

June 18, 2009

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

Serial No. 09-375  
NSSL/MLC R0  
Docket No. 50-336  
License No. DPR-65

**DOMINION NUCLEAR CONNECTICUT, INC.**  
**MILLSTONE POWER STATION UNIT 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), Dominion Nuclear Connecticut, Inc. (DNC) hereby submits information regarding a change to the Emergency Core Cooling System (ECCS) evaluation model for the Small Break Loss of Coolant Accident (SBLOCA) analysis for Millstone Power Station Unit 2 (MPS2) and its application in existing analyses.

Attachment 1 provides a report describing a plant-specific change associated with the AREVA SBLOCA ECCS evaluation model for MPS2. Information regarding the effect of the ECCS evaluation model change upon the reported SBLOCA analysis of record (AOR) results for MPS2 is provided in Attachment 2.

Based on the information in Attachment 2, the calculated peak cladding temperature (PCT) for the SBLOCA analysis for MPS2 is 1714°F. The SBLOCA results for MPS2 are confirmed to have sufficient margin to the 2200°F limit of 10 CFR 50.46(b)(1). DNC has determined that the current PCT assessment represents a significant change in PCT (greater than the 50°F limit), as defined in 10 CFR 50.46(a)(3)(i).

10 CFR 50.46(a)(3)(ii) requires a 30-day report to be submitted that includes a "proposed schedule for providing a reanalysis or taking other action as may be needed to show compliance with Section 50.46 requirements." DNC 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 meet the acceptance criteria of 10 CFR 50.46. As such, DNC considers the schedule requirements of 10 CFR 50.46(a)(3)(ii) to be satisfied with the submission of this notification. DNC routinely tracks adjustments to the SBLOCA calculated PCT value to ensure that margin to the acceptance value set by 10 CFR 50.46 is maintained.

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

If you have any further questions regarding this submittal, please contact Ms. W. D. Craft at (804) 273-4687.

Sincerely,

  
J. Alan Price  
Vice President – Nuclear Engineering

Commitments made in this letter:

1. None.

Attachments: (2)

1. Report of Changes in AREVA SBLOCA ECCS Evaluation Model – Millstone Power Station Unit 2.
2. 30-Day Reporting of 10CFR50.46 Margin Utilization–Millstone Power Station Unit 2.

cc: U.S. Nuclear Regulatory Commission  
Region I Regional Administrator  
475 Allendale Road  
King of Prussia, PA 19406-1415

Ms. C. J. Sanders  
NRC Project Manager  
U.S. Nuclear Regulatory Commission, Mail Stop 08 B1A  
One White Flint North  
11555 Rockville Pike  
Rockville, MD 20852-2738

NRC Senior Resident Inspector  
Millstone Power Station

**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**

**DOMINION NUCLEAR CONNECTICUT, INC.  
MILLSTONE POWER STATION UNIT 2**

## **REPORT OF CHANGES IN AREVA SBLOCA ECCS EVALUATION MODEL**

The AREVA Small Break Loss of Coolant Accident (SBLOCA) Evaluation Model (EM) is used to analyze the SBLOCA for the AREVA fuel product utilized at Millstone Power Station Unit 2 (MPS2). The S-RELAP5 computer code is one of the codes utilized in the SBLOCA EM. AREVA identified the change described below and provided the results of an assessment to determine the impact on peak cladding temperature (PCT).

### **Radiation to Fluid Heat Transfer Model Change**

During development of Revision 2 of its Realistic Large Break LOCA (RLBLOCA) EM, AREVA discovered an error in its S-RELAP5 computer code. The calculation of the wall-to-vapor emissivity was incorrect. The source of the miscalculation was determined to be Figure 23 in the TRAC Model Description report (Reference 1). The scale of the x-axis in Figure 23 is in error by a feet-to-meters squared conversion factor.

In S-RELAP5, the computation of the wall-to-vapor emissivity is based on a correlation taken from a FLECHT SEASET report, specifically Equation 6-6 in Reference 2. As implemented in S-RELAP5, this correlation was modified by a factor derived from comparison to the curves in Figure 23 of Reference 1. Since Figure 23 is in error, the factor AREVA applied to Equation 6-6 in implementing the correlation in its S-RELAP5 computer code is also in error, which created the error in the S-RELAP5 computation of the wall-to-vapor emissivity. The result is that the S-RELAP5 radiation to fluid correlation under predicts the radiation heat transfer.

AREVA has corrected the S-RELAP5 code by implementing the Equation 6-6 emissivity correlation from Reference 2 without modification.

AREVA evaluated the impact on the SBLOCA PCT resulting from this discrepancy. This change resulted in a 64°F decrease in the SBLOCA PCT for MPS2.

### **Conclusion**

Dominion Nuclear Connecticut, Inc. has performed an evaluation of PCT for comparison to 10 CFR 50.46 requirements. Considering the current PCT change as well as previously reported changes, the corrected SBLOCA PCT is 1714°F for MPS2. The SBLOCA results have sufficient margin to the 2200°F limit specified in 10 CFR 50.46(b)(1). The current change in PCT (-64°F) for MPS2 is greater than the 50°F limit for reporting; hence, the change is significant and submittal of this 30-day report to the NRC is required.

### **References**

1. NUREG/CR-3633 (EGG-2294), Volume 1, "TRAC-BD1/MOD1: An Advanced Best Estimate Computer Program for Boiling Water Reactor Transient Analysis," April 1984.
2. NUREG/CR-2256 (EPRI NP-2013 and WCAP-9891), "PWR FLECHT SEASET Unblocked Bundle, Forced and Gravity Reflood Task Data Evaluation and Analysis Report," NRC/EPRI/Westinghouse Report No. 10, November 1981.

**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**

**DOMINION NUCLEAR CONNECTICUT, INC.  
MILLSTONE POWER STATION UNIT 2**

**10 CFR 50.46 MARGIN UTILIZATION - SMALL BREAK LOCA**

---

<b>Plant Name:</b>	Millstone Power Station, Unit 2
<b>Utility Name:</b>	Dominion Nuclear Connecticut, Inc.

---

**Analysis Information**

<b>EM:</b>	PWR Small Break LOCA, S-RELAP5 Based	<b>Limiting Break Size:</b> 0.08 ft <sup>2</sup>
<b>Analysis Date:</b>	01/02	
<b>Vendor:</b>	AREVA	
<b>Peak Linear Power:</b>	15.1 kW/ft	
<b>Notes:</b>	None	

---

**Clad Temp (°F)**

**LICENSING BASIS**

Analysis of Record PCT	1941
------------------------	------

**PCT ASSESSMENTS (Delta PCT)**

**A. Prior ECCS Model Assessments**

1. Decay Heat Model Error	-133
2. Revised SBLOCA Guideline	0
3. Core Exit Modeling-Upper Tie Plate Flow Area	-22
4. Point Kinetics Programming Issue with RELAP5-Based Computer Codes	-8

**B. Planned Plant Modification Evaluations**

1. None	0
---------	---

**C. Current ECCS Model Assessments**

1. Radiation to Fluid Heat Transfer Model Change	-64
--	-----

**D. Other**

1. None	0
---------	---

---

**LICENSING BASIS PCT + PCT ASSESSMENTS**

**PCT = 1714**

---