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Docket Nos.: 50-400
and 50-401

Mr. E. E. Utley
Executive Vice President
Carolina Power & Light Company
Post Office Box 1551
Raleigh, North Carolina 27602

Dear Mr. Utley:

Subject: Discrepancy in the LOCA Peaking Factor for Shearon Harris

It has recently come to our attention that there is a discrepancy in the Shearon Harris (SH) FSAR between the power distribution peaking factor, FQ, described in Section 4.3, Nuclear Design, and that used in Section 15.6, LOCA Analysis. The Standard Format, Regulatory Guide 1.70, requires that any value of FQ to be used in a Chapter 15 analysis should be fully discussed and justified in Section 4.3. Chapter 4 of the SH FSAR lists and describes the derivation and surveillance of only the "standard" Westinghouse FQ value of 2.32. No other value is discussed or mentioned. However, Section 15.6 uses a value of 2.11. This occurs without explanation or any mention other than the value listed in Table 15.6.5-2.

Given only the information presently available in the FSAR and its references a derating to about 91 percent power would be required for SH to meet LOCA requirements using the peaking factor (and resulting kW/ft) from the analyses and surveillance described in Section 4.3.

Informal investigation has indicated that Westinghouse and SH intend to use a new excore "Axial Power Distribution Monitoring System" to demonstrate, via active surveillance, that the LOCA peaking factor (2.11) can be met in operation. However, this is not mentioned in the FSAR. They evidently intend to submit a topical report on this subject. A previous report (WCAP-9105) on the (possibily same) subject was submitted in 1977 and reviewed, with approval for referencing (discriptions of the system and techniques). However, it was incomplete, e.g., not dealing with uncertainties, and thus no approved system presently exists.

In view of this newly discovered discrepancy in peaking factors and the absence of information in the FSAR, the subject of peaking factor control, analysis and surveillance (or power reduction) must be considered an open issue which could be resolved by responding satisfactorily to the following:

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Table 15.6.5-2 of the FSAR gives a value of 2.11 for the FQ used in LOCA analysis. Section 4.3 of the FSAR (which should discuss all aspects of all power distributions used in Chapter 15 analyses, including in particular the power peaking factors used to satisfy LOCA analysis requirements) does not mention such a value. Instead Section 4.3 presents only the standard Westinghouse discussions demonstrating that an FQ value of 2.32 can be maintained, using the standard Westinghouse CAOC (with improved load follow) analysis, control and excore (split detector) surveillance. The only conclusion that one can draw from this information, as it stands, is that it will be necessary to derate the reactor to 91 percent power. If there is an alternate power distribution analysis, control scheme or surveillance system to be used with your reactor operations which will demonstrate that an FQ of 2.11 can be maintained, please modify Section 4.3 (and other indications of FQ and peak kW/ft such as Table 4.1) to present this new limit, and a discussion in detail of the modifications involved to hardware, analyses and operations, including a full uncertainty analysis. Topical reports may be submitted and referenced, but modifications to Chapter 4 (and possibly Chapter 7) are required.

Please direct any questions to Dr. Prasad Kadambi at (301)492-8423.

Sincerely,

Original signed by:
George W. Knighton

George W. Knighton, Chief
Licensing Branch No. 3
Division of Licensing

cc: See next page

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