VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

July 24, 2007

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

Serial No. 07-0507
NL&OS/GDM R1'
Docket Nos. 50-280
50-281
License Nos. DPR-32
DPR-37

VIRGINIA ELECTRIC AND POWER COMPANY
SURRY POWER STATION UNITS 1 AND 2
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), Virginia Electric and Power Company (Dominion) hereby submits a required 30-day report regarding recently identified changes to the Westinghouse Large Break Loss of Coolant Accident (LBLOCA) Emergency Core Cooling System (ECCS) Evaluation Model (EM) for Surry Power Station Units 1 and 2 (SPS 1&2). Attachment 1 of this letter provides the report describing plant-specific evaluation model changes associated with the Westinghouse LBLOCA ECCS EM for SPS 1&2.

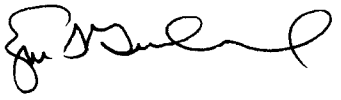
Information regarding the effect of the ECCS evaluation model changes upon the reported LBLOCA analyses of record (AOR) results is provided for SPS 1&2 in Attachment 2. To summarize the information in Attachment 2, the calculated peak cladding temperature (PCT) for the SPS 1&2 LBLOCA analyses is 2064°F. This result represents a significant change in PCT, as defined in 10 CFR 50.46(a)(3)(i).

The LBLOCA results for SPS 1&2 are confirmed to have sufficient margin to the 2200°F limit for PCT specified in 10 CFR 50.46. 10 CFR 50.46(a)(3)(ii) requires that the 30-day report include a "proposed schedule for providing a reanalysis or taking other action as may be needed to show compliance with Section 50.46 requirements." Addressing this 10 CFR 50.46(a)(3)(ii) requirement, Dominion's letter dated November 16, 2006 (Serial No. 06-936) transmitted a best-estimate LBLOCA analysis using the approved Westinghouse Automated Statistical Treatment of Uncertainty Method (ASTRUM) for NRC review and approval. Upon approval, the ASTRUM analysis will provide improved margin to the 2200°F limit for PCT specified in 10 CFR 50.46.

Based on the evaluation of this information and the resulting changes in the applicable licensing basis PCT results, no further action is required to demonstrate compliance with the 10 CFR 50.46 requirements.

If you have any further questions regarding this submittal, please contact Mr. Gary D. Miller at (804) 273-2771.

Very truly yours,



Eugene S. Grecheck
Vice President – Nuclear Support Services

Commitments made in this letter: None

Attachments: (2)

1) Report of Changes in Westinghouse Large Break LOCA ECCS Evaluation Model - Surry Power Station Units 1 and 2

2) 10 CFR 50.46 Margin Utilization - Westinghouse Large Break LOCA - Surry Power Station Units 1 and 2

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ATTACHMENT 1

REPORT OF CHANGES IN WESTINGHOUSE LARGE BREAK LOCA ECCS EVALUATION MODEL

SURRY POWER STATION UNITS 1 AND 2

VIRGINIA ELECTRIC AND POWER COMPANY
(DOMINION)

REPORT OF CHANGES IN WESTINGHOUSE LARGE BREAK LOCA ECCS EVALUATION MODEL SURRY POWER STATION UNITS 1 AND 2

Westinghouse has informed Dominion of a change to the BASH Evaluation Model (EM), which is used to analyze the peak cladding temperature (PCT) for the large break loss of coolant accident (LBLOCA) for Surry Power Station Units 1 and 2 (SPS 1&2). This change involved a modification to the LOCBART code. Consequently, Dominion performed a plant-specific assessment to determine the impact of the change. During the assessment, Dominion identified two additional changes to the PCT licensing basis for the LBLOCA as follows: 1) a credit for the initial fuel rod burnup of 4000 MWD/MTU, and 2) an augmentation of a current PCT assessment due to a change in the time that the PCT occurs during the transient.

Evaluation of Westinghouse LBLOCA Evaluation Model Error

The Westinghouse BASH Evaluation Model (EM) is used to analyze the LBLOCA in accordance with 10 CFR 50.46 requirements. The BASH EM consists of several computer codes that are used to simulate the LBLOCA. The LOCBART code has been modified to correct an inverted term in the calculation of the pellet volumetric heat generation rate. This change affects the steady-state and transient heat generation for the hot rod and hot assembly and could result in either an increase or decrease in peak cladding temperature for a given calculation. Dominion performed a plant-specific assessment of the impact of the change and determined that it resulted in a +19°F ΔPCT (penalty) for SPS 1&2.

