

VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

December 8, 2003

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

Serial No. 03-313H
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 REALISTIC LARGE BREAK LOSS OF
COOLANT ACCIDENT (RLBLOCA) CONTAINMENT MODEL

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 19, 2003 (Serial No. 03-313D), Questions 2, 3, and 4 on September 26, 2003 (Serial Nos. 03-313E and F), and Questions 2, 4, 10a, 10b and containment modeling on November 10, 2003 (Serial No. 03-313G).

In a telephone call conducted on November 25, 2003, the NRC Staff requested that a figure be provided to document the comparison referred to in letter Serial No. 03-313G between the containment response of the RLBLOCA and the existing UFSAR model. In addition, the NRC requested confirmation that the maximum rod HTC provides a lower bound of the radiative heat transfer expected for the hot rod.

The attachment to this letter provides the requested figure and a response to the request on radiative heat transfer. As noted in our August 20, 2003 letter, this information is applicable to both North Anna Units 1 and 2 even though the RAIs received were 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

4001

license amendment by December 31, 2003. We appreciate your consideration of our technical and scheduler 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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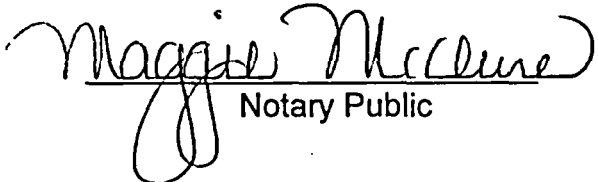
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North Anna Power Station

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)
COUNTY OF HENRICO)

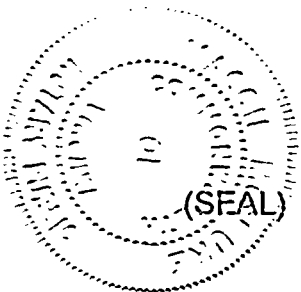
The foregoing document was acknowledged before me, in and for the County and Commonwealth aforesaid, today by Leslie N. Hartz, who is Vice President - Nuclear Engineering, of Virginia Electric and Power Company. She has affirmed before me that she is duly authorized to execute and file the foregoing document in behalf of that Company, and that the statements in the document are true to the best of her knowledge and belief.

Acknowledged before me this 8th day of December, 2003.

My Commission Expires: March 31, 2004.



Notary Public



Attachment 1

**Supplemental Response to Request for Additional Information
Containment Response Model Comparison from
November 10, 2003 letter (Serial No. 03-313G)**

Realistic Large Break LOCA Analysis Results – North Anna

**Framatome Fuel Transition Program
Technical Specification Change**

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

Dominion Supplemental Response to NRC Request for Additional Information
North Anna Realistic LBLOCA Analysis
Containment Response Model Comparison of
November 10, 2003 letter (Serial No. 03-313G)

In an August 28, 2003 meeting, the NRC staff requested additional information to supplement the responses provided in Dominion's August 20, 2003 letter (Serial No. 03-313A). In letters dated September 5, 2003 (Serial No. 03-313C), September 19, 2003 (Serial No. 03-313D), September 26, 2003 (Serial Nos. 03-313E and F), and November 10, 2003 (Serial No. 03-313G) the supplemental information was provided to the NRC. The additional information requested by the NRC Staff in the November 25, 2003 telephone conference call for containment models is provided below. The response provided below is applicable to both North Anna Units 1 and 2, even though the RAIs received were specific to Unit 2.

Containment Response Modeling

NRC Request:

Letter 03-313G mentioned containment response simulations comparing results from the S-RELAP5 model with CSB 6-1 inputs and the existing UFSAR minimum containment response simulation. Please provide a figure that documents this comparison, as discussed in the November 25, 2003 telephone conference call.

