

VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

10 CFR 50.90

February 12, 2004

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

Serial No. 03-313L
NLOS/ETS
Docket Nos. 50-338
50-339
License Nos. NPF-4
NPF-7

VIRGINIA ELECTRIC AND POWER COMPANY (DOMINION)
NORTH ANNA POWER STATION UNITS 1 AND 2
PROPOSED TECHNICAL SPECIFICATIONS CHANGES AND EXEMPTION
REQUEST FOR USE OF FRAMATOME ANP ADVANCED MARK-BW FUEL
SUPPLEMENTAL INFORMATION FOR LOSS OF COOLANT ACCIDENT MIXED
CORE EFFECTS

In a May 6, 2003 letter (Serial No. 03-313) Dominion submitted the Realistic Large Break LOCA (RLBLOCA) results for Advanced Mark-BW fuel in North Anna Unit 2 to support the NRC's review of a proposed amendment and exemptions that will permit North Anna Units 1 and 2 to use Framatome ANP Advanced Mark-BW fuel. On August 20, 2003 (Serial No. 03-313A) Dominion provided a response to an August 6, 2003 NRC request for additional information regarding the RLBLOCA results. In an August 28, 2003 meeting to discuss the RLBLOCA analysis results, the NRC staff requested further clarification of Dominion's August 20, 2003 responses. Supplemental information was provided for Questions 1, 5, 9, and 10b on September 5, 2003 (Serial No. 03-313C), Questions 6 and 11a on September 22, 2003 (Serial No. 03-313D), Questions 2, 3, and 4 on September 26, 2003 (Serial Nos. 03-313E and F), Questions 2, 4, 10a, 10b and containment modeling on November 10, 2003 (Serial No. 03-313G), and December 8, 2003 (Serial No. 03-313H), Question 4 on December 17, 2003 (Serial No. 03-313I), containment modeling and radiation heat transfer on January 6, 2004 (Serial No. 03-313J) and January 22, 2004 (03-313K). In a follow up telephone call conducted on February 5, 2004, the NRC Staff requested additional information regarding the Large Break and Small Break LOCA analysis of mixed fuel cores, including effects of fuel assembly bow.

The attachment to this letter provides the requested information. As noted in our August 20, 2003 letter, this information is applicable to both North Anna Units 1 and 2 even though the request for additional information received was specific to Unit 2.

To support the use of Framatome Advanced Mark-BW fuel in North Anna Unit 2, Cycle 17, we respectfully request the NRC to complete their review and approval of the

A001

license amendment by February 29, 2004. We appreciate your consideration of our technical and schedular requests.

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

Very truly yours,



Leslie N. Hartz
Vice President – Nuclear Engineering

Attachment

Commitments made in this letter: None

cc: U.S. Nuclear Regulatory Commission
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Attachment 1

Supplemental Information for Loss of Coolant Accident Mixed Core Effects

**Framatome Fuel Transition Program
Technical Specification Change**

**Virginia Electric and Power Company
(Dominion)
North Anna Power Station Units 1 and 2**

Supplemental Information for Loss of Coolant Accident Mixed Core Effects

In an August 28, 2003 meeting to discuss the RLBLOCA analysis results, the NRC staff requested further clarification of Dominion's August 20, 2003 responses. Supplemental information was provided for Questions 1, 5, 9, and 10b on September 5, 2003 (Serial No. 03-313C), Questions 6 and 11a on September 22, 2003 (Serial No. 03-313D), Questions 2, 3, and 4 on September 26, 2003 (Serial Nos. 03-313E and F), Questions 2, 4, 10a, 10b and containment modeling on November 10, 2003 (Serial No. 03-313G), and December 8, 2003 (Serial No. 03-313H), Question 4 on December 17, 2003 (Serial No. 03-313I), containment modeling and radiation heat transfer on January 6, 2004 (Serial No. 03-313J) and January 22, 2004 (03-313K). In a telephone call conducted on February 5, 2004, the NRC Staff requested additional information regarding the large break and small break LOCA analysis of mixed fuel cores, including effects of fuel assembly bow. The requested information is provided below.

NRC Question 1

The NRC staff interprets 10 CFR 50.46 as requiring that the whole North Anna Unit 2 core, including both fuels, must be evaluated in one analysis each for large break and small break LOCA. This should be accomplished with a single methodology each for large break and small break that is acceptable for application to North Anna Unit 2. Please provide the peak clad temperature (PCT) obtained from the mixed core analysis for the resident Westinghouse fuel for both small break and large break LOCA transients.

Dominion Response

Based on Framatome ANP LOCA methods, the most severe clad temperature predictions for the Westinghouse NAIF fuel are 1,404°F and 1,995°F for small and large break LOCA, respectively. In each case, the value provided is a maximum value that bounds both North Anna Unit 1 and 2. These PCT values are applicable to the resident Westinghouse NAIF fuel product in a mixed core with Framatome Advanced Mark-BW assemblies.

NRC Question 2

Are effects of the Framatome fuel assembly bow issue accommodated in the reported large and small break LOCA analysis results for the resident Westinghouse NAIF fuel product?

Dominion Response

The Framatome ANP fuel assembly bow concern is not applicable to the resident Westinghouse NAIF fuel product. As discussed in Dominion's submittal regarding this matter (Serial No. 04-017, dated January 22, 2004), it involves the potential influence on core peaking factor uncertainty associated with a defined amount of fuel assembly bowing. The aspect that is applicable for analysis of Framatome ANP fuel stems from the neutronic techniques and assumptions used to calculate the effects of fuel assembly bowing on local power distributions. The potential effects on peaking factor uncertainty in the Framatome ANP fuel does not affect the design basis for accommodating fuel rod and fuel assembly bowing that applies to the resident Westinghouse NAIF fuel product. Dominion's analysis of the NAIF fuel product in North Anna mixed cores incorporates the Westinghouse methodology for addressing the peaking factor effects of fuel assembly bowing. As part of Dominion's interim approach to accommodate effects of the Framatome ANP concern, an increased peaking factor uncertainty will be applied to reload core design predictions and measured values of Heat Flux Hot Channel Factor, F_Q . This increased uncertainty factor will be conservatively applied to all core locations for each reload core in which the interim approach is applied. Even with this increased uncertainty factor, the reload core designs will meet the design limits for F_Q associated with the LOCA analyses. This approach was previously detailed in the fuel assembly bow submittal of January 22, 2004 (Serial No. 04-017). In summary, the effects associated with Framatome ANP fuel assembly bow are thus accommodated in the large and small break LOCA analysis results for both the resident Westinghouse NAIF and Framatome ANP Advanced Mark-BW fuel products.