VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

December 9, 2005

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

Serial No. 05-700
NL&OS/ETS R0
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
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
PROPOSED REACTOR VESSEL MATERIAL SURVEILLANCE CAPSULE WITHDRAWAL SCHEDULE

In a letter dated March 15, 2005, Serial No. 05-129, Dominion submitted a proposed reactor vessel material surveillance capsule withdrawal schedule for NRC review and approval in accordance with 10 CFR 50, Appendix H, Section III.B.3. Subsequently, in a letter dated October 3, 2005, the NRC staff requested additional information to complete the review of the proposed capsule withdraw schedule. The attachment to this letter provides the requested information. In a November 17, 2005 telephone conference call with the NRC staff to discuss storage requirements for standby capsules, Mr. S. R. Monarque of the NRC staff indicated that the response could be delayed to further address standby capsule storage requirements. In a subsequent telephone call on December 8, 2005 with Mr. S. R. Monarque and Mr. M. A. Mitchell to discuss standby capsule storage requirements, the NRC concurred with the proposed commitment described below.

If you should have any questions regarding this submittal, please contact Mr. Thomas Shaub at (804) 273-2763.

Sincerely,

L. N. Hartz
Vice President – Nuclear Engineering

Attachment

Commitments made in this letter:

All surveillance capsules placed in storage will be maintained for possible future insertion. If one or more capsules will not be maintained in such a way as to permit future insertion, then the NRC staff will be notified of this change.

cc: U. S. Nuclear Regulatory Commission
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Attachment

Serial No. 05-700

Response to Request for Additional Information
Capsule Withdrawal Schedule

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

REQUEST FOR ADDITIONAL INFORMATION
SURVEILLANCE CAPSULE WITHDRAWAL SCHEDULE
NORTH ANNA, UNITS 1 AND 2
VIRGINIA ELECTRIC AND POWER COMPANY (DOMINION)
DOCKET NOS. 50-338 AND 50-339

By letter dated March 15, 2005, Virginia Electric and Power Company (VEPCO) submitted a proposed reactor vessel material withdrawal schedule for North Anna Power Station, Units 1 and 2. VEPCO is requested to respond to the following questions below.

NRC Question

1. What are the projected peak neutron fluence (E>1.0 MeV) values for the North Anna Power Station, Units 1 and 2 reactor vessels at the end of their current operating licenses (which allow for a total of 60 years of power operation)?

Dominion Response

The peak reactor vessel inner surface fluence (E> 1.0 MeV) values at the end of the current 60 year operating license (EOL) are:

North Anna Unit 1	5.90 E19 n/cm^2
North Anna Unit 2	5.91 E19 n/cm^2

These values were provided to the NRC in a letter dated October 15, 2002 [Reference 1] in support of the license renewal effort.

NRC Question

2. Note h in Table A-1 of Appendix A to your letter dated March 15, 2005, for North Anna Power Station, Unit 1 states "capsule X may be withdrawn at the [end of life] (EOL) to provide material properties data at a fluence which exceeds that expected to be achieved at the end of the 20-year license renewal period." Clarify the definition of "EOL" as it applies to Note h. Provide the calendar day, effective full-power years (EFPY) value, and the estimated surveillance capsule X neutron fluence (E>1.0 MeV) value, which are to be understood to be consistent with withdrawal of the capsule at "EOL."

Dominion Response

The term "End of License" (EOL) as used throughout VEPCO's submittal of March 15, 2005 applies to the end of the current 60 year operating license.

For North Anna Power Station, Unit 1, EOL is reached on April 1, 2038 [Reference 2], with a corresponding EFPY value of 50.3 years. For Unit 1 surveillance capsule X, the estimated neutron fluence (E>1.0 MeV) value at EOL is 9.44 E19 n/cm^2.

NRC Question

3. Note f in Table A-1 of Appendix A to your letter dated March 15, 2005, for North Anna Power Station, Unit 1, states "capsule X may be withdrawn at 44.5 EFPY in lieu of surveillance capsule Z to satisfy American Society for Testing and Materials (ASTM) E-185-82 fourth capsule requirement for the license period."

   a. What will the estimated neutron fluence (E>1.0 MeV) value be for surveillance capsule X withdrawn at 44.5 EFPY?

   Dominion Response

   For Unit 1 surveillance capsule X, the estimated neutron fluence (E>1.0 MeV) value at 44.5 EFPY is 8.45 E19 n/cm^2.

   b. If surveillance capsule X is withdrawn in lieu of surveillance capsule Z at 44.5 EFPY, what will the estimated fluence be for surveillance capsule Z at 50.3 EFPY?

   Dominion Response

   For Unit 1 surveillance capsule Z, the estimated neutron fluence (E>1.0 MeV) value at 50.3 EFPY is 7.48 E19 n/cm^2.

NRC Question

4. Note f in Table A-2 of Appendix A to your letter dated March 15, 2005, for North Anna Power Station, Unit 2, was modified to allow surveillance capsule X to be withdrawn at 42.8 EFPY in lieu of surveillance capsule Z to satisfy the ASTM E-185-82 fourth surveillance capsule withdrawal requirement for the licensed period.

   a. What will the estimated neutron fluence (E>1.0 MeV) value be for surveillance capsule X withdrawn at 42.8 EFPY?

   Dominion Response

   For Unit 2 surveillance capsule X, the estimated neutron fluence (E>1.0 MeV) value at 42.8 EFPY is 8.39 E19 n/cm^2.

b. Does this estimated fluence value meet the requirements of ASTM E-185-82 for the fourth surveillance capsule for the 60-year license period?

