

U.S. Nuclear Regulatory Commission Public Meeting Summary

Title: Discussion between Nuclear Regulatory Commission (NRC) and Dominion re: Subsequent License Renewal - Safety Issue - Cyclic Fatigue

Date of Meeting: August 16, 2021, 1:00 pm – 2:00 pm

Location: Webinar

Type of Meeting: This is an Observation Meeting. This is a meeting in which attendees will have an opportunity to observe the U.S. Nuclear Regulatory Commission (NRC) performing its regulatory function or discussing regulatory issues. Attendees will have an opportunity to ask questions of the NRC staff or make comments about the issues discussed following the business portion of the meeting; however, the NRC is not actively soliciting comments toward regulatory decisions at this meeting.

Purpose of the Meeting(s):

To understand how Virginia Electric and Power Company (Dominion Energy) will age manage cracking due to cyclic loading in fire water piping at North Anna.

General Details:

The NRC staff held a public, observational meeting with Dominion Energy to discuss responses to select NRC requests for additional information associated with the safety review of the North Anna Power Station Subsequent License Renewal Application (SLRA). The meeting began at 1:00 pm and ended approximately at 2:00 pm. There were six NRC staff members and eleven applicant staff and contractor. No members of the public were in attendance. The meeting began with introductions of the NRC staff, Dominion Energy staff and contractor, and members of the public who wished to introduce themselves.

Summary of Meeting:

- B2.1.27-1, Cyclic Fatigue of Buried Gray Cast Iron

To ensure a constructive discussion, Dominion Energy provided a draft of their proposed changes to the SLRA for managing cracking due to loading in fire water piping at North Anna (Agencywide Documents Access and Management System (ADAMS) Accession No. [ML21225A564](#)).

Dominion Energy explained that the proposed supplement would revise the SLRA to also require inspections of buried gray cast iron fire protection piping for detection and evaluation of cracking due to cyclic loading. Specifically, visual (VT), magnetic particle (MT), and radiographic nondestructive examination (NDE) methods will be used on the excavated gray cast iron fire protection piping to inspect for cracking due to cyclic loading. The NDE examination results will be evaluated by a Level II or III examiner qualified in accordance with American Society of Mechanical Engineers Code, Section XI requirements to identify the presence of cracking. If cracking is not identified using the NDE techniques then a 1-foot axial piece of the fire protection piping will still be destructively examined for the loss of material due to selective leaching as described in Generic Aging Lessons Learned for

Subsequent License Renewal (GALL-SLR) Report (NUREG-2191), Section XI.M33, Selective Leaching Program. If cracking is identified, then a 1-foot axial piece of fire protection piping will be selected for further examination for cracking due to cyclic loading and the loss of material due to selective leaching using destructive examination methods. The 1-foot axial piece of fire protection piping will be selected from a bounding location based on the crack size and characterization provided by the NDE techniques.

The staff and Dominion discussed why Dominion Energy would only be looking at the inner diameter and not the outer diameter. The results of the discussion are that Dominion will explain the logic behind their selection whether just the inner diameter or both the inner and outer diameter so the staff can understand the decision.

The NRC staff noted that only five of the six excavations would be looking for fatigue and asked which type of evaluation would be conducted on the sixth. Dominion Energy explained that the fatigue program and the selective leaching program are working together so the sixth excavation would inspect for selective leaching, but may not be a piping segment, and instead could be another component type, such as a hydrant.

The NRC staff also noted there was no clarifying discussion regarding the rationale for six excavations and the appropriateness of that sample size, given that cyclic loading is not specifically discussed in the GALL. Dominion Energy stated that the supplement will include discussion regarding the rationale for the six excavations.

The staff asked if the MT testing would be fairly routine implementation of MT or whether would it be more difficult to perform. Dominion Energy explained that it would be fairly routine, with nothing special necessary for qualifications or procedures.

The NRC staff and Dominion Energy next discussed how the crack growth analysis and fracture analysis evaluations would be accomplished. Dominion explained that it had available test data from industry to establish fracture data for fracture analysis. For crack growth analysis, Dominion has identified how to get the information to complete the analysis, which could include tracking pressure cycles of the fire water piping and testing. Dominion stated that additional work may be needed prior to entering the subsequent period of extended operation, including engaging Electric Power Research Institute.

The NRC staff noted that prior corrective action determined that the fire water piping should be replaced, but this effort was halted. Dominion Energy explained that the replacement effort was initiated, and the piping removed was examined and found to be in good condition or "fully intact". Therefore, Dominion Energy discontinued the replacement around 2013.

Dominion Energy reiterated the takeaways from the discussion:

- Summarize in a paragraph why the proposed NDE methods are appropriate based on operating experience.
 - o Address whether outer diameter also needs to be examined (in addition to inner diameter)
 - o Address whether subsurface flaws need to be considered

- Summarize in paragraph why six excavations are appropriate – designed from the category F from GALL-SLR AMP XI.M41, Buried and Underground Piping and Tanks program.
- Further explain why one of the six excavations will be different.
- Specifically cite the corrective action program.

Public Participation Themes:

No members of the public were in attendance.

Action Items/Next Steps:

The NRC staff will prepare and issue a meeting summary.

Attachments:

Meeting description and agenda – ADAMS Accession No. [ML21225A567](#)

Dominion presentation – ADAMS Accession No. [ML21225A564](#)