

VIRGINIA ELECTRIC AND POWER COMPANY

RICHMOND, VIRGINIA 23261

November 21, 2000

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

Serial No. 00-491A
NL&OS/GSS/ETS R0
Docket Nos. 50-338/-339
License Nos. NPF-4/-7

Gentlemen:

VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION UNITS 1 AND 2
SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION FOR
PROPOSED TECHNICAL SPECIFICATION CHANGES FOR
INCREASED FUEL ENRICHMENT AND
SPENT FUEL POOL SOLUBLE BORON AND FUEL BURNUP CREDIT

In a September 27, 2000 letter, Serial No. 00-491, Virginia Electric and Power Company (Dominion Generation) requested amendments, in the form of changes to the Technical Specifications to Facility Operating Licenses Numbers NPF-4 and NPF-7 for North Anna Power Station Units 1 and 2, respectively. The proposed changes would 1) increase the fuel enrichment limit to 4.6 weight percent Uranium-235, 2) establish Technical Specifications Limiting Conditions for Operations for Spent Fuel Pool (SFP) boron concentration and fuel storage restrictions, and 3) eliminate the value for the allowance for uncertainties in the calculation for K-effective in the SFP criticality calculation.

As part of the proposed Technical Specification changes we evaluated the change against the criteria of 10 CFR 50.92 and have determined that the proposed Technical Specifications changes did not constitute a significant hazards consideration. The basis for that determination was provided in the September 27, 2000 letter. As a result of a subsequent conversation with your staff, we are providing a summary of our previous significant hazards consideration determination. This summary, which is included as Attachment 1, specifically excludes detail from the associated safety evaluation that had been integrated into the initial significant hazards consideration determination.

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

Very truly yours,



William R. Matthews
Vice President – Nuclear Operations

Attachment

Commitments made in this letter: None

ADD1

cc: U.S. Nuclear Regulatory Commission
Region II
Sam Nunn Atlanta Federal Center
61 Forsyth Street, SW
Suite 23T85
Atlanta, Georgia 30303

Mr. M. J. Morgan
NRC Senior Resident Inspector
North Anna Power Station

Commissioner
Bureau of Radiological Health
1500 East Main Street
Suite 240
Richmond, VA 23218

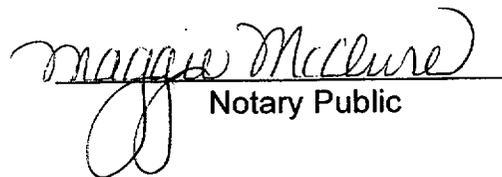
Mr. J. E. Reasor
Old Dominion Electric Cooperative
Innsbrook Corporate Center
4201 Dominion Blvd.
Glen Allen, Virginia 23060

COMMONWEALTH OF VIRGINIA)
)
COUNTY OF HENRICO)

The foregoing document was acknowledged before me, in and for the County and Commonwealth aforesaid, today by William R. Matthews, who is Vice President - Nuclear Operations, of Virginia Electric and Power Company. He has affirmed before me that he is duly authorized to execute and file the foregoing document in behalf of that Company, and that the statements in the document are true to the best of his knowledge and belief.

Acknowledged before me this 21st day of November, 2000.

My Commission Expires: 3-31-04.



Notary Public

(SEAL)

Attachment 1

**Significant Hazards Consideration Determination
Increased Fuel Enrichment and Spent Fuel Pool Boron and Burnup Credit**

**Dominion Generation
North Anna Units 1 and 2**

SIGNIFICANT HAZARDS CONSIDERATION

Virginia Electric and Power Company (Dominion Generation) has reviewed the requirements of 10 CFR 50.92 as they relate to proposed Technical Specifications changes for spent fuel pool (SFP) soluble boron concentration and fuel assembly loading restrictions based on fuel burnup and a maximum fuel enrichment increase for North Anna Units 1 and 2 from the current Technical Specifications limit of 4.3 weight percent U^{235} to 4.6 weight percent U^{235} . This higher fuel enrichment has been incorporated into the design basis for the spent fuel pool and fresh fuel storage racks through new criticality calculations. The basis for this no significant hazards consideration determination is summarized below.

Criterion 1. The proposed increase in maximum fuel enrichment and the changes to the SFP design basis will not significantly increase the probability of or consequences of an accident previously evaluated in the North Anna Units 1 and 2 UFSAR.

The only accidents for which the probability of occurrence is potentially affected by the fuel enrichment and SFP changes involve criticality events during fuel handling and storage (e.g., fuel mispositioning). The proposed Technical Specifications establish additional restrictions on the placement of each fuel assembly in the SFP to ensure subcriticality. However, criticality safety analyses have been performed that demonstrate that the K_{eff} during the handling and storage of both new and spent fuel remains low enough to ensure subcriticality during postulated accident conditions. In addition, analyses of the dilution of the spent fuel pool have been performed to ensure that there is adequate time for a dilution event to be detected and mitigated, such that the required subcritical margin is maintained in the spent fuel pool. Therefore the probability of occurrence of criticality during fuel handling or storage is not significantly increased. In addition the consequences of the operating reactor accident scenarios are also unchanged, because the source terms used to determine the releases from fuel during accidents are a function of burnup, rather than initial enrichment.

Criterion 2. The proposed increase in maximum fuel enrichment or the change in the SFP design basis does not create a new or different kind of accident from any already discussed in the North Anna Units 1 and 2 UFSAR.

Although there are new restrictions on placement of fuel in the SFP, the administrative controls on fuel movement to specified locations in the pool are unchanged. The higher enrichment fuel and the new Technical Specifications for the spent fuel pool do not require any new or different plant equipment, and do not change the manner in which

currently installed equipment is operated. There are no changes to normal core operation, and the units will meet all applicable design criteria and will operate within existing Technical Specifications limits. No new failure modes have been created for any system, component, or piece of equipment, and no new single failure mechanisms have been introduced. No new or different plant equipment is introduced, and the operation of currently installed equipment is not changed. The use of a higher maximum fuel enrichment will not cause the design criteria for fuel operation or storage to be exceeded. No new modes or limiting single failures are created by the use of a higher fuel enrichment. Safety analyses for the fuel storage area have demonstrated that subcriticality will be maintained during fuel handling and storage, including fuel mispositioning and pool dilution scenarios.

Criterion 3. The proposed increase in maximum fuel enrichment and the changes to the SFP design basis will not significantly reduce the margin of safety.

The use of higher enriched fuel and the changes to the SFP design basis have the potential to affect only criticality events during fuel handling and storage. Criticality analyses demonstrate that the limits on K_{eff} for the new and spent fuel storage areas will be satisfied. Therefore, there is adequate margin to ensure subcriticality during the storage and handling of fuel. The requirements of 10 CFR 50 Appendix A General Design Criterion 62 are satisfied. Safety analyses demonstrated that K_{eff} will remain sufficiently low to ensure subcriticality, so no new releases will result and there is no impact on radiological consequences of accidents. The safety analyses of record will remain applicable for the operation of fuel with a higher initial U^{235} enrichment and changes to the spent fuel pool. Therefore, the margin of safety is not affected by the proposed increase in initial fuel enrichment or changes to the spent fuel pool design basis.

Based on the evaluations and analyses results presented in the foregoing safety significance evaluation, it has been demonstrated that increasing the North Anna Units 1 and 2 maximum initial fuel enrichment to 4.6 weight percent U^{235} and changing the design basis of the spent fuel pool to eliminate any credit for Boraflex but take credit for soluble boron in the pool will not result in a significant hazards consideration.