

MEMORANDUM

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From: DCISC Consultants

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To: DCISC

Subj: NRC Documents released on 2 June 2026 concerning “Potential Changes to RPV Embrittlement Regulations Under SRM-SECY-22-0019”

On 2 June 2026 the NRC issued two documents, a cover letter (ML26148A432) and a White Paper (ML26148A433), that provide up-to-date information concerning the NRC staff’s current thinking on how they will execute the rulemaking plan described in SECY-22-0019 (ML21314A215: “*Rulemaking Plan for the Revision of Embrittlement and Surveillance Requirements for High-Fluence Nuclear Power Plants In Long-Term Operation*”) in a manner consistent with the Commissions direction described in (ML25196A437). In general, the effort described in SECY-22-0019 aims to bring NRC guidance and requirements on embrittlement trend prediction and on surveillance monitoring into better alignment with current technical understandings and practices, a needed effort because current NRC guidance and requirements on these matters have not been updated for decades.

The purpose of this memorandum is to review the statements made by the NRC in the documents issued on 2 June 2026 to assess the potential impact, if any, on the situation at Diablo Canyon Unit 1. The following major points are notable:

- **Embrittlement Trends**

- Summary of NRC Statements: The NRC has expressed its intention to update its guidance on embrittlement trend prediction. Specifically, the NRC stated that it is considering revising its PTS rule (10CFR50.61) to “*require the use of an NRC-approved ETC augmented with the appropriate margins at high neutron fluences (6×10^{19} n/cm²)*” and that “*the staff is considering an update to RG 1.99, Rev. 2, such that the use of the ETC in E900-15 would be approved for all neutron fluences up to 2×10^{20} n/cm², while the ETC in RG 1.99, Rev. 2, would be approved only for neutron fluence levels less than 6×10^{19} n/cm².*”
- Impact on Diablo Canyon Unit 1: If this change is made it will have no impact on Unit 1. The projected fluence for Unit 1 after 60 years of operation is $\approx 2 \times 10^{19}$ n/cm² while the highest surveillance capsule fluence is expected to be $\approx 3.7 \times 10^{19}$ n/cm² for Capsule B, which was removed from the Unit 1 in 2025 and is expected to be reported to the NRC during or before the Autumn of 2026. Both of these fluence values, which are pertinent to Unit 1, are considerably below the fluence of 6×10^{19} n/cm², and it is for fluence above 6×10^{19} n/cm² that the NRC has stated its intention to change its regulatory guidance.

- **Surveillance Monitoring**

- Summary of NRC Statements: The NRC has expressed its intention to update its guidance concerning the required withdrawal schedule for surveillance capsules. Specifically, the NRC has stated that “*during periods of extended operation, the requirements would be revised to ensure that data from additional surveillance capsule(s) with a neutron fluence equal or greater than the peak RPV neutron fluence for extended operation is tested at an appropriate periodicity (e.g., every 20 years) to ensure adequate performance monitoring.*”
- Impact on Diablo Canyon Unit 1: If this change is made it will have no impact on Unit 1. One of the data from so-called sister-plant materials from Palisades, which has informed Unit 1’s integrity assessment since 2013, has a fluence above the projected 60-year fluence of $\approx 2 \times 10^{19}$ n/cm² for Unit 1. Once obtained, the data from Diablo Canyon Unit 1 Capsule B also will exceed this 60-year fluence. So based on the information available today, Unit 1 is already compliant with the guidance the NRC is considering for future implementation.

- **Use of Direct Fracture Toughness (Master Curve)**

- Summary of NRC Statements: The NRC has expressed its intention to “*consider allowing the use direct fracture toughness measurements to demonstrate the integrity of the RPV.*” Specifically, the NRC has stated that Master Curve approaches may be considered in the future without the need for case-specific regulatory review.
- Impact on Diablo Canyon Unit 1
 - If this change is made it would have no operational impact for the foreseeable future (i.e., for 60-years of operation) on Unit 1.
 - *For information only*: As described in the supplemental analysis previously reported to the DCISC (see Section 4.1.2 of Report #2, <https://www.dcisc.org/download/library/topical-library/report-part-2-evaluation-of-diablo-canyon-unit-1-embrittlement-76.pdf>), Master Curve data already exists for the limiting weld wire heat in Unit 1. This data, when used with draft ASME guidance current when Report #2 was written (i.e., draft Code Case N-914), showed that Unit 1 would not be expected to exceed the NRC’s PTS screening criteria until a fluence that lies well beyond that of expected for Capsule B, which itself is ≈ 1.8 times the 60-year fluence on the RPV wall.

In summary, the NRC’s plans announced on 2 June 2026 have no foreseeable impact on Diablo Canyon Unit 1. We will continue to monitor the NRC’s proposed plans to update its embrittlement regulations and will notify the DCISC if anything changes that impact the statements made in this memorandum.