, Traversing In-core Probe, Residual Heat Removal (RHR) Discharge to Radwaste, and RHR Process Sample), Group 6 PCIVs (i.e., Containment Atmosphere Control/Dilution, Containment Atmosphere Monitoring, and Post Accident Sampling System), and Group 8 PCIVs (i.e., RHR Shutdown Cooling Suction and RHR Inboard Injection). The isolation

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Event Description (continued)

signal closed all of the PCIVs that were open at the time of the expected actuation. All other affected plant equipment and systems responded as designed.

After the expected coolant level shrink, reactor coolant level increased, as expected, above the RFP high level trip setpoint, and the 1A RFP tripped at 0118 hours on high reactor water level of 208 inches. At approximately 0143 hours, with RPV level restored to normal, the 1A RFP was restarted and began injecting into the RPV. The combined flows from the RFP, Condensate Booster Pumps (CBP) [SD], and Reactor Water Cleanup (RWCU) [CE] reject resulted in the Hotwell level increasing above normal. This resulted in the RFP high turbine casing drain level alarm (i.e., 1-UA-04 1-5, RFP A Turb Drains Level Hi). With the 1A RFP turbine casing drain level reaching 8 inches and rising, the 1A RFP was manually tripped due to high turbine casing drain level.

At this point, with the 1B RFP not immediately available due to being out of service for maintenance, the RPV level continued to lower. Operators raised Control Rod Drive [AA] flow to try to maintain normal RPV level, and established a RPV level of 180 inches for injecting with RCIC. At 0159 hours, with RPV level at 180 inches and lowering, Operators manually started the RCIC system to maintain RPV coolant level. The RCIC system maintained RPV coolant level until the 1B RFP could be returned to service. At 0220 hours, the 1B RFP was started, and the RCIC system was subsequently shutdown at 0306 hours.

Event Cause

When the reactor pressure is above 350 psig, a RFP should be available for RPV level control. The root cause of this event is that the Operators made the redundant RFP unavailable while the RPV pressure was still above 350 psig. When the 1A RFP had to be secured due to the high turbine casing drain level, Operators had to start the RCIC system to control vessel level since the redundant 1B RFP was unavailable due to maintenance. A contributing cause to this event was that licensed operator training did not provide sufficient detail for the interrelations between the condenser hotwells and the components that input to them on a shutdown unit.

Safety Assessment

The safety significance of this event is considered minimal. In addition to RCIC, the Emergency Core Cooling Systems and the Automatic Depressurization System were operable and available to provide adequate core cooling if needed. Operators maintained RPV level within the normal band while RCIC was used for level control. All systems functioned as designed.

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Corrective Actions

The following corrective action to prevent recurrence will be taken.

- Revise 1(2)OP-32, "Condensate and Feedwater System Operating Procedure," to add a Caution that, during a reactor shutdown, a RFP should not be made unavailable before Reactor Pressure is less than 350 psig, except in case of an emergency, or if removing a RFP from service to conduct required maintenance while at power. This action is scheduled to be completed by May 27, 2010.

Additional corrective actions include the following.

- Revise 1(2)OP-29, "Circulating Water System," to include a note with information about the inputs to the hotwells, including RWCU reject, Condensate Pump minimum flow, CBP minimum flow, and RFP minimum flow. This action is scheduled to be completed by May 27, 2010.

- Identify the performance gaps in Licensed Operator training in relation to this event, and include a case study of this event, to improve Operator training. This action is scheduled to be completed by May 27, 2010.

Previous Similar Events

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

LER 1-2009-005, dated November 19, 2009, documents a condition where Unit 1 received valid actuations of the Reactor Protection System (RPS) and the Primary Containment Isolation System (PCIS) while Operators were placing the High Pressure Coolant Injection (HPCI) system in service for reactor pressure control. The root cause was determined to be an inadequate procedure, and the corrective action was to revise the procedure to include plant conditions with low decay heat and low RPV pressure when using HPCI in pressure control mode. Thus, the corrective actions associated with LER 1-2009-005 could not have reasonably been expected to prevent the condition reported in this LER.

Commitments

No regulatory commitments are contained in this report.