



July 29, 2026

United States Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

Serial No.: 26-182
NRA/JHH: R0
Docket No. 50-338
License No.: NPF-4

VIRGINIA ELECTRIC AND POWER COMPANY
NORTH ANNA POWER STATION UNIT 1
REQUEST FOR APPROVAL OF REVISION TO SURVEILLANCE CAPSULE
WITHDRAWAL SCHEDULE

Pursuant to 10 CFR 50, Appendix H, Section III.B.3, Virginia Electric and Power Company (Dominion Energy Virginia or "Dominion") hereby requests approval for a revision to the North Anna Power Station (NAPS) Unit 1 reactor vessel material surveillance program withdrawal schedule.

In reference 1, Dominion requested approval of a revision to the surveillance capsule withdrawal schedule to withdraw Capsule X during the NAPS Unit 1 Thirty-Third Refueling Outage (NAPS 1R33) instead of the previously approved NAPS 1R31. Despite repeated attempts, Capsule X could not be withdrawn during NAPS 1R31 with the Irradiated Sample Handling Tool (ISHT). Delaying Capsule X withdrawal until the NAPS 1R33 outage allowed the withdrawal to be planned concurrent with a core barrel lift, which would allow for additional options for capsule removal. The NRC concluded that withdrawal of Capsule X during NAPS 1R33 after 41.9 Effective Full Power Years (EFPY) was acceptable and approved the requested change to the Capsule X surveillance capsule withdrawal schedule in reference 2.

Subsequent to the request to withdraw Capsule X during NAPS 1R33, Dominion acquired upgraded tooling that does not require removal of the core barrel for access and could be used to complete withdrawal of Capsule X during NAPS 1R32. Therefore, Dominion requests a revision to the surveillance capsule withdrawal schedule to allow removal of Capsule X during NAPS 1R32, currently scheduled for Spring 2027, or NAPS 1R33, currently scheduled for Fall 2028. The two-outage window would allow Dominion to attempt to remove Capsule X during NAPS 1R32 using the upgraded tooling, while preserving the option to remove Capsule X during NAPS 1R33 concurrent with removal of the core barrel.

Attachment 1 provides a description and assessment of the proposed change to the reactor vessel material surveillance program withdrawal schedule. Attachment 2 provides a mark-up of the currently approved NAPS UFSAR page.

To support implementation of the revised withdrawal schedule, Dominion requests approval of this proposed change by January 15, 2027. As documented in Attachment 1, the proposed revision to the Capsule X withdrawal schedule maintains compliance with Dominion's current reactor vessel materials surveillance program requirements.

Should you have any questions regarding this submittal, please contact Julie Hough at (804) 273-3586.

Sincerely,


James Holloway (Jul 29, 2026 07:43:38 EDT)

James E. Holloway
Vice President Nuclear Engineering & Fleet Support

- References:
1. Letter from Dominion Energy Virginia to NRC, "Virginia Electric and Power Company, North Anna Power Station Unit 1, Request for Approval of Revision to Surveillance Capsule Withdrawal Schedule," dated September 23, 2025 (ADAMS Accession No. ML25267A090).
 2. Letter from NRC to Dominion Energy Virginia, "North Anna Power Station, Unit No. 1 – RE: Request to Revise Reactor Vessel Material Surveillance Capsule Withdrawal Schedules (EPID L-2025-LLL-0016)," dated September 30, 2025 (ADAMS Accession No. ML25262A005).

- Attachments:
1. Description and Assessment of the Proposed Revision to the North Anna Power Station Unit 1 Surveillance Capsule Withdrawal Schedule
 2. Surveillance Capsule Withdrawal Schedule UFSAR Mark-Up

Commitments made in this letter:

1. Following receipt of NRC approval, NAPS UFSAR Table 5.4-2 will be updated to include the revised surveillance capsule withdrawal schedule table.

cc: U. S. Nuclear Regulatory Commission, Region II

Mr. G. E. Miller
NRC Senior Project Manager - North Anna Power Station
U. S. Nuclear Regulatory Commission

NRC Senior Resident Inspector
North Anna Power Station

ATTACHMENT 1

DESCRIPTION AND ASSESSMENT OF THE PROPOSED REVISION TO
THE NORTH ANNA POWER STATION
UNIT 1 SURVEILLANCE CAPSULE WITHDRAWAL SCHEDULE

**VIRGINIA ELECTRIC AND POWER COMPANY
(DOMINION ENERGY VIRGINIA)
NORTH ANNA POWER STATION UNIT 1**

Proposed Revision to the North Anna Power Station (NAPS) Unit 1 Surveillance Capsule Withdrawal Schedule

