December 28, 2000

Mr. Steve Byrne
Vice President, Nuclear Operations
South Carolina Electric & Gas Company
Virgil C. Summer Nuclear Station
Post Office Box 88
Jenkinsville, South Carolina 29065

SUBJECT: VIRGIL C. SUMMER NUCLEAR POWER STATION RE: CRACK IN WELD AREA REACTOR COOLANT SYSTEM (TAC NO. MB0251)

Dear Mr. Byrne:

You recently submitted WCAP-15615, "Integrity Evaluation for Future Operation Virgil C. Summer Nuclear Plant: Reactor Vessel Nozzle to Pipe Weld Regions," and "Crack Growth of Alloy 182 Weld Metal in PWR Environments (PWR MRP-21)" as part of your assessment of the cracking in the "A" reactor coolant pipe weld. Our staff is currently reviewing WCP-15615 and requires additional information to continue with its review.

The enclosed information was transmitted by facsimile on December 28, 2000, to Mr. Melvin Browne of South Carolina Electric & Gas Company, to facilitate an upcoming conference call in order to clarify the staff's questions. We request that you submit your response to these questions before the next public meeting in January 2001. If you have any questions regarding the enclosure, contact us as soon as possible to obtain clarification.

Sincerely,

/RA/

Ramin R. Assa, Project Manager, Section 1
Project Directorate II
Division of Project Licensing Management
Office of Nuclear Reactor Regulation

Docket No. 50-395

Enclosure: Request for Additional Information

cc w/encls: See next page

Questions for V. C. Summer

1. The crack growth results are presented in Figure 4-4 for postulated axial flaws and in Figures 4-5 to 4-7 for postulated circumferential flaw. Please clarify the following:

   a. Confirm that the K dependent equation, Crack Growth Rate = $1.4 \times 10^{-11}(K-9)^{1.16}$ m/sec, was used in generating the above-mentioned four figures.

   b. Was K constantly being updated for each increment of crack extension? If not, discuss what was done.

   c. If a 2-D finite element method (FEM) model was used in calculating K, justify your results by comparing them to K values from another source; e.g., closed-form solutions for a simplified but applicable case, or published influence functions based on 3-D FEM results. Do the same if your K values were not from a 2-D FEM model. Further, for staff verification, provide the K value and all input loads relevant to Figure 4-4 for an axial crack of 0.6 inch deep and the K value and all input loads relevant to 4-5 for a circumferential crack of the same depth.

   d. How were the residual stresses modeled? Did you apply the residual stress distribution directly at the crack surface?

   e. Figure 4-4 indicates that if the initial crack depth was assumed to be 0.6 inch (a/t = 0.256), the time for the crack to reach the Section XI allowable limit would be around one cycle. Provide your comments.