VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

January 28, 1998

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Serial No. 98-010
NL&OS/GDM R0
Docket Nos. 50-280
50-281
License Nos. DPR-32
DPR-37

Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY
SURRY POWER STATION UNITS NO. 1 AND 2
INCREASED FUEL ENRICHMENT TECHNICAL SPECIFICATIONS CHANGE
RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION

Virginia Electric and Power Company submitted a proposed Technical Specifications change request to the NRC on November 5, 1997 (Serial No. 97-614) to increase the maximum allowable fuel enrichment from 4.1 to 4.3 weight percent U^{235}. Subsequent to our submittal, the NRC provided four questions to our staff to obtain additional information to facilitate their review of our change request. These questions and our responses were discussed during a telephone call on December 2, 1997 with Messrs. Larry Kopp and Gordon Edison of the NRC. In a subsequent telephone call, Mr. Edison requested that the responses previously provided be documented in a letter. Therefore, the four NRC questions and our responses are provided in the attachment.

Should you have any further questions or require additional information, please contact us.

Very truly yours,

James P. O'Hanlon

James P. O'Hanlon
Senior Vice President - Nuclear

Attachment

A001

cc: U. S. Nuclear Regulatory Commission
Region II
Atlanta Federal Center
61 Forsyth St., SW, Suite 23T85
Atlanta, GA 30303

Mr. R. A. Musser
NRC Senior Resident Inspector
Surry Power Station

Commitment Summary

No new commitments are being made in this letter.

Attachment

Response to NRC Request for Additional Information
Proposed Technical Specification for Increased Fuel Enrichment

Surry Power Station Units 1 and 2

Response to NRC Request for Additional Information
Proposed Technical Specification for Increased Fuel Enrichment

Surry Power Station Units 1 and 2

1. NRC Question:

TS 5.4.B addresses assurance that k-eff for new fuel rack is less than or equal to 0.98 assuming optimum moderation (e.g., aqueous foam). Since Section 9.1.1 of NUREG-0800 (Standard Review Plan) also requires that k-eff not exceed 0.95 under fully flooded conditions, TS 5.4.b should also state that k-eff for new fuel rack must be less than or equal to 0.95 assuming full density flooding.

Response:

The results of our analysis were compared to the current Surry Technical Specifications, which limit the K-effective in the new fuel storage area to $\leq$0.98, regardless of the type of aqueous moderator. The analysis for the enrichment increase shows that the K-effective for the new fuel storage area is less than 0.95 for even the optimum moderation condition. Therefore, although they are not explicitly stated in the Surry Technical Specifications and were not considered as limits in our submittal, our analysis shows that the requirements of the Standard Review Plan are satisfied for the Surry new fuel storage area at the requested fuel enrichment limit.

Based on our telephone discussion with Mr. Larry Kopp and Mr. Gordon Edison on December 2, 1997, it is our understanding that the NRC is not requiring that the K-effective limits defined in the Surry Technical Specifications be changed as part of this request. Incorporation of the new 10 CFR 50.68 requirements (which are consistent with the Standard Review Plan) into the Surry Technical Specifications will be addressed as part of the implementation of the standardized Improved Technical Specifications. For review of the requested change to the fuel enrichment limit in the Surry Technical Specifications, the analysis of the Surry new fuel storage area shows these criticality accident requirements are satisfied for fuel at the proposed maximum enrichment.

2. NRC Question:

The TS amendment request states that the criticality analyses did not credit soluble boron, except for accident conditions. If acceptable storage of spent fuel shown in TS Fig. 5.4-1 is based on maintaining k-eff less than 0.95 in the spent fuel racks with no soluble boron in the pool water, the phrase "2250 ppm Boron in Pool Water" is confusing and should be removed from the Figure.

Response:

Figure 5.4-1 applies to an accident evaluation affecting only Region 1 of the spent fuel pool which is adjacent to the cask loading area. The analysis of this region of the Surry spent fuel pool differs from that for Region 2 (the remainder of the spent fuel pool) due to the possibility of damage from a cask drop accident. Consistent with previous NRC-approved analyses for Region 1, an extremely conservative approach was taken to analyze the effect of a cask drop on criticality. The rack geometry was modeled as a repeating array of crushed storage cans containing a lattice of optimum pitch fuel pins within each storage can. Due to assuming optimum pitch and reflective X-Y boundary conditions, both 2250 ppm boron and burnup credit are required to show K-effective is <0.95. Application of the double contingency principle allows use of soluble boron credit for evaluation of the cask drop accident.

3. NRC Question:

Why is proposed Fig. 5.4-1 different than the current Fig. 5.4-1 for fuel enrichments up to 4.2 w/o U-235?

Response:

The difference in Figure 5.4-1 is primarily due to assuming the presence of 2250 ppm boron in the pool water for the current analysis of Region 1, versus 2000 ppm boron in the previous analysis. The higher boron concentration is consistent with the current Technical Specifications minimum boron concentration of 2300 ppm in the spent fuel pool. (This Technical Specifications limit has been increased since the previous analysis was performed.)

4. NRC Question:

Since criticality concerns with a cask drop accident can be alleviated by taking credit for soluble boron, what is the reason for having a separate burnup dependent Region 1? It seems the only concern is whether radiological concerns can be handled by the required decay time after discharge from the core.

Response:

This question is addressed in the response to Question 2 above.