Evaluation of Credit for Initial Burnup of 4000 MWD/MTU

This change is a crediting of an initial burnup of 4000 MWD/MTU for the hot rod. This is a lower bounding value for the current operating cycles (Surry Unit 1 Cycle 21 and Surry Unit 2 Cycle 21). The credit of the initial burnup provides a PCT benefit that offsets the PCT penalty due to the correction of the error in LOCBART (see above discussion). The PCT assessment for the use of a minimum burnup of 4000 MWD/MTU is a -139°F ΔPCT (benefit) to PCT for SPS 1&2.

This assessment does not support startup of Surry Unit 1 from the upcoming fall 2007 refueling outage, as it will not support operation from 0 to 4000 MWD/MTU burnup. As indicated in the cover letter, a revised LBLOCA analysis is under review at the NRC. Subsequent to the refueling outage in fall 2007 for Surry Unit 1, the SPS 1&2 large break LOCA analysis will be based on the Westinghouse Best-Estimate Large Break Loss of Coolant Accident (BE-LBLOCA) analysis methodology using the Automatic Statistical Treatment of Uncertainty Method (ASTRUM). In letters dated November 16, 2006 (Reference 1) and March 29, 2007 (Reference 2), Dominion provided a submittal and a response to a request for additional information to the NRC requesting approval to use this method at Surry Units 1 and 2 coincident with the Surry Unit 1 refueling. This new LBLOCA analysis will address all burnups subsequent to its implementation.

Therefore, no beginning of cycle (BOC) to 4000 MWD/MTU analysis was included in this evaluation.

Augmentation of Previous PCT Assessment

Previously, Westinghouse provided a description of a resolution for an error in the LOCBART fluid property logic, which was dependent on the time of the limiting PCT during the transient. An assessment and two augmentations of this change are identified in the most recent reporting of the PCT to the NRC (Reference 3). A PCT assessment of +10°F (penalty) was initially identified for this issue for an early-reflood PCT. An augmentation of +10°F (penalty) was then assessed when the PCT changed from an early-reflood PCT to a mid-reflood PCT due to the evaluation of revised containment parameters and use of PAD 4.0 initial fuel pellet temperatures. With the implementation of the IFBA fuel product, the PCT changed from a mid-reflood PCT to an early-reflood PCT and a -10°F augmentation (benefit) was required. Finally, the PCT changes to a late-reflood PCT for the evaluation herein. Thus, the overall assessment for the LOCBART fluid property logic issue is required to be a +0°F. Therefore, an additional -10°F ΔPCT augmentation (benefit) is assessed for the LOCBART fluid property logic issue for SPS 1&2.

Evaluation of PCT Licensing Basis Changes Pursuant to 10 CFR 50.46

A review of Reference 3 indicates that the current licensing basis PCT is 2194°F for SPS 1&2. The impact of these changes results in a decrease in the licensing basis PCT to 2064°F for SPS 1&2, which is less than the 10 CFR 50.46 PCT limit of 2200°F.

The PCT assessment is greater than the 50°F limit for reporting as defined in 10 CFR 50.46(a)(3)(i); hence, the change is significant and the submittal of a 30-day report to the NRC is required.

Conclusion

Dominion has performed an evaluation of PCT for comparison to 10 CFR 50.46 requirements. Considering the current PCT changes, as well as previously reported changes, the corrected large break LOCA PCT is 2064°F. Therefore, the SPS 1&2 LBLOCA results have sufficient margin to the 2200°F limit specified in 10 CFR 50.46(b)(1). The PCT assessments for 10 CFR 50.46(a)(3)(i) accumulation are greater than the 50°F limit for reporting; hence, the changes are significant and submittal of a 30-day report to the NRC is required.

Finally, the change to the PCT licensing basis does not support startup of Surry Unit 1 from the upcoming fall 2007 refueling outage (i.e., it will not support operation from 0 to 4000 MWD/MTU burnup). However, a revised, best-estimate LBLOCA analysis is under review at the NRC and is scheduled to be implemented at SPS 1&2 prior to startup from the Surry Unit 1 fall 2007 refueling outage.

