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Carolina Power & Light Company

September 18, 1979

FILE: NG-3514(P)

SERIAL NO.: GD-79-2363

Office of Nuclear Reactor Regulation
Attention: Mr. T. A. Ippolito, Chief
Operating Reactors Branch No. 3
United States Nuclear Regulatory Commission
Washington, D.C. 20555

BRUNSWICK STEAM ELECTRIC PLANT, UNIT NO. 1

DOCKET NO. 50-325

LICENSE NO. DPR-71

ROTATED FUEL BUNDLE: TECHNICAL DOCUMENTATION FOR MCPR LIMIT REVISION

Dear Mr. Ippolito:

In a letter dated September 11, 1979, Carolina Power & Light Company (CP&L) requested a technical specification change for MCPR limits related to the fact that fuel bundle LJ0197 is misoriented by 180°. The misorientation of the fuel bundle was discovered on August 28, 1979 and reported to NRR on August 30, 1979. In several telephone conversations with your staff subsequent to our discovery, CP&L provided information to your staff as background for preparation of the Safety Evaluation and the license amendment. This information is formally documented below:

1. Event Chronology - Discussed with NRR in a September 14, 1979 telephone conversation by CP&L:

The presence of the rotated bundle (LJ0197) was confirmed by viewing core loading tapes on the morning of August 28. Reactor power at that time was at a reduced level of approximately 90.5% due to condenser vacuum problems. Plant staff personnel reviewed cycle 2 reload information and determined very conservatively that, for the rotated bundle, LHGR should not exceed 9.7 kw/ft and MCPR limit should be increased to 1.45. The unit was reduced to approximately 88% power on August 28 to comply with the 9.7 kw/ft LHGR limit (operating MCPR was about 1.56 and was thus not limiting). On August 28, General Electric (GE) performed preliminary calculations and advised that CP&L operate within the limits of 9.7 kw/ft for LHGR and 1.38 for MCPR for the rotated bundle which resulted in the 88% power limit.

2. Telephone Conversation - August 30, 1979:

CP&L described to NRR our plans to operate on an interim basis with the following conservative limits for bundle LJ0197:

MCPR: 1.38
LHGR: 9.7 kw/ft

These limits were recommended by GE as very conservative limits to observe until more precise limits could be calculated. CP&L confirmed to NRR that the power densification spiking penalty was included in the above LHGR limit.

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3. Telephone Conversation - September 10, 1979:

CP&L called NRR and discussed the more precise proposed operating limits transmitted to us by GE. These limits were subsequently submitted to NRR in our September 11, 1979 letter which requested the technical specification change.

4. Telephone Conversations - CP&L responded to questions from NRR reviewer on September 13 and 18, 1979:

- A. Process Computer: In the event of a Process Computer outage, the peaking factor corrections which will be incorporated into the Process Computer to insure that the 13.4 kw/ft design limit is not exceeded in bundle LJ0197 will automatically be incorporated into the off-line calculations. This is due to the fact that CP&L's off-line Process Computer backup code contains a data bank and software identical to that of the Process Computer for the LHGR calculation. This off-line code data bank is updated twice per week to reflect burnup profile. Until the Process Computer data bank change arrives from GE, administrative control will insure that the 20% correction factor is applied to the calculated LHGR of bundle LJ0197.
- B. Shutdown Margin: The shutdown margin verification test did not use control rod 30-11 which is adjacent to bundle LJ0197. The closest rod used in this test was at location 34-15, two diagonal bundle pitches from LJ0197. On September 18, CP&L reported to NRR that GE had completed their analysis verifying that the rotated bundle caused no measurable impact upon the shutdown margin calculations, tests, or results previously assumed. The location of the analytically strongest rod (34-15) remains unchanged, as does the rod's worth, the BOC shutdown margin, and the shutdown margin at the most reactive point in the cycle (BOC plus 4,000 MWD/t).

Should you have any questions concerning this information, do not hesitate to contact my staff.

Yours very truly,

M. A. M. Duffie
for E. E. Utley

Executive Vice President
Power Supply & Customer Services

JAM/jcb

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