

Dominion Nuclear Connecticut, Inc.
Millstone Power Station
Rope Ferry Road
Waterford, CT 06385



Dominion™

MAR 27 2003

Docket No. 50-336
B18866

RE: 10 CFR 50.46(a)(3)(ii)

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

Millstone Power Station, Unit No. 2
2002 Annual Reporting of Changes to and Errors in
Emergency Core Cooling System Models or Applications

In accordance with 10 CFR 50.46(a)(3)(ii), Dominion Nuclear Connecticut, Inc. (DNC) hereby submits the annual summary of changes to and errors identified in the Emergency Core Cooling System (ECCS) evaluation models or applications of those models for Millstone Unit No. 2

Attachment 1 transmits the annual report for the period January 2002 through December 2002. The following is a synopsis of the information provided in Attachment 1.

Small Break Loss of Coolant Accident (SBLOCA)

1. DNC has previously reported the changes in the SBLOCA analysis to the U.S. Nuclear Regulatory Commission (NRC) in a letter dated September 5, 2002,⁽¹⁾ to meet the 30-day reporting criterion of 10 CFR 50.46(a)(3)(ii).

Large Break Loss of Coolant Accident (LBLOCA)

1. As a result of additional validation and verification activities, Framatome ANP (FRA-ANP) identified and corrected a number of minor errors in the RFPAC computer code. The RFPAC code performs the refill and reflood calculations for the LBLOCA event in the SEM/PWR-98 evaluation model. This item resulted in a 16°F increase in Peak Cladding Temperature (PCT).
2. FRA-ANP identified an incorrect Reactor Coolant Pump junction area used in the RELAP4 LBLOCA blowdown analysis. Correction of this error resulted in a small change in the pump exit junction area. This item resulted in a 0°F change in PCT.

⁽¹⁾ J. A. Price letter to U.S. Nuclear Regulatory Commission, "Millstone Power Station, Unit No. 2, 30 Day Reporting of Changes to, and Errors in, Emergency Core Cooling System Models or Applications," dated September 5, 2002 (B18734).

ADD1

3. FRA-ANP identified an error in the clad thermal expansion calculation in the TOODEE2 computer code. The TOODEE2 code performs the fuel rod heatup calculations for the LBLOCA event in the SEM/PWR-98 evaluation model. This item resulted in a 1°F reduction in PCT.
4. FRA-ANP identified an error in the biasing of the accumulator line losses in the LBLOCA ECCS model when applied to the SEM/PWR-98 methodology. This item resulted in a 1°F reduction in PCT.

Considering the changes summarized in Attachment 1, the corrected PCTs for the limiting SBLOCA (1808°F) and LBLOCA (1826°F) remain below the 2200°F limit specified by 10 CFR 50.46(b)(1).

This information satisfies the 2002 annual reporting requirements of 10 CFR 50.46(a)(3)(ii). In addition, no reanalysis or other actions are necessary to demonstrate compliance with 10 CFR 50.46 requirements.

There are no regulatory commitments contained within this letter.

If you should have any questions concerning this submittal, please contact Mr. Ravi Joshi at (860) 440-2080.

Very truly yours,

DOMINION NUCLEAR CONNECTICUT, INC.



J. Alan Price
Site Vice President - Millstone

Attachment (1)

cc: H. J. Miller, Region I Administrator
R. B. Ennis, NRC Senior Project Manager, Millstone Unit No. 2
Millstone Senior Resident Inspector

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Attachment 1

Millstone Power Station, Unit No. 2

2002 Annual Reporting of 10 CFR 50.46 Margin Utilization

**10 CFR 50.46 Margin Utilization
 Small Break Loss of Coolant Accident (SBLOCA)**

Plant Name:	Millstone Unit No. 2
Utility Name:	Dominion Nuclear Connecticut, Inc.

Analysis Information

EM:	PWR Small Break LOCA S-RELAP5 Based	Limiting Break Size:	0.08 ft ²
Analysis Date:	01/02		
Vendor:	Framatome ANP		
Peak Linear Power:	15.1 kW/ft		
Notes:	None		

	<u>Clad Temp (°F)</u>	<u>Notes</u>
LICENSING BASIS		
Analysis of Record PCT	1941	(1)
MARGIN ALLOCATIONS (Delta PCT)		
A. Prior Permanent ECCS Model Assessments		
1. None	0	
B. Planned Plant Change Evaluations		
1. None	0	
C. 2002 Permanent ECCS Model Assessments		
1. Decay Heat Model Error	-133	
2. Revised SBLOCA Guideline	0	(2)
D. Temporary ECCS Model Issues		
1. None	0	
E. Other Margin Allocations		
1. None	0	
<hr/> LICENSING BASIS PCT + MARGIN ALLOCATIONS		PCT = 1808

NOTES:

- (1) New Analysis of Record using S-RELAP5 based methodology.
- (2) Assessment of this change resulted in a PCT differential of +66°F. Framatome ANP provided this assessment for information. The +66°F assessment does not apply since the current Analysis of Record incorporates the revised SBLOCA guideline.

**10 CFR 50.46 Margin Utilization
 Large Break Loss of Coolant Accident (LBLOCA)**

Plant Name:	Millstone Unit No. 2
Utility Name:	Dominion Nuclear Connecticut, Inc.

Analysis Information

EM:	SEM/PWR-98	Limiting Break Size:	1.0 DECLG
Analysis Date:	11/98		
Vendor:	Framatome ANP		
Peak Linear Power:	15.1 kW/ft		
Notes:	None		

	<u>Clad Temp (°F)</u>	<u>Notes</u>
LICENSING BASIS		
Analysis of Record PCT	1814	(1)

MARGIN ALLOCATIONS (Delta PCT)

A. Prior Permanent ECCS Model Assessments

- | | |
|--|----|
| 1. Corrected Corrosion Enhancement Factor | -1 |
| 2. ICECON Coding Errors | 0 |
| 3. Setting RFPAC Fuel Temperatures at Start of Reflood | -2 |
| 4. SISPNCH/ujun98 Code Error | 0 |
| 5. Error in Flow Blockage Model in TOODEE2 | 0 |
| 6. Change in TOODEE2-Calculation of QMAX | 0 |
| 7. Change in Gadolinia Modeling | 0 |
| 8. PWR LBLOCA Split Break Modeling | 0 |
| 9. TEOBY Calculation Error | 0 |
| 10. Inappropriate Heat Transfer in TOODEE2 | 0 |
| 11. End-of-Bypass Prediction by TEOBY | 0 |
| 12. R4SS Overwrite of Junction Inertia | 0 |
| 13. Incorrect Junction Inertia Multipliers | 1 |
| 14. Errors Discovered During RODEX2 V&V | 0 |
| 15. Error in Broken Loop SG Tube Exit Junction Inertia | 0 |

B. Planned Plant Change Evaluations

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

C. 2002 Permanent ECCS Model Assessments

- | | |
|---|----|
| 1. RFPAC Refill and Reflood Calculation Code Errors | 16 |
| 2. Incorrect Pump Junction Area Used in RELAP4 | 0 |
| 3. Error in TOODEE2 Clad Thermal Expansion | -1 |
| 4. Accumulator Line Loss Error | -1 |

D. Temporary ECCS Model Issues

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

**10 CFR 50.46 Margin Utilization
Large Break Loss of Coolant Accident (LBLOCA)**

E. Other Margin Allocations

1. None 0

LICENSING BASIS PCT + MARGIN ALLOCATIONS

PCT = 1826

Notes:

(1) New Analysis of Record with SEM/PWR-98 LOCA Evaluation Model