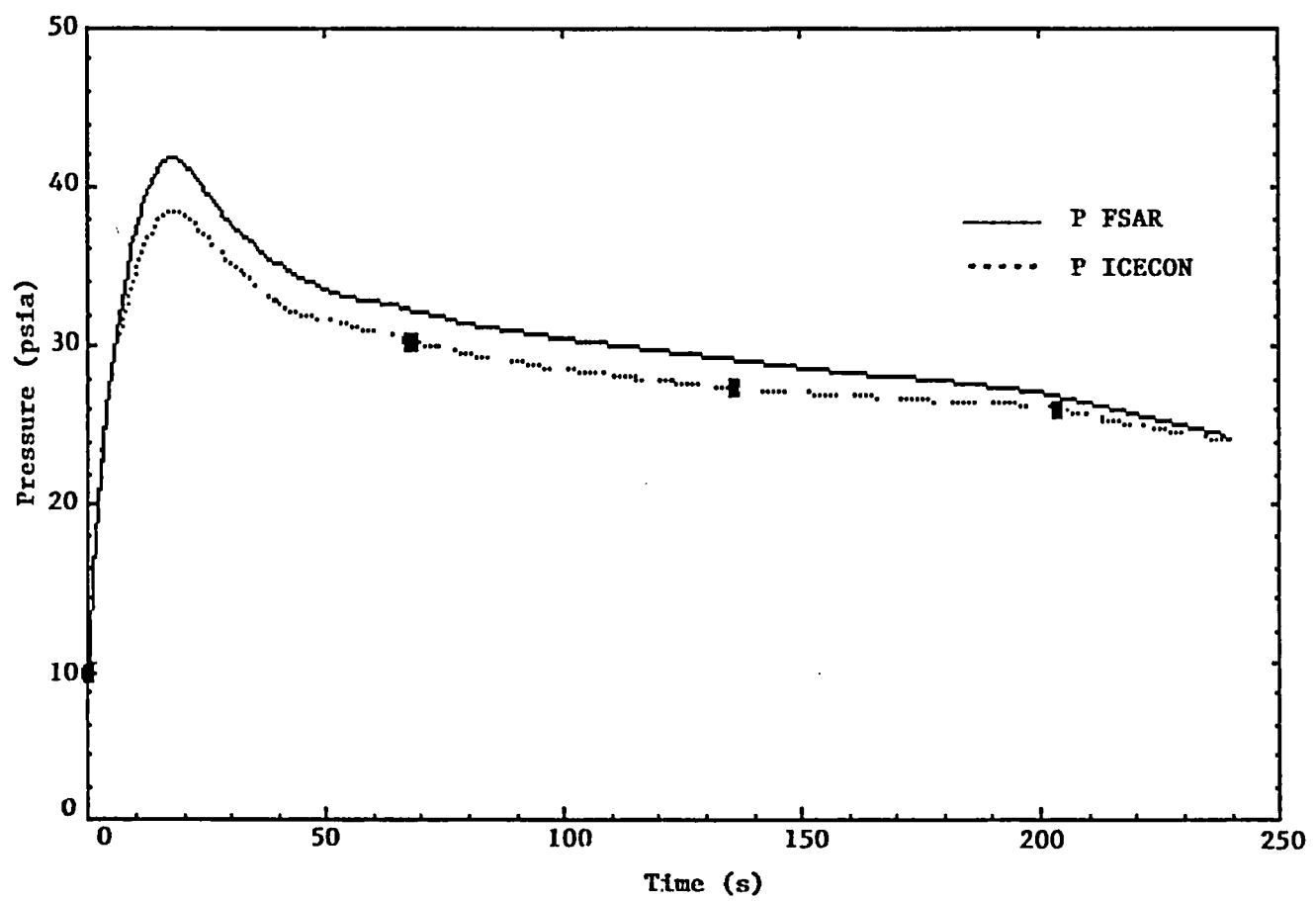
Response:

In the attachment to letter 03-313G, in the section entitled 'Heat Transfer to Internal Structures,' the following is stated:

"The 1.7 multiplier was validated for the North Anna analyses by demonstrating good (less than one psi tolerance) or bounding agreement between simulations using S-RELAP5 with CSB 6-1 inputs and the existing UFSAR minimum containment response simulation."

To establish confidence in the plant-specific ICECON containment model, the Framatome ANP RLBLOCA guidelines require performing a benchmark calculation for comparison with an existing minimum containment back pressure calculation. Figure 1 presents the result from the required calculation. It compares results of the North Anna UFSAR Appendix K minimum containment backpressure calculation (solid line) with a North Anna ICECON containment backpressure calculation (dotted line). The ICECON calculation was performed for the same break size as the existing UFSAR case. The mass and energy releases used in the ICECON simulation were generated by S-RELAP. The results of this calculation established qualification for the ICECON model, which was then subsequently used in accordance with the approved methodology of EMF-2103.

Figure 1 North Anna RLBLOCA Guideline Containment Model Qualification Comparison



Radiation Heat Transfer Modeling

NRC Request:

In a telephone conference call on November 25, 2003, NRC Staff made an additional request for Dominion to confirm that the result reported in Letter 03-313G for Maximum Rod HTC provides a lower bound of the radiative heat transfer expected for the hot rod.

Response:

Dominion, in letters dated September 26 (Serial No. 03-313F) and November 10, 2003 (Serial No. 03-313G) provided results from the assessment of radiative heat transfer for application of the Realistic LBLOCA (RLBLOCA) model to North Anna. The specific information provided was based upon a NRC staff request at an August 28, 2003 public meeting to demonstrate, by comparison with applicable FLECHT tests, that the North Anna plant had comparable or greater radiative heat transfer than the test data. The November 10 letter appended results from two additional tests requested by NRC Staff. The results were presented in terms of two quantities: Assembly Average HTC and Maximum Rod HTC. Evaluation by Framatome and Dominion indicate that if the Maximum Rod HTC were determined in a fashion that represented a lower bound, its value would be less than the 9.66 Btu/hr-ft²-R reported in Tables 2 and 3 in Attachment 1 of letter 03-313G. However, this result would be greater than the comparable FLECHT test data cited, so the conclusion remains unchanged. That is, North Anna has greater radiative heat transfer than the applicable test data and no undue credit is derived from applying the approved RLBLOCA heat transfer model to North Anna.