July 29, 1986

Docket No. 50-395

Mr. D. A. Nauman
Vice President, Nuclear Operations
South Carolina Electric & Gas Company
P.O. Box 764 (Mail Code 167)
Columbia, South Carolina 29218

Dear Mr. Nauman:

SUBJECT: V. C. SUMMER NUCLEAR STATION STEAM GENERATOR TUBE PLUGGING CRITERIA

Duke Power Company has proposed alternative steam generator tube plugging criteria for McGuire Units 1 and 2 similar to your proposed criteria for V. C. Summer. On July 15, 1986, a telephone conference call was held between the NRC staff, Duke Power Company (DPC), and Westinghouse Electric Corporation, regarding DPC's proposed criteria. The concerns discussed during that call are attached for your information and were telecopied toy our staff on July 21, 1986.

Sincerely,

/s/

Jon B. Hopkins, Project Manager
PWR Project Directorate #2
Division of PWR Licensing-A
Office of Nuclear Reactor Regulation

Enclosure:
As stated

cc w/enclosure:
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ATTACHMENT

Technical Concerns

(1) Because the flaw sizing uncertainty for the stress corrosion cracks in the tubesheet region is large with existing eddy current testing methods, tube plugging may be required if any indication is found within the F* region. The licensee should work towards qualifying eddy current sizing techniques for this type of degradation.

(2) The Westinghouse report contains no information on tube pullout tests. The licensee should provide test data to support the F* pullout analysis.

(3) The Westinghouse report contains test data on estimating the contact pressure based on hardrolling tubes in cylindrical collars. The licensee should discuss the difference in contact pressure between hardrolling into a tubesheet versus the test collar.

(4) In the second paragraph on page 10 of the Westinghouse report, there is a discussion on the reduction of contact pressure resulting from yielding of the tube at heatup. The licensee should provide clarification of this effect since this reduction does not appear to be reflected in the calculation of contact pressure.

(5) Because boric acid attacks ferritic steel, a tube with a through-wall flaw below the F* region may eventually result in loss of contact pressure. In addition, if leakage occurs up the tube, a lubricated interface may exist between the tube and the tubesheet reducing the friction coefficient. The licensee should discuss the effect of the corrosion and the variation in the friction coefficient on the pullout force.

(6) Tube degradation may affect the contact pressure. The licensee should consider the effect of tube degradation on the F* distance and the extent of degradation allowed.

(7) The Westinghouse report contains calculations of contact pressure based on the average of test data. The licensee should use the lower bound data for analysis and should clarify any introduced margins.

(8) Hardrolling tubes may introduce overroll (hardrolling to above the top of the tubesheet) and underroll (hardrolling to below the top of the tubesheet). The licensee should verify the extent of overroll and underroll at McGuire for each tube for which this method is intended to be applied. A commitment to account for overrolling and underrolling should be provided.

(9) The Westinghouse report contains little detail of analytical procedures. The licensee should provide the analysis used so that the staff can verify or reproduce the calculations.

(10). Eddy current testing of the steam generators in McGuire Units 1 and 2 has been completed. The licensee should document the characteristics of stress corrosion cracking detected.

Administrative Concern

The staff is seriously considering limiting any approval of the F* method to one refueling cycle.