



Progress Energy

AUG 11 2008

SERIAL: BSEP 08-0103

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 1-2008-003

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,

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

JE22
NCR

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

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 4

4. TITLE

Reactor Building Crane Design Inadequacy

5. EVENT DATE

MONTH	DAY	YEAR
06	11	2008

6. LER NUMBER

YEAR	SEQUENTIAL NUMBER	REV NO.
2008	003	00

7. REPORT DATE

MONTH	DAY	YEAR
08	11	2008

8. OTHER FACILITIES INVOLVED

FACILITY NAME	DOCKET NUMBER
BSEP, Unit 2	05000324
FACILITY NAME	DOCKET NUMBER
	050000

9. OPERATING MODE

1

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

- ☐ 20.2201(b)
☐ 20.2201(d)
☐ 20.2203(a)(1)
☐ 20.2203(a)(2)(i)
☐ 20.2203(a)(2)(ii)
☐ 20.2203(a)(2)(iii)
☐ 20.2203(a)(2)(iv)
☐ 20.2203(a)(2)(v)
☐ 20.2203(a)(2)(vi)

- ☐ 20.2203(a)(3)(i)
☐ 20.2203(a)(3)(ii)
☐ 20.2203(a)(4)
☐ 50.36(c)(1)(i)(A)
☐ 50.36(c)(1)(ii)(A)
☐ 50.36(c)(2)
☐ 50.46(a)(3)(ii)
☐ 50.73(a)(2)(i)(A)
☐ 50.73(a)(2)(i)(B)

- ☐ 50.73(a)(2)(i)(C)
☐ 50.73(a)(2)(ii)(A)
☒ 50.73(a)(2)(ii)(B)
☐ 50.73(a)(2)(iii)
☐ 50.73(a)(2)(iv)(A)
☐ 50.73(a)(2)(v)(A)
☐ 50.73(a)(2)(v)(B)
☐ 50.73(a)(2)(v)(C)
☐ 50.73(a)(2)(v)(D)

- ☐ 50.73(a)(2)(vii)
☐ 50.73(a)(2)(viii)(A)
☐ 50.73(a)(2)(viii)(B)
☐ 50.73(a)(2)(ix)(A)
☐ 50.73(a)(2)(x)
☐ 73.71(a)(4)
☐ 73.71(a)(5)
☐ OTHER

Specify in Abstract below or
in NRC Form 366A**10. POWER LEVEL**

100

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	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 June 11, 2008, as a result of a review of the Reactor Building crane structure by the original equipment manufacturer (OEM), it was determined that the structural design of the Unit 1 and Unit 2 Reactor Building cranes did not ensure the crane structural integrity during a design basis seismic event. Specifically, the allowable design stresses for the design basis seismic event are exceeded in the end connector plates and bolted connections connecting the crane girders. This condition has existed since operation of the plants began.

The direct cause of this event is that the crane girder end connection design was not adequately evaluated during the initial design of the crane by Whiting Corporation (i.e., the OEM). The crane design was performed by Whiting Corporation in the 1970's. Due to the historical nature of this condition, determining a plausible cause is not practical or feasible.

Modifications have been implemented for the Unit 1 and Unit 2 Reactor Building cranes to allow continued restricted use of the cranes for loads of up to 40 tons. Engineering Changes will be developed and implemented to restore the cranes to their original seismic design requirements.

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NARRATIVE

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

Introduction

On June 11, 2008, as a result of a review of the Reactor Building crane structure by the original equipment manufacturer, it was determined that the structural design of the Unit 1 and Unit 2 Reactor Building cranes (1/2-BC-RB-BRIDGE-CRANE) [LR] did not ensure the crane structural integrity during a design basis seismic event. Specifically, the allowable design stresses for the design basis seismic event are exceeded in the end connector plates and bolted connections connecting the crane girders. This condition has existed since operation of the plants began.

This event is being reported in accordance with 10 CFR 50.73(a)(2)(ii)(B), as an event or condition that resulted in the plant being in an unanalyzed condition that significantly degraded plant safety.

Event Description*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.

Discussion

As part of BSEP's ongoing Dry Fuel Storage project, Whiting Corporation, the original equipment manufacturer, was requested to reconstitute the design calculations for the Reactor Building cranes in order to evaluate the increased loading conditions resulting from handling the dry shielded canisters used for fuel storage.

These cranes are Whiting 125/5 Ton Bridge Cranes, Serial Numbers 10388 and 10389. The design of the cranes was based on BSEP specification 257-002. This specification was approved initially on July 6, 1971. Specification 257-002 states that all parts of the cranes are to be designed to resist seismic loads. Specifically, the crane was to be designed to withstand both an Operating Basis Earthquake (OBE) and a Design Basis Earthquake (DBE) with the maximum lift load on the hook. Maximum material stresses were to be maintained within normal American Institute of Steel Construction (AISC) Code allowable limits for OBE, and within material yield points and in accordance with AISC specification requirements for DBE loading.

As a result of this effort, on June 11, 2008, it was determined that the allowable design stresses for the design basis seismic event are exceeded in the end connector plates and bolted connections connecting the crane girders.

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Event Cause

The direct cause of this event is that the crane girder end connection design was not adequately evaluated during the initial design of the crane by Whiting Corporation. The crane design was performed by Whiting Corporation in the 1970's. Due to the historical nature of this condition, determining a plausible cause is not practical or feasible.

Safety Assessment

The safety significance of this condition is minimal. This concern is only applicable to conditions present during an extremely unlikely DBE. However, the ability of the crane to maintain a load or structural stability during the DBE is in question. If a DBE had occurred prior to the implementation of the compensatory measures, there was a potential that the lack of structural integrity could have resulted in crane structural damage which, in turn, could have adversely impacted structures, systems, or components in the vicinity of the crane at the time. Due to the difficulty in predicting the various effects on plant equipment, this condition was conservatively considered an unanalyzed condition that significantly degraded plant safety.

Corrective Actions

Modifications have been implemented for the Unit 1 and Unit 2 Reactor Building cranes to allow continued restricted use of the cranes for loads of up to 40 tons.

Engineering Changes will be developed and implemented to restore the cranes to their original seismic design requirements. These modifications are currently scheduled to be completed by February 27, 2009, for Unit 2 and July 31, 2009, for Unit 1.

Previous Similar Events

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

- Nuclear Condition Report (NCR) 251648, originated on October 27, 2007, identified a similar concern related to the tornado wind loading design of the cranes. At the time this condition was identified, there was no indication that the original seismic design was in question. Additionally, in 1997, calculation 0SEIS-0036 was performed. This calculation included a re-analysis of the Reactor Building crane structure. BSEP Engineering relied on calculation 0SEIS-0036 to provide assurance that there were no seismic concerns with the cranes. However, as with the original evaluation, this analysis did not consider the effect on the girder end connectors. As a result the corrective actions for NCR 251648 focused on the wind loading issue and would not have been reasonably expected to prevent the condition discussed in this LER.

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Commitments

No regulatory commitments are contained in this report.