CP&L

Carolina Power & Light Company

July 3, 1979

FILE: NG-3513 (B) SERIAL: GD-79-1667

Mr. James P. O'Reilly, Director
U.S. Nuclear Regulatory Commission
Region II
101 Marietta Street, Suite 3100
Atlanta, GA 30303

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NO. 1
LICENSE NO. DPR-71
DOCKET NO. 50-325
CYCLE 2 SUMMARY STARTUP TEST REPORT

Dear Mr. O'Reilly:

This report is submitted in accordance with Technical Specifications, Section 6.9, as applicable for insertion of 8 x 8 R fuel, to provide the Startup Test Report for Unit 1 Cycle 2.

The following physics testing was performed on Brunswick Unit No. 1 during the beginning of cycle startup and power ascension:

1. Shutdown Margin Demonstration

The beginning of cycle, cold, xenon-free shutdown margin test was performed to demonstrate that the reactor remained shut down by the prescribed margin with the strongest rod fully withdrawn. With the strongest rod fully withdrawn, two diagonally adjacent control rods were withdrawn to a calculated position corresponding to .38% + R, and the reactor was observed to remain shut down.

2. Reactivity Anomaly

At $\geq$ 95% power and full core flow, the predicted control rod density was compared to the actual control rod density with the following results:

Control Rod Density Required			Control Rod Density Measured
Minimum	Predicted	Maximum	
0.0	.023	.062	.023

The hot, full power reactivity measurement was found to be within the required band ($\pm$ 1% reactivity) and as predicted.

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3. Critical Eigenvalue

The cold, critical, xenon-free eigenvalue was measured on the initial startup of Cycle 2. The results are as follows:

Predicted K_{eff}	Measured K_{eff}	% Deviation From Predicted
1.006	1.007	0.1%

The cold, critical eigenvalue was found to be close to the predicted value and within the acceptance criteria of $\pm$ 1%.

4. TIP Uncertainty

Total TIP uncertainty was determined above and below 75% power while at steady state. Results are as follows:

Maximum Allowed Uncertainty	Measured Uncertainty
9.00%	3.99% at <75% 2.22% at >75%

The TIP uncertainty was determined to be well below the required limit.

5. Core Power Distribution and Symmetry

a. At medium and high power levels, bundle power comparisons were made between symmetric bundles with the following results:

Maximum Expected Bundle Power Asymmetry	Maximum Measured Bundle Power Asymmetry
15%	1.61%

b. Measured and predicted values of core thermal limits (MCPR, MAPLHGR, LHGR) were compared at $\geq$ 95%, and the measured values were found to be within $\pm$ 10% of the predicted values.

The core power distribution and symmetry test indicated a symmetric power distribution as well as close agreement between predicted and measured values of core thermal limits.

As discussed in our letter to Mr. T. A. Ippolito of March 16, 1979, on the subject of Physics Startup Test Program, the following tests were satisfactorily concluded:

a. Core Loading Verification - A core loading verification was performed per BSEP Fuel Handling Procedure (FH-11). It was verified that the core was loaded as specified by the design reference loading pattern.

b. Core Power Symmetry - See Response No. 4, TIP Uncertainty.

c. Control Rod Mobility - Control rod mobility was verified prior to startup by control rod functional/friction testing. Each control rod was verified to move full travel without binding or excessive friction. In addition, the reactor was observed to remain subcritical during the withdrawal of each control rod.

d. Reactivity Testing - Refer to Item 1, Shutdown Margin and Item 3, Critical Eigenvalue.

Core physics testing performed during the Unit No. 1 Cycle 2 startup and power ascension indicates that the reactor is performing safely and as predicted.

Yours very truly,

H. R. Banks
Manager
Nuclear Generation

MAJ/CSB/jnh*

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