



10 CFR 50.46(a)(3)(ii)

SEP 13 2010

SERIAL: BSEP 10-0107

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
Annual Report of Emergency Core Cooling System Evaluation Model
Changes and Errors

Ladies and Gentlemen:

In accordance with 10 CFR 50.46, "Acceptance criteria for emergency core cooling systems for light-water nuclear power reactors," paragraph (a)(3)(ii), Carolina Power & Light Company (CP&L), now doing business as Progress Energy Carolinas, Inc., is submitting the annual report of the emergency core cooling system (ECCS) evaluation model changes and errors for the Brunswick Steam Electric Plant (BSEP), Unit Nos. 1 and 2.

BSEP, Units 1 and 2 employ a mixed core design containing co-resident AREVA and Global Nuclear Fuel (GNF) fuel. Because the GNF fuel is now a non-limiting fuel type, model changes and errors are not being reported for the GNF fuel.

The enclosed report covers the period from August 17, 2009, through August 27, 2010. The reported estimated licensing basis peak cladding temperature (PCT) remains within the acceptance criteria set forth in 10 CFR 50.46 (i.e., $\leq 2200^{\circ}\text{F}$).

No regulatory commitments are contained in this letter. 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 that reads "Phyllis N. Mentel".

Phyllis N. Mentel
Manager - Support Services
Brunswick Steam Electric Plant

ADD2
NRR

Document Control Desk
BSEP 10-0107 / Page 2

WRM/wrm

Enclosure: Brunswick Units 1 and 2 10 CFR 50.46 Report

cc (with enclosure):

U. S. Nuclear Regulatory Commission, Region II
ATTN: Mr. Luis A. Reyes, Regional Administrator
245 Peachtree Center Ave, NE, Suite 1200
Atlanta, GA 30303-1257

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

Brunswick Units 1 and 2 10 CFR 50.46 Report

Plant: Brunswick Steam Electric Plant, Units 1 and 2
 Report Revision Date: August 27, 2010
 Current Operating Cycles: Unit 1 – Cycle 18, Unit 2 – Cycle 19
 Evaluation Model: EMF-2361(P)(A), Revision 0, EXEM BWR-2000 ECCS
 Evaluation Model, May 2001.
 Fuel: ATRIUM™-10

	Net PCT Effect	Absolute PCT Effect
A. Cumulative 10 CFR 50.46 Changes and Error Corrections – Previously Reported (Resulting in an effective licensing basis PCT of 1900°F)	-7°F	+7°F
B. 10 CFR 50.46 Changes and Error Corrections – This Reporting Period		
1. LOCA re-analysis establishing a new licensing basis PCT of 1904°F (Reference: AREVA Report ANP-2624(P), Revision 2)	---	---
2. RELAX code array index issues (Reference: AREVA Engineering Information Record 51-9133678-000)	0°F	0°F
3. HUXY code numerical view factor evaluation (Reference: AREVA Engineering Information Record 51-9143783-000)	+1°F	+1°F
C. Absolute Sum of 10 CFR 50.46 Changes and Error Corrections (based on new licensing basis PCT of 1904°F)	---	+1°F

D. Evaluated Effective Licensing Basis PCT including Changes and Error Corrections				
Fuel Type	Licensing Basis PCT	Cumulative Incremental Change in PCT	Estimated PCT	Estimated PCT ≤ 2200°F
A10	1904°F	+1°F	1905°F	Yes