1. Background

Appendix H of 10 CFR 50 (Reference 1) requires a material surveillance program to monitor changes in the fracture toughness properties of ferritic material in the reactor vessel beltline region that result from exposure of these materials to neutron irradiation and the thermal environment. Under this program, fracture toughness test data is obtained and analyzed from material specimens exposed in surveillance capsules that are withdrawn periodically from the reactor vessel. Test results must be reported to the NRC within eighteen months of the date of the capsule withdrawal. In addition, Section III.B.3 of Appendix H to 10 CFR 50 requires the NRC to approve the capsule withdrawal schedule prior to implementation.

The design of the surveillance program and the withdrawal schedule must meet the requirements of the edition of ASTM E 185 (Reference 2) that was current at the issuance of the ASME Code to which the reactor vessel was purchased. The North Anna Power Station (NAPS) Unit 1 reactor vessel surveillance program was based on ASTM E185-73 and meets the testing requirements of ASTM E185-82. Virginia Electric and Power Company (Dominion Energy Virginia or "Dominion") has withdrawn and tested three capsules from Unit 1.

Removal of Capsule X was previously scheduled to occur during the fall 2025 NAPS Unit 1 Thirty-First Refueling Outage (1R31), in the 60-year initial period of extended operation to satisfy the initial license renewal schedule for NAPS Unit 1. After an unsuccessful attempt to withdraw Capsule X during NAPS 1R31, Dominion requested a schedule change to withdraw Capsule X during NAPS 1R33 by letter dated September 23, 2025 (Reference 3). The NRC approved this schedule revision by letter to Dominion dated September 30, 2025 (Reference 4).

2. Proposed Revision to Program/Withdrawal Schedule

The Unit 1 Reactor Material Surveillance Program withdrawal schedule is contained in the NAPS Updated Final Safety Analysis Report (UFSAR). The proposed change revises the schedule to change the removal time for Capsule X from 1R33 in Fall 2028 to 1R32 in Spring 2027 or the currently approved 1R33 in Fall 2028.

3. Justification

The cumulative core burnup at the end of NAPS Unit 1 Cycle 31 was 39.3 effective full power years (EFPY). Prior to approval of the surveillance capsule schedule change in reference 4, Capsule X was scheduled to be removed at the nearest outage after reaching 39.1 EFPY, which corresponded to fluence on Capsule X of 7.20×10^{19} n/cm². The

scheduled removal time of 39.3 EFPY for Capsule X corresponded to a surveillance capsule fluence of 7.24×10^{19} n/cm². The NRC concluded that removal of Capsule X during NAPS 1R33 after 41.9 EFPY, which corresponds to a projected surveillance capsule fluence of 7.69×10^{19} n/cm², was acceptable and supported approval of the revised surveillance capsule withdrawal schedule in reference 4. The revision to the surveillance capsule withdrawal schedule proposed in this submittal would allow removal of Capsule X during NAPS 1R32 or the currently approved NAPS 1R33. Removal of Capsule X during NAPS 1R32 (Spring 2027) at a cumulative core burnup of approximately 40.7 EFPY corresponds to a projected surveillance capsule fluence of 7.47×10^{19} n/cm².

The maximum fluence at the pressure vessel clad/base metal interface at 60 years of operation (50.3 EFPY) is projected to be 5.13×10^{19} n/cm². The maximum fluence at the pressure vessel clad/base metal interface of 80 years of operation is projected to be 7.2×10^{19} n/cm² (Reference 5).

The Capsule X fluence at 40.7 EFPY or 41.9 EFPY will be greater than one times the 60-year fluence of 5.13×10^{19} n/cm² at the pressure vessel clad/base metal interface, but less than two times the 60-year fluence. The Capsule X fluence at 40.7 EFPY or 41.9 EFPY will also be greater than one times the 80-year fluence of 7.2×10^{19} n/cm² at the pressure vessel clad/base metal interface, but less than two times the 80-year fluence. The Capsule X fluence will remain within these limits with withdrawal during NAPS 1R32 (Spring 2027) or NAPS 1R33 (Fall 2028).

Therefore, the proposed withdrawal schedule revision for NAPS Unit 1 Capsule X will continue to satisfy the NUREG-1801 (Reference 6) and NUREG-2191 (Reference 7) requirements. This request to revise the removal time for NAPS Unit 1 Capsule X maintains compliance with the current reactor pressure vessel materials surveillance program requirements for NAPS Unit 1.

