

**NORTH ANNA POWER STATION, UNITS 1 AND 2 (NAPS)
SUBSEQUENT LICENSE RENEWAL APPLICATION (SLRA)
REQUESTS FOR ADDITIONAL INFORMATION (RAIS)
SAFETY - SET 4**

1. RG 1.127, Inspection of Water-Control Structures Associated with Nuclear Power Plants, AMP B2.1.35

Regulatory Basis:

Section 54.21(a)(3) of 10 CFR requires the applicant to demonstrate that the effects of aging for structures and components will be adequately managed so that the intended function will be maintained consistent with the current licensing basis (CLB) for the period of extended operation.

The staff uses the guidance in Appendix A of SRP-SLR to review operating experience to provide a basis to support its finding regarding the adequacy of the applicant's proposed aging management program (AMP) to manage the effects of aging in a manner that SC-intended functions will be maintained during the subsequent period of extended operation.

RAI B2.1.35-1a

Background:

SLRA Section B2.1.35, in item 8 of the Operating Experience Summary, states that 1) structures within the settlement monitoring program, including the Service Water Reservoir, the Service Water Pump House, and the Service Water Valve House, are monitored every 184 days, as specified in the Technical Requirements Manual (TRM), Section 3.7.7; 2) the initial baseline elevations for these structures and components are listed in UFSAR Table 3.8-15; 3) the appropriate action is taken in accordance with the Corrective Action Program if differences between observed values and baseline elevations exceed prescribed limits given in TRM Section B3.7.7; and 4) no settlement have been found to have exceeded the TRM limits.

During the staff's review, Dominion extended the settlement inspection interval from 184 days to 12 months. RAI B2.1.35-1 requested Dominion to explain how the longer interval will continue to provide adequate aging management of settlement for structures within the scope of subsequent license renewal, especially structures which may be close to the settlement action limits identified in the TRM.

Dominion's response to RAI B2.1.35-1, by letter dated April 29, 2021 (ADAMS Accession No. ML21119A287), indicates that settlement marker SM-28 for the Service Water Valve House has reached the 75% settlement limit specified in TRM Section B3.7.7. Dominion's response also indicates that an increase in allowable settlement could be accommodated by adjusting the expansion joint tie-rods as noted in the design change that implemented the 2009 modifications if future settlement exceeds the 75% threshold.

The NRC staff conducted an audit on recent operating experience related to settlement, and found that the projected settlement for the settlement marker SM-28 may exceed the current 100% settlement limit around 2036. The subsequent period of extended operation (SPEO) begins in April 2038 for NAPS Unit 1 and August 2040 for NAPS Unit 2.

The acceptance criteria program element in SRP-SLR Section A.1.2.3 states that: 1) the quantitative or qualitative acceptance criteria of the program and its basis should be described. For observed degradation during current inspections, the acceptance criteria, against which the need for corrective actions are evaluated, should ensure that the SC-intended function(s) are maintained consistent with all CLB design conditions during the SPEO; 2) where it is practical to project observed degradation to the end of the SPEO, the projected degradation is evaluated to determine if it could impact the intended function of a system, structure, or component. 3) acceptance criteria could be specific numerical values, or could consist of a discussion of the process for calculating specific numerical values of conditional acceptance criteria to ensure that the SC-intended function(s) will be maintained under all CLB design conditions. The corrective actions program element in the SRP-SLR Section A.1.2.3 also states, in part, that actions to be taken when the acceptance criteria are not met should be described in appropriate detail or referenced to source documents.

Issue:

It is unclear how the Inspection of Water-Control Structures Associated with Nuclear Power Plants program will be adequate to manage settlement aging effect through the end of the SPEO if future settlement exceeds the settlement acceptance criteria specified in the TRM.

From Dominion's response to RAI B2.1.35-1, it appears that the projected settlement for settlement marker SM-28 may exceed the 100% settlement limit prior to the SPEO, which indicates the loss of intended function. Furthermore, based on the operating experience it is unclear whether other settlement markers are expected to exceed or will exceed the settlement acceptance criteria. Therefore, program elements (e.g., acceptance criteria, corrective actions) related to settlement need to be modified or enhanced to demonstrate that the aging management program will be adequate to manage the aging effect during the SPEO.

Request:

1. Update the SLRA to include recent settlement related operating experience for the Service Water Valve House.
2. Provide updated acceptance criteria with basis (or process for determining conditional acceptance criteria to ensure intended function) against which the need for corrective actions are evaluated, and/or appropriate enhancement(s) to the program that clearly describe the specific actions that will be taken if the settlement for the water-control structures exceeds the settlement limit specified in the TRM.