Dominion Response

Yes, the estimated neutron fluence (E>1.0 MeV) value for Unit 2 surveillance capsule X at 42.8 EFPY of 8.39 E19 n/cm^2 satisfies the requirements of ASTM E-185-82 for the fourth surveillance capsule for the 60-year license period. The peak EOL inner reactor vessel surface neutron fluence (E>1.0 MeV) for Unit 2 is 5.91 E19 n/cm^2. Per the requirements of ASTM E-185-82, Table 1, the estimated neutron fluence for Unit 2 surveillance capsule X is not less than once, or greater than twice, the peak EOL vessel fluence.

c. If surveillance capsule X is withdrawn in lieu of surveillance capsule Z at 42.8 EFPY, what will the estimated fluence be for surveillance capsule Z at 52.3 EFPY?

Dominion Response

For Unit 2 surveillance capsule Z, the estimated neutron fluence (E>1.0 MeV) value at 52.3 EFPY is 8.20 E19 n/cm^2.

NRC Question

5. Note g in Table A-2 of Appendix A to your letter dated March 15, 2005, for North Anna Power Station, Unit 2 states "withdrawal of surveillance capsule Z at EOL satisfies ASTM E-185-82 requirement for EOL surveillance capsule and provides material properties data at a fluence which exceeds that expected to be achieved at the end of the 20-year license renewal period." Clarify the definition of "EOL" as it applies to Note g. Provide the calendar day, EFPY value, and the estimated surveillance capsule Z neutron fluence (E>1.0 MeV) value, which are to be understood to be consistent with withdrawal of the capsule at "EOL."

Dominion Response

The term "End of License" (EOL) as used throughout VEPCO's submittal of March 15, 2005 applies to the end of the current 60 year operating license.

For North Anna Power Station, Unit 2, EOL is reached on August 21, 2040 [Reference 2], with a corresponding EFPY value of 52.3 years. For Unit 2 surveillance capsule Z, the estimated neutron fluence (E>1.0 MeV) value at EOL is 8.20 E19 n/cm^2.

NRC Question

6. Note h in Table A-2 of Appendix A to your letter dated March 15, 2005, for North Anna Power Station, Unit 2 states "surveillance capsule X may be withdrawn at EOL to provide material properties data at a fluence which exceeds that expected to be achieved at the end of the 20-year license renewal period." Clarify the definition of "EOL" as it applies to Note h. Provide the calendar day, EFPY value, and the estimated surveillance capsule X neutron fluence (E>1.0 MeV) value which are to be understood to be consistent with withdrawal of the capsule at "EOL."

Dominion Response

The term "End of License" (EOL) as used throughout VEPCO's submittal of March 15, 2005 applies to the end of the current 60 year operating license.

For North Anna Power Station, Unit 2, EOL is reached on August 21, 2040 [Reference 2], with a corresponding EFPY value of 52.3 years. For Unit 2 surveillance capsule X, the estimated neutron fluence (E>1.0 MeV) value at EOL is 10.17 E 19 n/cm^2.

NRC Question

7. Since there can be up to four standby surveillance capsules for North Anna Power Station, Units 1 and 2, these surveillance capsules have the potential to be removed for storage. However, the NRC staff notes that currently, there is no detailed guidance regarding the treatment of standby surveillance capsules. Therefore, the NRC staff requests the licensee to ensure that any surveillance capsules removed from the North Anna, Units 1 and 2 reactor vessels, without the intent to test them, are maintained in a condition that would permit their future use, if necessary. A note in the surveillance withdrawal schedule in the North Anna Power Station, Units 1 and 2 Updated Final Safety Analysis Report stating the following should be included to ensure that standby surveillance capsules are properly maintained:

   "All surveillance capsules placed in storage must be maintained for future insertion. Any changes to storage requirements must be approved by the NRC, as required by 10 CFR Part 50, Appendix H."

Dominion Response

It is Dominion's opinion that 10 CFR Part 50 Appendix H, as well as ASTM E-185-82, are silent on storage requirements for standby (untested) irradiated surveillance capsules not used to demonstrate compliance with ASTM E-185-82 Section 7.6. As a substitute for the sentences above, Dominion proposes the following alternative

language for inclusion into an applicable section of the North Anna Power Station, Units 1 and 2 Updated Final Safety Analysis Report:

> "All surveillance capsules placed in storage will be maintained for possible future insertion. If one or more capsules will not be maintained in such a way as to permit future insertion, then the NRC staff will be notified of this change."

The alternate wording in the above mentioned commitment was discussed with the NRC Staff and agreed upon in a telephone conference call on December 8, 2005.

References

1. Letter from D. A. Christian to USNRC, "Virginia Electric and Power Company (Dominion), Surry and North Anna Power Stations Units 1 and 2, Response to Request for Supplemental Information License Renewal Applications," dated October 15, 2002 [ADAMS Accession Number ML022960411].

2. Letter from O. Tabatabai (USNRC) to D. A. Christian (Dominion), "Issuance of Renewed Facility Operating License Nos. NPF-4 and NPF-7 for North Anna Power Station, Unit Nos. 1 and 2, and Renewed Facility Operating License Nos. DPR-32 and DPR-37 for Surry Power Station, Unit Nos. 1 and 2," dated March 20, 2003 [ADAMS Accession Number ML030710581].