

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

SAFETY – SET 5

1. Buried and Underground Piping and Tanks, AMP XI.M41

Regulatory Basis: Title 10 of the *Code of Federal Regulations* (10 CFR) Section 54.21(a)(3) requires an applicant to demonstrate that, for components within the scope of license renewal, the effects of aging will be adequately managed to maintain the component's intended function(s) consistent with the current licensing basis for the period of extended operation. One of the findings that the Nuclear Regulatory Commission (NRC) staff must make to issue a renewed license (10 CFR 54.29(a)) is that actions have been identified and have been or will be taken with respect to managing the effects of aging during the period of extended operation on the functionality of components that have been identified to require review under 10 CFR 54.21, such that there is reasonable assurance that the activities authorized by the renewed license will continue to be conducted in accordance with the current licensing basis. To complete its review and enable formulation of a finding under 10 CFR 54.29(a), the staff is requesting additional information regarding the matters described below.

Background: As required by 10 CFR 54.21(d), each [subsequent] license renewal application (SLRA) must include a final safety analysis report (FSAR) supplement containing a summary description of the programs and activities determined by 10 CFR 54.21(a) for managing the effects of aging. In its discussions about FSAR supplements, NRC Standard Review Plan for Subsequent License Renewal (SRP-SLR), "Standard Review Plan for Review of Subsequent License Renewal Applications for Nuclear Power Plants," (NUREG-2192, Revision 0, July 2017) (ADAMS Accession No. ML17187A204) Section 3.3.2.5 notes that the FSAR supplement description should be sufficiently comprehensive such that later changes to the program can be controlled by 10 CFR 50.59 "Changes, Tests, and Experiments." The SRP-SLR also notes that the program description should include any future aging management activities including enhancements and commitments and contain the bases for determining that aging effects will be managed. The SRP-SLR further notes that the type of information to be included is provided in NUREG-2191, Revision 0, "Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Report," dated July 2017 (ADAMS Accession No. ML17187A031), Table XI-01, "FSAR Supplement Summaries for GALL-SLR Report Chapter XI Aging Management Programs [AMP]."

As amended by Supplement 4 to the SLRA (letter dated August 26, 2021, ADAMS Accession No. ML21238A297), Dominion Energy included extensive changes to the program description in SLRA Section B2.1.27, "Buried and Underground Piping and Tanks." Supplement 4 adds a new Enhancement (No. 6) to reflect the deletion of jockey pump monitoring as the basis for not performing excavated direct visual inspection of the buried gray cast iron fire main piping. The new enhancement describes the performance of nondestructive examinations (i.e., magnetic particle and radiographic testing) of the excavated piping, and destructive examinations of any identified bounding cracks, with engineering evaluations of crack growth, and flaw stability to address cracking due to cyclic loading. Supplement 4 also modifies Enhancement No. 5 to the Buried and Underground Piping and Tanks program to provide for destructive examinations of the excavated gray cast iron pipe as given in GALL-SLR AMP XI.M33, Selective Leaching.

Supplement 4 to the application also modified SLRA Section A1, "Summary Description of Aging Management Programs," and SLRA Section A1.27, "Buried and Underground Piping and Tanks," by adding the sentence: "The program will also manage cracking due to cyclic loading in buried gray cast iron fire protection piping that is lined with a cementitious coating." A previous supplement had deleted the discussion about monitoring jockey pump activity in lieu of performing visual inspections of buried fire protection system components. The staff notes that Supplement 4 also modified SLRA Table A4.0-1, "Subsequent License Renewal Commitments," Item 27 to describe the commitments to revise procedures for Enhancements No. 5 and No.6.

As documented in the NRC's Determination of Acceptability and Sufficiency for Docketing associated with the SLRA (letter dated October 13, 2020, ADAMS Accession No. ML20258A284), the GALL-SLR Report does not address cracking due to cyclic loading for buried gray cast iron piping. Dominion recognized this aspect when it eventually cited an aging management review item with generic note H (indicating the aging affect was not in the GALL-SLR Report) for cracking due to cyclic loading that will be managed by the Buried and Underground Piping and Tanks program.

Because the aging effect for the given material and environment combination is not addressed in the GALL-SLR Report, the FSAR program description in GALL-SLR Table XI-01 for the Buried and Underground Piping and Tanks AMP would not be sufficient. The staff notes that the SLRA did not initially address cracking due to cyclic loading and after substantially enhancing the Buried and Underground Piping and Tank program only a single sentence (noted above) was added to the FSAR program description. The staff also notes that although the table with subsequent license renewal commitments includes a description of the program's enhancements, once commitments (e.g., to revise procedures) have been completed, they can, and have been deleted from the commitment table.

RAI 4.7.6-1

Issue: In order to ensure that changes to the program, which could decrease the overall effectiveness of the program to manage the effects of aging, will receive appropriate review by a licensee, the FSAR supplement should be sufficiently comprehensive. The FSAR supplement in SLRA Section A1.27, "Buried and Underground Piping and Tanks," appears to lack a sufficient description of the activities for managing cracking due to cyclic loading to provide appropriate administrative and regulatory controls for the program. The current program includes specific nondestructive and destructive inspections of excavated gray cast iron piping and relatively unique engineering evaluations of crack growth and flaw stability in a brittle material that are not described in the current FSAR supplement. In addition, specific activities for managing the loss of material due to selective leaching are being performed as part of the Buried and Underground Piping and Tanks program; however, these activities are not referenced or otherwise noted in SLRA Section A1.21, Selective Leaching. The staff cannot complete its review of the above FSAR supplements without additional information.

Request: Provide additional information that either: (a) explains how the current FSAR supplement descriptions in SLRA Section A1.27 for of the Buried and Underground Piping and Tanks program and SLRA Section A1.21 for the Selective Leaching program will provide appropriate administrative and regulatory controls to ensure that any future changes to the programs will not decrease their overall effectiveness to manage the effects of aging, or (b) modifies the associated FSAR supplements to include a more detailed description of the programs and aging management activities.