VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

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

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VIRGINIA ELECTRIC AND POWER COMPANY (DOMINION)
NORTH ANNA POWER STATION UNIT 1
30-DAY REPORT OF EMERGENCY CORE
COOLING SYSTEM (ECCS) MODEL CHANGES
PURSUANT TO THE REQUIREMENTS OF 10 CFR 50.46

In accordance with 10 CFR 50.46(a)(3)(ii), Dominion hereby submits information regarding changes to the Emergency Core Cooling System (ECCS) evaluation model for the Small Break Loss of Coolant Accident (SBLOCA) analysis for North Anna Power Station Unit 1 (NAPS 1) and its application in existing analyses.

Attachment 1 provides a report describing plant-specific changes associated with the AREVA SBLOCA ECCS evaluation model for NAPS 1.

Information regarding the effect of the ECCS evaluation model changes upon the reported SBLOCA analysis of record (AOR) result for NAPS 1 is provided in Attachment 2. The calculated peak cladding temperatures (PCT) for the AREVA SBLOCA analysis for NAPS 1 is 1395°F. The SBLOCA result for NAPS 1 is confirmed to have sufficient margin to the 2200°F limit for PCT specified in 10 CFR 50.46(b)(1). Dominion has determined that the PCT assessment for 10 CFR 50.46(a)(3)(i) accumulation (sum of the absolute magnitudes), including the current as well as previous PCT assessments, results in a total accumulation of 61°F which represents a significant change as defined in 10 CFR 50.46(a)(3)(i).

10 CFR 50.46(a)(3)(ii) requires the licensee to provide a report within 30 days, which includes a proposed schedule for providing a reanalysis or taking other action as may be needed to show compliance with 10 CFR 50.46. Dominion has reviewed the information provided by AREVA and determined that the adjusted SBLOCA PCT value and the manner in which it was derived continue to conform to the requirements of 10 CFR 50.46. As such, Dominion considers the schedular requirements of 10 CFR 50.46(a)(3)(ii) to be satisfied with the submission of this notification. Dominion routinely tracks adjustments to the SBLOCA and Large Break Loss of Coolant Accident (LBLOCA) calculated PCT values to ensure that reasonable margins to the acceptance value set by 10 CFR 50.46 are maintained.

This information satisfies the 30-Day reporting requirements of 10 CFR 50.46(a)(3)(ii).

If you have any questions or require additional information, please contact Mr. Thomas Shaub at (804) 273-2763.

Very truly yours,

Gerald T. Bischof
Vice President – Nuclear Engineering

Attachments: (2)

1) Report of Changes in AREVA SBLOCA ECCS Evaluation Model – North Anna Power Station Unit 1.

2) 30-Day Reporting of 10 CFR 50.46 Margin Utilization – North Anna Power Station Unit 1.

Commitments made in this letter: None.

cc: U.S. Nuclear Regulatory Commission
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ATTACHMENT 1

30-DAY REPORT OF EMERGENCY CORE COOLING SYSTEM (ECCS) MODEL CHANGES PURSUANT TO THE REQUIREMENTS OF 10 CFR 50.46

REPORT OF CHANGES IN AREVA SBLOCA ECCS EVALUATION MODEL

**VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION UNIT 1**

REPORT OF CHANGES IN
AREVA SBLOCA ECCS EVALUATION MODEL

The current small break loss of coolant accident (SBLOCA) analysis for AREVA fuel in North Anna Power Station Unit 1 (NAPS 1) was performed using the AREVA SBLOCA Evaluation Model (EM). AREVA identified the changes described below and provided the results of an assessment to determine the impact on peak cladding temperature (PCT).

RCCA Reactivity Input

AREVA identified an issue related to modeling a slightly non-conservative RCCA reactivity input for the NAPS 1 SBLOCA. The SBLOCA Analysis of Record (AOR) modeled a RCCA reactivity based on a fully inserted End-of-Life (EOL) rod worth of 6.64 %Δk/k and a delayed neutron fraction of 0.0075. The EOL rod worth is a first cycle of operation value from the NAPS UFSAR. A lower rod worth is more appropriate to have the SBLOCA result cover a wider range of operating conditions. The control rod worth selected for use is 4.0 %Δk/k with the same delayed neutron fraction. This change resulted in a 3°F decrease in PCT.

Critical Flow Transition

AREVA identified an issue related to modeling the evaluation model (EM) critical flow as it transitions from subcooled to two-phase flow. The SBLOCA AOR modeled the EM critical flow transition with values that differ from the EM demonstration analysis. The change is related to the use of the quality option instead of the void fraction option over which the subcooled two-phase flow smoothing occurs. This change resulted in a 26°F increase in PCT.

Conclusion

Dominion has perfomed an evaluation of PCT for comparison to 10 CFR 50.46 requirements. The AOR PCT for NAPS 1 is 1404°F. Considering the current PCT changes as well as all previously reported changes, the corrected SBLOCA PCT is 1395°F. The SBLOCA results have sufficient margin to the 2200°F limit specified in 10 CFR 50.46(b)(1). As identified in Attachment 2, the PCT assessment for 10 CFR 50.46(a)(3)(i) accumulation (sum of the absolute magnitudes) includes the current assessments (29°F) and previous assessments (32°F) resulting in a total accumulation of 61°F. The 10 CFR 50.46(a)(3)(i) accumulation of 61°F is greater than the 50°F limit for reporting; hence, the changes are significant and submittal of this 30 day report to the NRC is required.

ATTACHMENT 2

**30-DAY REPORT OF EMERGENCY CORE
COOLING SYSTEM (ECCS) MODEL CHANGES
PURSUANT TO THE REQUIREMENTS OF 10 CFR 50.46**

30-DAY REPORTING OF 10 CFR 50.46 MARGIN UTILIZATION

**VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION UNIT 1**

10 CFR 50.46 MARGIN UTILIZATION – AREVA SMALL BREAK LOCA

Plant Name: North Anna Power Station, Unit 1
Utility Name: Virginia Electric and Power Company

Analysis Information

EM:	AREVA SB EM	**Limiting Break Size:**	5.2 Inches (SI Line)
Analysis Date:	2004		
Vendor:	AREVA		
FQ:	2.32	**FΔH:**	1.65
Fuel:	Advanced Mark-BW	**SGTP (%):**	7
Notes:	None		

	Clad Temp (°F)
LICENSING BASIS	
Analysis of Record PCT	1404
PCT ASSESSMENTS (Delta PCT)	
A. Prior ECCS Model Assessments	
1. None	0
B. Planned Plant Modification Evaluations	
1. Revised Test Flow Curve for HHSI	-24
2. Point Kinetics Programming Issue with RELAP5-Based Computer Codes	-8
C. 2008 ECCS Model Assessments	
1. RCCA Reactivity Input	-3
2. Critical Flow Transition	26
D. Other	
1. None	0

LICENSING BASIS PCT + PCT ASSESSMENTS	**PCT =**	**1395**