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CALVERT CLIFFS NUCLEAR POWER PLANT

March 10, 2010

U. S. Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Document Control Desk

SUBJECT: Calvert Cliffs Nuclear Power Plant
Unit No. 1; Docket No. 50-317
Revision to Reactor Vessel Surveillance Capsule Withdrawal Schedule

Pursuant to Appendix H of 10 CFR Part 50, Calvert Cliffs Nuclear Power Plant, LLC hereby submits for approval a revision to its schedule for withdrawal of reactor vessel material surveillance capsule at the 104° location for Calvert Cliffs Unit 1.

As is the case with the currently approved withdrawal schedule, the proposed withdrawal schedule satisfies the requirements of ASTM [American Society for Testing and Materials] E185-70, the version that was current at the time the reactor vessels were designed. The details of the proposed revision are contained in Attachment (1) to this letter.

SCHEDULE

Based on the current reactor vessel surveillance capsule withdrawal schedule, the Calvert Cliffs Unit 1 capsule located at the 104° location is required to be withdrawn during the 2010 refueling outage (March 2010). Therefore, we request that you complete the review of our application by March 16, 2010.

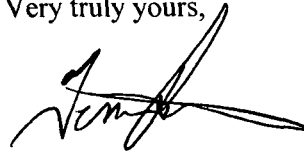
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Should you have questions regarding this matter, please contact Mr. Douglas E. Lauver at (410) 495-5219.

Very truly yours,

A handwritten signature in black ink, appearing to read 'J. Stanley', with a long horizontal flourish extending to the right.

for
James J. Stanley
Manager – Engineering Services

JJS/PSF/bjd

Attachment: (1) Proposed Revision to the Schedule for Withdrawal of Reactor Vessel Material Surveillance Capsule for Calvert Cliffs Unit 1

cc: D. V. Pickett, NRC
S. J. Collins, NRC

Resident Inspector, NRC
S. Gray, DNR

ATTACHMENT (1)

**PROPOSED REVISION TO THE SCHEDULE FOR WITHDRAWAL OF
REACTOR VESSEL MATERIAL SURVEILLANCE CAPSULE FOR
CALVERT CLIFFS UNIT 1**

ATTACHMENT (1)

PROPOSED REVISION TO THE SCHEDULE FOR WITHDRAWAL OF REACTOR VESSEL MATERIAL SURVEILLANCE CAPSULE FOR CALVERT CLIFFS UNIT 1

I. BACKGROUND

Appendix H to 10 CFR Part 50 describes reactor vessel material surveillance program requirements. Paragraph (III)(B)(3) of this Appendix states that a proposed material withdrawal schedule must be submitted with a technical justification per 10 CFR 50.4, and approved prior to implementation.

As is the case with the currently approved withdrawal schedule, the proposed withdrawal schedule satisfies the requirements of American Society for Testing and Materials (ASTM) E185-70, the version that was current at the time the reactor vessel surveillance program was designed.

Table (1) shows the currently approved withdrawal schedule for Calvert Cliffs Unit 1 reactor vessel surveillance capsules (Updated Final Safety Analysis Report Table 4-13A).

II. PROPOSED REVISION TO THE WITHDRAWAL SCHEDULE

Table (2) provides the proposed revision to the reactor vessel surveillance capsule withdrawal schedule for Unit 1. The revised schedule is based on ASTM E185-82 recommendations, and reflects updated fluence information from the surveillance capsule removed in 1992 with appropriate adjustment made for fuels loaded in subsequent cycles. As shown below in Section III, the proposed withdrawal schedule satisfies the requirements of ASTM E185-70, the version that was current at the time the reactor vessels were designed. Therefore, the withdrawal schedule satisfies the requirements of Appendix H to 10 CFR Part 50.

III. JUSTIFICATION

The Calvert Cliffs Unit 1 reactor vessel was designed to the 1965 through winter 1967 Addenda, edition of the American Society of Mechanical Engineers Code. American Society for Testing and Materials E185-70 was the current standard when the surveillance program was designed. As stated in the Calvert Cliffs Updated Final Safety Analysis Report, the reactor vessel surveillance program meets the requirements of ASTM E185-70.

The guidance provided in ASTM E185-82 is consistent with, but more specific than, the guidance provided in earlier editions, including ASTM E185-70 to which the Calvert Cliffs Nuclear Power Plant reactor vessel surveillance program is required to conform. Therefore, compliance with the ASTM E185-82 withdrawal schedule guidance ensures compliance with ASTM E185-70 withdrawal schedule guidance. ASTM E185-82 provides a withdrawal schedule in terms of years of operation but also provides the option to develop a schedule tied to target fluences accumulated in the vessel. As in the case of the currently approved withdrawal schedule, the proposed withdrawal schedule follows the guidance that ties the withdrawal schedule to vessel fluence targets.