References

1. Letter from G. T. Bischof (Dominion) to USNRC, "Virginia Electric and Power Company, Surry Power Station Units 1 and 2, Proposed Technical Specifications Change, Addition Of ASTRUM Methodology to Core Operating Limits Report References and Revised Large Break LOCA Analysis," Serial No. 06-936, November 16, 2006.
2. Letter from G. T. Bischof (Dominion) to USNRC, "Virginia Electric and Power Company, Surry Power Station Units 1 and 2, Proposed Technical Specifications Change, Addition Of ASTRUM Methodology to Core Operating Limits Report References and Revised Large Break LOCA Analysis, Request for Additional Info," Serial No. 06-936A, March 29, 2007.
3. Letter from G. T. Bischof (Dominion) to USNRC, "Dominion Energy Kewaunee, Inc., Dominion Nuclear Connecticut, Inc., Virginia Electric and Power Company, Kewaunee Power Station, Millstone Power Station Units 2 and 3, North Anna Power Station Units 1 and 2, Surry Power Station Units 1 and 2, "2006 Annual Report of Emergency Core Cooling System (ECCS) Model Changes Pursuant to the Requirements of 10 CFR 50.46," Serial No. 07-0464, June 28, 2007.

ATTACHMENT 2

10 CFR 50.46 MARGIN UTILIZATION – WESTINGHOUSE LARGE BREAK LOCA

SURRY POWER STATION UNITS 1 AND 2

VIRGINIA ELECTRIC AND POWER COMPANY
(DOMINION)

10 CFR 50.46 MARGIN UTILIZATION – WESTINGHOUSE LARGE BREAK LOCA

Plant Name:	Surry Power Station, Unit 1		
Utility Name:	Virginia Electric and Power Company		
Analysis Information			
EM:	BASH	**Limiting Break Size:**	Cd=0.4
Analysis Date:	2001		
Vendor:	Westinghouse		
FQ:	2.32	**FΔH:**	1.62
Fuel:	SIF	**SGTP (%):**	15
Notes:	None		

		Clad Temp (°F)
LICENSING BASIS		
	Analysis of Record PCT	2117
PCT ASSESSMENTS (Delta PCT)		
A.	**Prior ECCS Model Assessments**	
1.	LBLOCA/Seismic SG Tube Collapse	0
2.	BASH EM Transient Termination	0
3.	LOCBART Fluid Property Logic Issue	10
4.	LOCBART ZIRLO™ Cladding Specific Heat Model Error	16
5.	PAD 4.0 Initial Pellet Temperatures	-11
6.	Removal of Part-Length CRDMs	-66
7.	Pressurizer Surge Line Piping Schedule Reconciliation	8
8.	LOCBART Fluid Property Logic Issue-Augmented	10
9.	Revised Containment Heat Sink Input	113
10.	Revised Containment Spray Flowrate	-17
11.	Revised Containment Free Volume	-17
12.	LOCBART Fluid Property Logic Issue-Augmented	-10
13.	BASH Minimum and Maximum Time Step Sizes	0
B.	**Planned Plant Modification Evaluations**	
1.	Westinghouse IFBA Fuel Product Implementation	41
C.	**2007 ECCS Model Assessments**	
1.	LOCBART Pellet Volumetric Heat Generation Rate	19
2.	Burnup Credit of 4000 MWD/MTU	-139
3.	LOCBART Fluid Property Logic Issue-Augmented	-10
D.	**Other**	
1.	None	0
LICENSING BASIS PCT + PCT ASSESSMENTS		**PCT = 2064**

10 CFR 50.46 MARGIN UTILIZATION – WESTINGHOUSE LARGE BREAK LOCA

Plant Name:	Surry Power Station, Unit 2		
Utility Name:	Virginia Electric and Power Company		
Analysis Information			
EM:	BASH	**Limiting Break Size:**	Cd=0.4
Analysis Date:	2001		
Vendor:	Westinghouse		
FQ:	2.32	**FΔH:**	1.62
Fuel:	SIF	**SGTP (%):**	15
Notes:	None		

		Clad Temp (°F)
LICENSING BASIS		
	Analysis of Record PCT	2117
PCT ASSESSMENTS (Delta PCT)		
A.	**Prior ECCS Model Assessments**	
1.	LBLOCA/Seismic SG Tube Collapse	0
2.	BASH EM Transient Termination	0
3.	LOCBART Fluid Property Logic Issue	10
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B.	**Planned Plant Modification Evaluations**	
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C.	**2007 ECCS Model Assessments**	
1.	LOCBART Pellet Volumetric Heat Generation Rate	19
2.	Burnup Credit of 4000 MWD/MTU	-139
3.	LOCBART Fluid Property Logic Issue-Augmented	-10
D.	**Other**	
1.	None	0
LICENSING BASIS PCT + PCT ASSESSMENTS		**PCT = 2064**