4. References

1. 10 CFR 50, Appendix H, "Reactor Vessel Material Surveillance Program Requirements."
2. ASTM Standard E185, "Standard Practice for Conducting Surveillance Tests for Light-Water Cooled Nuclear Power Reactor Vessels."
3. Letter from Dominion Energy Virginia to NRC, "Virginia Electric and Power Company, North Anna Power Station Unit 1, Request for Approval of Revision to Surveillance Capsule Withdrawal Schedule," dated September 23, 2025 (ADAMS Accession No. ML25267A090).

4. Letter from NRC to Dominion Energy Virginia, "North Anna Power Station, Unit No. 1 – RE: Request to Revise Reactor Vessel Material Surveillance Capsule Withdrawal Schedules (EPID L-2025-LLL-0016)," dated September 30, 2025 (ADAMS Accession No. ML25262A005).
5. WCAP-18015-NP, Revision 2, "Extended Beltline Pressure Vessel Fluence Evaluations Applicable to North Anna 1 & 2," September 2018.
6. NUREG-1801, Generic Aging Lessons Learned (GALL) Report, Revision 0, July 2001.
7. NUREG-2191, Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Report, Revision 0, July 2017.

ATTACHMENT 2

SURVEILLANCE CAPSULE WITHDRAWAL SCHEDULE UFSAR MARK-UP

**VIRGINIA ELECTRIC AND POWER COMPANY
DOMINION ENERGY VIRGINIA
NORTH ANNA POWER STATION UNIT 1**

Table 5.4-2
SURVEILLANCE CAPSULE WITHDRAWAL SCHEDULE^a FOR NORTH ANNA UNIT 1

Capsule Ident.	Capsule Location ^b	Lead Factor ^c	Capsule Status ^d	Withdrawal EFPY/Year ^e	Insert EFPY/Year ^e	Est. Capsule Fluence ($\times 10^{19}$) ^e
V	165°	1.61	Active	1.1/1979	NA	0.306
U	65°	1.04	Active	5.9/1987	NA	0.914
W	245°	1.16	Active	14.8/1998	NA	2.05
Z	305°	0.80	Standby ^g	16.2/2000	NA	1.52
Z	165°	NA	Standby ^g	NA	16.2/2000	1.52
Z	165°	1.44	Standby ^g	NA	NA	7.37 (50.3 EFPY)
T	55°	0.80	Standby ^g	16.2/2000	NA	1.52
T	245°	NA	Standby ^g	NA	16.2/2000	1.52
T	245°	1.13	Standby ^g	NA	NA	5.77 (50.3 EFPY)
Y	295°	1.26	Standby ^g	NA	NA	6.48 (50.3 EFPY)
S	45°	0.73	Standby ^g	NA	NA	3.74 (50.3 EFPY)
X	285°	1.77	Active ^f	41.9/2028 (estimated)	NA	7.69 (41.9 EFPY)

40.7/2027 or

7.47 (40.7 EFPY)
7.69 (41.9 EFPY)

- a. Withdrawal schedule meets requirements of ASTM E-185-82, *Standard Practice for Conducting Surveillance Tests for Light-Water Cooled Nuclear Power Reactor Vessels*, dated July 1, 1982. Schedule established by Reference 13 (Letter from NRC as required per 10 CFR 50 App H).
- b. See Figure 5.4-5 for original capsule installation locations.
- c. Lead Factor is defined in ASTM E-185-82 as the ratio of the neutron flux density at the location of the specimens in a surveillance capsule to the neutron flux density at the reactor pressure vessel inside surface at the peak fluence location.
- d. Capsules required to satisfy the requirements of ASTM E-185-82 during the 60 year license period are designated *Active*. Capsules not required by ASTM E-185-82, but which are maintained for contingencies, including further license renewal, are designated *Standby*.
- e. Surveillance capsule neutron fluence and EFPY estimates are taken from WCAP-18015-NP. WCAP-18015-NP uses an NRC approved methodology, documented in WCAP-14040-A that satisfies Regulatory Guide 1.190. 50.3 EFPY corresponds to the estimated cumulative core burnup at the end of the 60-year license period.
- f. The projected 80-year peak clad/base metal fluence, i.e., 7.20×10^{19} n/cm² is projected to occur at 39.1 EFPY. The capsule is estimated to be withdrawn in 2027 (EOC 32) or 2028 (EOC 33).
- g. Capsules Z, T, Y, and S are available to satisfy potential fluence monitoring requirements during the 20-year license renewal period.