This request proposes to revise the reactor vessel surveillance capsule withdrawal schedule to allow the removal of the capsule located at the 284° location in place of the scheduled 104° capsule. During the 2010 refueling outage several attempts were made to remove the 104° capsule using enhanced tooling. These attempts were unsuccessful even with the enhanced tooling, which included an increased load capacity of the tooling.

We reviewed the other capsules that were available for withdrawal and determined that the 284° capsule was an appropriate substitute for the 104° capsule. The 284° capsule is isofluent to the 104° capsule and meets the requirements of ASTM E185-82 to withdraw the third capsule at a time when the accumulated neutron fluence on the capsule corresponds to the approximate end of life fluence at the reactor vessel

ATTACHMENT (1)

**PROPOSED REVISION TO THE SCHEDULE FOR WITHDRAWAL OF REACTOR VESSEL
MATERIAL SURVEILLANCE CAPSULE FOR CALVERT CLIFFS UNIT 1**

¼ T location. As noted on Table (2), we would withdraw the 284° capsule during the 2010 refueling outage and designate the 104° capsule as the standby capsule. This proposed change meets the requirements of Appendix H to 10 CFR Part 50.

Table (1)

**Current Unit 1 Reactor Vessel Surveillance Program
Capsule Removal Schedule**

Capsule Azimuthal Position	Target Fast Neutron Fluence (x 10¹⁹ n/cm²)	Projected End-of-Cycle Date
263°	0.62 ^a	Withdrawn, 1979
97°	2.64 ^b	Withdrawn, 1992
104°	3.06 ^c	2010
83°	5.26 ^d	2020
277°	6.59 ^e	2032
284°	STANDBY	

Notes:

- ^a Actual capsule fluence [Perrin, J S, et al., "Calvert Cliffs Unit No. 1 Nuclear Plant Reactor Pressure Vessel Surveillance Program: Capsule 263," Battelle Columbus Laboratories, December 1980].
- ^b Actual capsule fluence; [Lowe, A L, Jr., et al., "Analysis of Capsule 97° Baltimore Gas and Electric Company Calvert Cliffs Nuclear Power Plant Unit No. 1," B&W Nuclear Service Company, BAW-2160, June 1993].
- ^c Withdrawal criteria - Capsule fluence that corresponds to the projected fluence at the vessel ¼ T location at end of extended life.
- ^d Withdrawal criteria - Capsule fluence that corresponds to the projected fluence at the vessel inner wall location at end of extended life.
- ^e Withdrawal criteria - Not less than once or greater than twice the peak end of extended life vessel fluence at the vessel inner wall ($5.09 \times 10^{19} < \text{fluence in n/cm}^2 < 10.18 \times 10^{19}$). Note: This capsule also satisfies the requirement in the Nuclear Regulatory Commission safety evaluation report for Calvert Cliffs license renewal, that one capsule containing dosimetry is to be removed during the final 5 years of the extended license.

ATTACHMENT (1)

**PROPOSED REVISION TO THE SCHEDULE FOR WITHDRAWAL OF REACTOR VESSEL
MATERIAL SURVEILLANCE CAPSULE FOR CALVERT CLIFFS UNIT 1**

Table (2)

**Proposed Unit 1 Reactor Vessel Surveillance Program
Capsule Removal Schedule**

Capsule Azimuthal Position	Target Fast Neutron Fluence ($\times 10^{19}$ n/cm²)	Projected End-of-Cycle Date
263°	0.62 ^a	Withdrawn, 1979
97°	2.64 ^b	Withdrawn, 1992
284°	3.06 ^c	2010
83°	5.26 ^d	2020
277°	6.59 ^e	2032
104°	STANDBY	

Notes:

- ^a Actual capsule fluence [Perrin, J S, et al., "Calvert Cliffs Unit No. 1 Nuclear Plant Reactor Pressure Vessel Surveillance Program: Capsule 263," Battelle Columbus Laboratories, December 1980].
- ^b Actual capsule fluence; [Lowe, A L, Jr., et al., "Analysis of Capsule 97° Baltimore Gas and Electric Company Calvert Cliffs Nuclear Power Plant Unit No. 1," B&W Nuclear Service Company, BAW-2160, June 1993].
- ^c Withdrawal criteria - Capsule fluence that corresponds to the projected fluence at the vessel $\frac{1}{4}$ T location at end of extended life.
- ^d Withdrawal criteria - Capsule fluence that corresponds to the projected fluence at the vessel inner wall location at end of extended life.
- ^e Withdrawal criteria - Not less than once or greater than twice the peak end of extended life vessel fluence at the vessel inner wall ($5.09 \times 10^{19} < \text{fluence in n/cm}^2 < 10.18 \times 10^{19}$). Note: This capsule also satisfies the requirement in the Nuclear Regulatory Commission safety evaluation report for Calvert Cliffs license renewal, that one capsule containing dosimetry is to be removed during the final 5 years of the extended license.