



# Progress Energy

FEB 24 2011

SERIAL: BSEP 11-0025

U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Director, Division of Spent Fuel Storage and Transportation  
Office of Material Safety and Safeguards  
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  
Independent Spent Fuel Storage Installation (ISFSI) Docket No. 72-006  
Registration and Use of Cask to Store Spent Fuel and System Thermal  
Performance Assessment

Ladies and Gentlemen:

In accordance with 10 CFR 72.212(b)(1)(ii), Carolina Power & Light Company (CP&L), now doing business as Progress Energy Carolinas, Inc., is registering the use of an approved spent fuel storage cask at the Brunswick Steam Electric Plant (BSEP) ISFSI. Registration of the cask is required no later than 30 days after using that cask to store spent fuel. The required cask registration information is provided in Enclosure 1.

This letter is also providing a summary of the results of the thermal performance assessment for the highest heat load dry storage canister (DSC) as required by the General Requirements and Conditions of the Technical Specifications for Amendment No. 10 to Certificate of Compliance No. 1004, Section 1.1.7, "Special Requirements for First System in Place." Enclosure 2 provides the results of the thermal performance assessment for DSC BNP-61BTH-2-F-1-HZ08, which has the highest heat load to date.

No regulatory commitments are contained in this letter. Please refer any questions regarding this submittal to Mr. Lee Grzeck, Acting Supervisor - Licensing/Regulatory Programs, at (910) 457-2487.

Sincerely,

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

MISS24

Document Control Desk  
BSEP 11-0025 / Page 2

WRM/wrm

Enclosures:

1. Cask Registration Information Required by 10 CFR 72.212(b)(1)(ii)
2. NUHOMS-61BTH System Thermal Performance Information

cc (with enclosures):

U. S. Nuclear Regulatory Commission, Region II  
ATTN: Mr. Victor M. McCree, 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

Mr. W. Lee Cox, III, Section Chief  
Radiation Protection Section  
North Carolina Department of Environment and Natural Resources  
1645 Mail Service Center  
Raleigh, NC 27699-1645

Cask Registration Information  
Required by 10 CFR 72.212(b)(1)(ii)

The following information is required by 10 CFR 72.212(b)(1)(ii), which states that the general licensee shall "Register use of each cask with the Nuclear Regulatory Commission no later than 30 days after using that cask to store spent fuel."

|   |   |
|---|---|
| Licensee Name   | Carolina Power & Light Company<br>(dba Progress Energy Carolinas, Inc.)                         |
| Licensee Address  | Progress Energy<br>Brunswick Steam Electric Plant<br>P.O. Box 10429<br>Southport, NC 28461-0429 |
| Reactor License Numbers   | DPR-71 (Unit 1)<br>DPR-62 (Unit 2)  |
| Reactor Docket Numbers  | 50-325 (Unit 1)<br>50-324 (Unit 2)  |
| Independent Spent Fuel Storage Installation (ISFSI) Docket Number | 72-006  |
| Person Responsible for Providing Additional Information           | Lee Grzeck<br>Acting Supervisor – Licensing/Regulatory Programs<br>(910) 457-2487               |
| Cask Certificate of Compliance Number                             | 1004, Amendment 10  |
| Cask Model Number   | Type 2 NUHOMS <sup>®</sup> -61BTH   |
| Horizontal Storage Module (HSM) Model Number / HSM Number         | HSM-H / 0-ISFSI-HSM-008   |
| Cask Identification Number  | BNP-61BTH-2-F-1-HZ08  |
| Service Date  | February 9, 2011  |

## NUHOMS-61BTH System Thermal Performance Information

The following provides a 30-day notification of the results of the thermal performance assessment for the highest heat load dry storage canister (DSC) as required by the General Requirements and Conditions of the Technical Specifications for Certificate of Compliance No. 1004, Amendment No. 10, Section 1.1.7, "Special Requirements for First System in Place."

Section 1.1.7, "Special Requirements for First System in Place," requires a summary of the results of thermal measurements for the first cask system in place. Specifically, Section 1.1.7 requires the heat transfer characteristics of the cask system to be recorded by temperature measurements with a DSC loaded with fuel assemblies producing approximately 24 kW heat load in a horizontal storage module (HSM). Section 1.1.7 also requires that if the system does not include fuel capable of producing a 24 kW heat load, then the user may use the lesser heat load and provide a calculation and comparison of the thermal performance, and that this process should continue to be performed and reported for any higher heat loads until a 31.2 kW heat load is achieved for the Type 2 61BTH DSC being used for the Brunswick Independent Spent Fuel Storage Installation (ISFSI).

|  |                      |
|--|----------------------|
| DSC Number                                 | BNP-61BTH-2-F-1-HZ08 |
| HSM Number                                 | 0-ISFSI-HSM-008      |
| Loading Date                               | February 9, 2011     |
| Temperature Measurement Date (Equilibrium) | February 12, 2011    |
| Maximum Allowable Heat Load                | 31.2 kW              |
| Actual Loaded Heat Load                    | 29.771 kW            |

The calculated temperature differential limit is a function of both the DSC heat load and the ambient temperature. For the loaded DSC BNP-61BTH-2-F-1-HZ08, the heat load was 29.771 kW and the ambient temperature each day, at the time of the temperature measurements, was between 42°F and 57°F (i.e., based on an average of three measurements). Based on these conditions and methodology consistent with the Transnuclear Updated Final Safety Analysis Report, the maximum allowable temperature rise is approximately 71.3°F. The HSM for the DSC BNP-61BTH-2-F-1-HZ08 was closed on February 9, 2011, and the temperature rise reached equilibrium by February 12, 2011. On February 12, 2011, the air inlet temperature was 57.4°F (i.e., based on an average of three measurements) and the air outlet temperature was 87.4°F (i.e., based on an average of four measurements). This gives an actual temperature rise of 30.0°F, which is significantly less than the allowable limit of 71.3°F.

Based on these measurements, it can be concluded that the thermal analysis, as described in Amendment No. 10 to Certificate of Compliance No. 1004 for the NUHOMS-61BTH system, is conservative.

Reference: Transnuclear, Inc. Calculation No. NUH61BTH-0425, Revision 0.