

SOUTH CAROLINA ELECTRIC & GAS COMPANY

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April 27, 1982

T. C. NICHOLS, JR.
VICE PRESIDENT AND GROUP EXECUTIVE
NUCLEAR OPERATIONS



Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Virgil C. Summer Nuclear Station
Docket No. 50/395
Steam Generator Modification

Dear Mr. Denton:

Recently, the NRC requested certain information regarding modifications to the Virgil C. Summer Nuclear Station steam generators for the tube vibration problem. Specifically requested were (a) an estimate of the total time to make the modifications, (b) an estimate of the radiation field where personnel will be working, and (c) an estimate of the total radiation exposure to personnel for the modification work.

Recognizing that the modifications being considered by Westinghouse are in the design stage, information regarding any aspect can only be considered preliminary or best estimates. With that understanding, SCE&G contacted Westinghouse to obtain the information requested.

For the purpose of this analysis three assumptions were made. These assumptions are an operating history of 50% power for one year, the modification to be performed with the primary system filled and the secondary system empty, and 0% failed fuel.

With these assumptions the best estimates at this time are:

- a) Approximately three to four months required to complete the modifications, with a modification design potentially available in the latter part of 1982.
- b) Radiation environment estimated to be:
 - 1) 5 - 15 mrem/hr. general background.
 - 2) 1.5 - 4 rem/hr. internal to the steam generator.
 - 3) 600 mrem/hr. inside the steam generator main feed water nozzle at the impingement plate.

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- c) Approximately 150 to 175 person-rem total radiation exposure per steam generator estimated. Specific ALARA considerations currently being investigated in an effort to reduce total exposures include in-depth pre-job planning and assessment, training of individuals utilizing full scale mock-ups, ALARA design reviews, use of automated welding equipment in high exposure areas and the development of additional techniques and tooling to reduce job specific exposures. Westinghouse estimates a potential reduction of 25 - 50 person-rem/generator through these efforts.

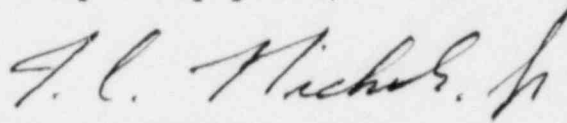
As indicated in the Virgil C. Summer Nuclear Station Final Environmental Statement (FES) Section 4.5.2.3, the NRC staff's occupational dose estimate utilized for the analysis of impacts on the radiation work force population is 1300 person-rem/yr. averaged over the life of the plant. This estimate has been utilized realizing the unpredictable nature and frequency of required routine and special maintenance such as the subject steam generator repair. Section 12.1.6.3 of the FSAR provides an estimated total annual dose of about 400 person-rem per year associated with normal station operations. This is discussed in Section 12.4 of the NRC's Safety Evaluation Report (SER). The difference of these estimates provides guidance on the magnitude of average total person-rem associated with unpredictable major maintenance or modifications required. Thus, the SER and FES have considered an annual average non-routine dose of 900 person-rem per year in the staff assessment of the radiological impacts of station operation. The steam generator modifications currently being considered will be accomplished in accordance with ALARA requirements. Estimates of exposures are currently being refined but they indicate that considerably less than 900 person-rem will be required for this modification.

As the FES and SER have considered the impacts associated with an annual average radiation worker exposure of 1300 person-rem, this modification considering anticipated exposures is consistent with NRC operating license evaluations.

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If you have additional questions, please advise us.

Very truly yours,

A handwritten signature in dark ink, appearing to read "T. C. Nichols". The signature is fluid and cursive, with a large, stylized initial "T" and a long, sweeping underline.

T. C. Nichols,
Vice-President and Group Executive
Nuclear Operations

RBC:TCN:fjc

cc: V. C. Summer
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