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March 11, 1994
RC-94-0070

Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Attention: Mr. G. F. Wunder

Gentlemen:

Subject: VIRGIL C. SUMMER NUCLEAR STATION (VCSNS)
DOCKET NO. 50/395
OPERATING LICENSE NO NPF-12
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
REGARDING TECHNICAL SPECIFICATION CHANGE - TSP 930017
FUEL STORAGE

In response to your letter dated February 8, 1994, requesting additional information on five (5) items, attached are the South Carolina Electric & Gas Company (SCE&G) responses. SCE&G hopes that these responses adequately resolve all questions and concerns and will allow the review of the Technical Specification change to be completed.

I declare that these statements and matters set forth herein are true and correct to the best of my knowledge, information, and belief.

Should you have any questions concerning this issue, please call Mr. Philip A. Rose at (803) 345-4052 at your convenience.

Very truly yours,

John L. Skolds

John L. Skolds

PAR/JLS/nkk
Attachments

c: O. W. Dixon
R. R. Mahan (w/o Enclosures)
R. J. White
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RESPONSES TO USNRC QUESTIONS
PERTAINING TO SPENT FUEL STORAGE
TSP 930017

1. Please discuss the number of neutron histories used in the KENO Monte Carlo calculations and why this is sufficient to assure convergence.

   A typical Westinghouse KENOVa Monte Carlo calculation involves more than 60,000 neutron histories which is significantly more than the KENO default of 30,900. To assure adequate convergence, the KENO edits which show Average Keff per Generation Run and Average Keff by Generation Skipped are examined. These edits provide a visual inspection on the overall convergence of the KENOVa Monte Carlo results.

2. This question was withdrawn per a telephone conference between the NRC and SCE&G on March 2, 1994.

3. The revised TS refers to fuel with a maximum nominal enrichment of 5.0 w/o U-235 with sufficient IFBAs such that the maximum reference fuel assembly k_∞ is no greater than 1.460. Since all fuel assemblies placed in Region 1 must comply with the enrichment-IFBA requirements given in Figure 8 of the criticality analysis report or have a reference K_∞ less than or equal to 1.460, why is Figure 8 not a part of the TS?

   The IFBA credit curve given in Figure 8 was conservatively established to identify the minimum number of IFBA rods per assembly needed to allow fuel storage in the Region 1 spent fuel racks. This curve has several conservatisms built into it which may not be applicable to the final IFBA fuel assembly design. These conservatisms include allowances for minimum IFBA length, IFBA rod configuration, and IFBA rod repositioning effects which accompany increased IFBA B^{10} loadings. The IFBA credit curve of Figure 8 is a conservative method to confirm the K_∞ requirement as specified in the Tech Specs. The infinite multiplication factor, K_∞, is used as a reference criticality reactivity point to determine acceptability of storage for the actual IFBA fuel assembly design. This allows the as-designed IFBA loading, IFBA lengths, and IFBA rod positions to be taken into account.

4. The effect of axial burnup distribution on assembly reactivity has been deemed to be unnecessary over the burnup-enrichment range used in the Region 2 racks. Has this effect been analyzed in conjunction with top and bottom Boraflex shrinkage?

   The effect of top and bottom end shrinkage has a negligible effect on the burnup credit in the Region 2 racks. Any increase in flux at the ends of the fuel assembly will increase the axial leakage experienced by the fuel assembly. Therefore, slight increases in the flux at the ends of the fuel assembly will be offset by the increase in axial leakage.

Other conservatisms included in the burnup credit curve include the very conservative nature of assuming 4% shrinkage on every poison panel at the bottom of the cell and a 1% ΔK penalty at 30,000 MWD/MTU applied linearly to the burnup credit limit curve.

5. Is there a plant requirement to measure the pool water boron concentration? If so, where is it located and what sampling frequency is required?

   Chemistry Procedures require sampling the spent fuel pool water weekly and every 72 hours when in Mode 6 to ensure the boron concentration is above 2000 ppm.