VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

March 7, 2002

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555-0001

Serial No.:	01- 560C
CM/RAB	R0
Docket Nos.:	50-338
	50-339
License Nos.:	NPF-4
	NPF-7

Gentlemen:

**VIRGINIA ELECTRIC AND POWER COMPANY (DOMINION)
NORTH ANNA POWER STATION UNITS 1 AND 2
PROPOSED IMPROVED TECHNICAL SPECIFICATIONS
REQUEST FOR ADDITIONAL INFORMATION
ISTS 3.7.7 AND ITS 3.7.9 BEYOND SCOPE ISSUES (TAC Nos. MB1439, MB1440, MB1451, and MB1452)**

This letter transmits our response to the NRC's request for additional information (RAI) regarding the North Anna Power Station (NAPS) Units 1 and 2 proposed Improved Technical Specifications (ITS). The North Anna ITS license amendment request was submitted to the NRC in a December 11, 2000 letter (Serial No. 00-606).

The NRC requested additional information regarding Improved Standard Technical Specification (ISTS) 3.7.7, "Component Cooling Water (CCW) System," and ITS 3.7.9, "Ultimate Heat Sink," in a letter dated September 6, 2001 (TAC Nos. MB1439, MB1440, MB1451, and MB1452). On November 19, 2001, Dominion submitted responses to the NRC's RAIs (Serial Number 01-560). In a subsequent telephone call with members of your staff, Dominion agreed to revise one response and to submit additional information to address certain questions in the September 6, 2001 letter. The revised response and the additional information were transmitted in a letter dated January 25, 2002 (Serial Number 01-560A). In a letter dated February 11, 2002, the NRC requested further information on the North Anna reservoir. The additional information was transmitted in a letter dated February 18, 2002 (Serial Number 01-560B). In a telephone call on February 28, 2002, the NRC requested additional information on Component Cooling and the North Anna reservoir. This letter transmits the requested information.

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

Very truly yours,

Eugene S. Grecheck
Vice President - Nuclear Support Services

Attachment

Commitments made in this letter: None

cc: U.S. Nuclear Regulatory Commission
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SN: 01-560C
Docket Nos.: 50-338/339
Subject: RAI - Proposed ITS

COMMONWEALTH OF VIRGINIA)
)
COUNTY OF HENRICO)

The foregoing document was acknowledged before me, in and for the County and Commonwealth aforesaid, today by Eugene S. Grecheck, who is Vice President - Nuclear Support Services, 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 7th day of March, 2002.

My Commission Expires: March 31, 2004.

Maggie McCluve
Notary Public

(SEAL)

Attachment

Proposed Improved Technical Specifications
Response to Request for Additional Information
ISTS 3.7.7, "Component Cooling Water System"
ITS 3.7.9, "Ultimate Heat Sink"

Virginia Electric and Power Company
(Dominion)

North Anna Power Station Units 1 and 2

North Anna Improved Technical Specifications (ITS)
Additional Information Regarding Component Cooling Water (CC) System and Ultimate Heat Sink (UHS) (TAC Nos. MB1439, MB1440, MB1451, AND MB1452)

The following information is provided to address NRC questions raised during a conference call on February 28, 2002.

Decay Heat Release Valve (DHRV) Unavailability
The North Anna PRA model does not presently credit the DHRV for post-Steam Generator Tube Rupture (SGTR) recovery. The PRA model credits the condenser steam dumps and the SG PORVs. Use of the condenser steam dumps requires condenser cooling from Lake Anna. Following a SGTR, it is necessary to relieve steam from the secondary side to cool the primary below 350° F, where the Residual Heat Removal (RHR) system may be placed in service. If the DHRV was credited, it would have an unavailability of less than 1.0E-1. This number is based upon the following considerations:

- The DHRV flow path is similar to the Steam Generator Power Operated Relief Valve (SG PORV) flow path.
- The human error probability (HEP) associated with the DHRV will be comparable to the known HEP associated with use of the SG PORVs.
- The SG PORV system unavailability is approximately 1.0E-2.

Based upon these considerations, the 1.0E-1 assumption for the DHRV unavailability is a reasonable, bounding number.

Risk Achievement Worth (RAW) for Lake Anna
The North Anna PRA model does not credit the DHRV for post-SGTR recovery. The PRA model credits the condenser steam dumps and the SG PORVs. Use of the condenser steam dumps requires condenser cooling from Lake Anna. If the model did credit the DHRV, then the SGTR sequence cutsets with SG PORV failure would have an additional 0.1 multiplier to reflect the DHRV unavailability. If these top cutsets are adjusted to credit the DHRV, the impact upon the Lake Anna CDF and LERF RAWs will be as follows. (The RAW is the risk increase due to unavailability of Lake Anna.)

Risk Achievement Worths Due to Unavailability of Lake Anna		
	DHRV not Credited	DHRV Credited
CDF Risk Achievement Worth	2.0	1.8
LERF Risk Achievement Worth	2.9	1.6

Component Cooling Pump Asymmetry
There is a slight asymmetry in the risk importance measures for the Component Cooling pumps due to the modeling of the loss of seal cooling (T4) initiating event as a fault tree rather than a point estimate. A review of the top cut sets shows that the majority of this

asymmetry is attributable to the following factor. The Component Cooling pumps are coupled with the Charging Pumps in the cut sets for the T4 initiator. This coupling occurs due to their redundant function in providing Reactor Coolant Pump seal cooling. The A and the B Charging pumps are powered by the H and J emergency buses respectively. The C Charging pump can be powered from either emergency bus, but the model only credits the H-bus power supply. If the PRA model credited the J-bus power supply for the C Charging pump, the risk importance of the B Component Cooling pump would diminish, and approach the numerical values for the A Component Cooling pump.

Risk Reduction Worth (RRW) for Lake Anna

Lake Anna is not explicitly modeled in the North Anna PRA; as such, its RRW is 1.000 by definition. While the Risk Achievement Worth (RAW) can be estimated by failing surrogate events, the RRW cannot be similarly estimated because the dependent components (such as the steam dumps) are at failure risk for reasons other than potential unavailability of the lake. The RRW of key surrogate events can be considered, however. For example, the model includes a common cause failure (CCF) of the steam dumps; the RRW of this CCF is numerically calculated at 1.000. This figure accounts for both the lake and other common cause failure modes as well.

The Circulating Water system provides normal condenser cooling. As stated in North Anna UFSAR Table 2.4-6, operation of the Circulating Water pumps require a minimum Lake Anna water level of 235 feet above Mean Sea Level at the main intake structure.

Post-SGTR Response

Following a SGTR, the operators will trip the unit and then identify and isolate the ruptured generator. They then will cool the unit by dumping steam to the condenser or using the SG PORVs. This cooldown is required for two reasons:

1. It is necessary to cool down the primary side by first cooling the secondary side. After the primary side is cooled, it may be de-pressurized to terminate the primary-to-secondary leakage.

2. The Residual Heat Removal system cannot be placed in service above 350° F. The primary side must be cooled to below 350° F in order to use the RHR system for long term cooling.

Short term cooling requires steam relief using the steam dumps (turbine bypass to the condenser), the SG PORVs or the DHRV. Long term cooling may be accomplished with any of these methods or using the RHR system, but post-SGTR, the PRA model only credits the RHR system for long term cooling. For other events, the SG PORVs may also be used for long term cooling.