

From: [Klos, John](#)
To: gary.d.miller@dominionenergy.com
Cc: [Klos, John](#)
Subject: Formal Issuance of RAIs for Surry Post LOCA buffer change LAR
Date: Tuesday, April 19, 2022 1:04:52 PM

Gary,

By letter dated September 30, 2021 (Agencywide Documents Access and Management System Accession No. ML21277A065), Virginia Electric and Power Company (Dominion Energy Virginia, the licensee) submitted a License Amendment Request (LAR) to eliminate the Refueling Water Chemical Addition Tank (CAT) and allow the use of sodium tetraborate decahydrate (NaTB) to replace sodium hydroxide (NaOH) as a chemical additive (buffer) for containment sump pH control following a loss-of-coolant accident (LOCA) at Surry Units 1 and 2. By letter dated November 29, 2021 (ADAMS Accession No. ML21334A169), the licensee submitted supplemental information.

Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities," Appendix A, "General Design Criteria for Nuclear Power

Plants," General Design Criterion (GDC) 4, "Environmental and Dynamic Effects Design Bases," requires, in part, that structures, systems, and components (SSCs) important to safety be

designed to accommodate the effects of postulated accidents, including appropriate protection against the dynamic effects of postulated pipe ruptures.

Meeting the intent for compliance with GDC 4 requires that nuclear power plant SSCs important to safety be designed to accommodate the effects of, and be compatible with, the environmental conditions associated with normal operation, maintenance, testing, and postulated accidents, including loss-of-coolant accidents. These SSCs shall be protected against

certain dynamic effects, including pipe-whipping and discharging fluids. Such dynamic effects may be excluded from the design basis when analyses reviewed and approved by the Commission demonstrate that the probability of pipe rupture is shown to be extremely low under conditions consistent with the design basis for piping.

Additionally, NUREG-0800 Standard Review Plan section 3.6.2 addresses Determination of Rupture locations and Dynamic Effects Associated with the postulated Rupture of Piping for piping inside containment, for piping outside containment and Branch Technical Position (BTP) 3-3 addresses Protection against Postulated Piping Failures in Fluid Systems Outside Containment, and BTP 3-4 discusses Postulated Rupture Locations in Fluid System Piping Inside and Outside Containment.

To complete its review, the NRC staff requests additional information (RAI) as shown below. This request is now released formally with a 45 day calendar response period; thereby, these RAIs are due on Friday June 3, 2022.

EMIB-RAI-1:

Section 3.2.1 of the attachment 1 of the LAR addresses NaTB Basket design. It is stated that the basket locations are selected such that they are not adversely impacted by the effects of the High Energy Line Break (HELB) jet impingement forces and pipe whip due to

being sufficiently protected through the use of barriers, restraints, and distance. In order to understand that these baskets in Unit 1 and Unit 2 containments procured as safety related components are protected from HELB effects, the NRC staff requests a summary table for the 7 baskets listing the Unit number and the basket number, and the specific HELB effects protection method employed, namely (i) the distance or Zone of Influence (ZOI) method, (ii) restraints method, (iii) isolation or barriers method, or (iv) combination method.

EMIB-RAI-2:

In Section 3.2.2 of attachment 1 and the configurations of the containment spray system current and as-modified in attachment 2 of the LAR, it is shown that the piping from Chemical Addition Tank (CAT) are disconnected from the containment spray suction header piping. As a result of this change, the NRC staff requests additional information regarding the piping interface stress qualification where piping from Chemical Addition Tank (CAT) was disconnected. The disconnected piping from CAT and its supports in the vicinity of the interface that provided continuity and support to containment spray suction header interface, no longer provide any support after the modification. Please discuss the following.

- (i) Address if any new supports or revisions to the existing supports on the containment spray header suction piping in the vicinity of interface are needed
- (ii) Address any impact on the stress qualification of containment spray suction header piping.
- (iii) Also, address whether the containment spray header suction piping is a High Energy line, and any HELB locations for this piping are affected.

Thanks in advance,

John Klos

DORL McGuire, Surry Licensing Project Manager

U.S. NRC, Office of Nuclear Reactor Regulation (NRR),

Division of Operating Reactor Licensing (DORL),

NRC/NRR/DORL/LPL2-1, MS O9E3

Washington, DC 20555-0001

301.415.5136, John.Klos@NRC.gov