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**Sent:** Wednesday, March 1, 2023 10:31 AM  
**To:** Shayan.Sinha@dominionenergy.com  
**Subject:** Formal Issuance of RAIs for Surry/North Anna EP LAR  
**Attachments:** North Anna and Surry 2022 ERO Staffing RAIs.docx

Shayan,

By letter dated November 7, 2022 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML22312A550) Virginia Electric and Power Company submitted to the U.S. Nuclear Regulatory Commission (NRC), a proposed amendment to the license for Surry Power Station (SPS), Units 1 and 2 and North Anna Power Station, Units 1 and 2 regarding a revision to the emergency plans.

The NRC staff has reviewed the information submitted and needs additional information to complete its review and approval of the licensee's submittal. These requests for additional (RAIs) are attached to this email and are released formally with a 30-day response period (March 31, 2023) requested.

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REQUEST FOR ADDITIONAL INFORMATION

LICENSE AMENDMENT REQUEST TO REVISE THE EMERGENCY PLANS

DOMINION GENERATION

NORTH ANNA POWER STATION, UNITS 1 AND 2

SURRY POWER STATION, UNITS 1 AND 2

DOCKET NOS. 50-338, 50-339, 50-424, AND 50-425

By application dated November 7, 2022 (Agencywide Documents Access and Management System Accession No. ML22312A550), Virginia Electric and Power Company (Dominion Energy Virginia or the licensee) submitted a license amendment request (LAR) for Commission review and approval of the North Anna Power Station, Units 1 and 2 (NAPS), and the Surry Power Station, Units 1 and 2 (SPS), Emergency Plans. The licensee's LAR proposes changes to the NAPS and SPS Emergency Plans pursuant to Section 50.54(q) of Title 10 of the *Code of Federal Regulations* (10 CFR).

The following additional information is needed for the NRC to complete its review.

Requirement:

- Section 50.47(b) establishes the planning standards that the onsite and offsite emergency response plans must meet for NRC staff to make a finding that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. Planning Standard (2) addresses the capabilities of on-shift and augmented emergency response organization (ERO) staffing as follows:

On-shift facility licensee responsibilities for emergency response are unambiguously defined, adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available and the interfaces among various onsite response activities and offsite support and response activities are specified.

**RAI-1 (a and b)**

Issue 1.a: As stated in Section 3.2.2.C, "Emergency Direction and Control (Command and Control, Emergency Classification)" of Enclosure 1, "North Anna Power Station, Units 1 and 2: Discussion and Assessment of Proposed Changes," and Enclosure 2, "Surry Power Station, Units 1 and 2: Discussion and Assessment of Proposed Changes," states in part,

On-shift staffing for Senior Reactor Operators (SROs) includes a third SRO who is SM [Shift Manager]/SEM [Station Emergency Manager] qualified. This individual is not included in the 10 CFR 50.54(m)(2)(i) requirement and is a resource continuously available for oversight and direction of emergency response.

This statement is consistent with Table 5.1, "Minimum Staffing Requirements for Emergencies," of the emergency plans for North Anna and Surry which indicate that two Unit Shift Supervisors will be available to provide oversight and an additional Shift Manager will be available to perform classification. In its application, Dominion Energy Virginia is proposing to have three individuals qualified as shift manager/station emergency manager on shift. This does not appear to be consistent with Section 5.0, "Organizational Control of Emergencies," of each site's respective Emergency Plan which states, "the Shift Manager or Unit Supervisor initially acts in the capacity of the Station Emergency Manager (SEM) and takes actions as outlined in the EPIPS [emergency plan implementation procedures]." The guidance of NUREG-0654 Table B-1, "Emergency Response Organization (ERO) Staffing and Augmentation Plan", states that there should be one Operations Shift Manager who provides overall ERO command and control and emergency action level (EAL) classification.

RAI-1.a: Provide a description of the specific ERO responsibilities for each of the SROs included on Table 5.1 of the North Anna and Surry emergency plans. In your description, describe who provides overall ERO command and control and EAL classification.

RAI-1.b: The LAR includes Attachments 1-3, North Anna Power Station units 1 and 2: Table B-1 Comparison and 2-3, Surry Power Station units 1 and 2: Table B-1 Comparison (comparison tables) indicating that Emergency Direction and Control will be provided by a Shift Support Supervisor who is a Senior Reactor Operator (SRO) that may be assigned other functions. The comparison tables indicate that the Shift Support Supervisor is in addition to the three SROs on Table 5.1 of the North Anna and Surry emergency plans. Additionally, the North Anna comparison table indicates that the Shift Support Supervisor is also the fire brigade leader.

Provide an explanation for the differences between Table 5.1 of the North Anna and Surry emergency plans and the comparison tables included in the LAR. For North Anna only, this clarification should also discuss the potential conflicts associated with the concurrent performance of the fire brigade leader and emergency direction and control functions during an event requiring both positions.

## **RAI-2**

Issue 2: As stated in Section 3.2.4.C, "Off-site Dose Assessment Major Task," of Enclosures 1 and 2:

Performance of the dose assessment function by the third RP [radiation protection] technician was evaluated in the on-shift staffing analysis using the time motion study methodology. The analysis demonstrated that the function can be performed without conflicts.

It is not apparent how dose assessment and typical RP tasks such as job coverage, radiation surveys, or conducting RP briefs could be performed concurrently with dose assessment.

RAI-2: Explain how one RP technician can concurrently perform dose assessment and typical RP tasks such as job coverage or radiation surveys. In addition to addressing how the RP technician could be in two physically separate locations, please address the need to focus on important job tasks such as determining off-site dose for elevated and changing effluent conditions and RP tasks while concurrently providing field job coverage in high radiation areas or changing radiological conditions, conducting RP briefs, and performing radiation surveys in

unknown, high, or changing radiation areas.

**RAI-3 (a, b, c, and d)**

Issue 3 (a, b, c, and d): As stated in Section 3.2.4.C, "Off-site Surveys Major Task," of Enclosures 1 and 2,

The dispatch of OMTs [Offsite Monitoring Teams] at an Alert or higher classification combined with improvements in monitoring capability and the use of updated dose assessment software as discussed in Section 3.1.4 provides a means for assessing radioactive releases in the early stages of an event. Additionally, prior to the arrival of the OMTs, one of the on-shift RP Technicians are able to perform on-site (out-of-plant) surveys as a means of early identification of releases and provide data inputs to dose assessment. These capabilities serve as the basis for extending the augmentation response time from 60 to 90 minutes.

A review of the comparison tables for North Anna and Surry indicate that North Anna would remove two field monitoring team members and five RP technicians as 45-minute ERO responders augmenting, and two field monitoring team members and four 60-minute augmenting RP technicians and that Surry would remove one monitoring team member and eleven 60-minute augmenting RP technicians.

The application does not appear to not provide a description of the improved monitoring capabilities at North Anna and Surry that would monitor radioactivity releases that bypassed the effluent radiation monitors. Additionally, the above statement appears to describe a condition where dose assessment would require two RP technicians (one performing dose assessment and one to provide input to dose assessment). The application does not appear to provide a justification for the single RP technician not directly involved with dose assessment. It is not apparent how dose assessment and typical RP tasks such as job coverage, radiation surveys, or conducting RP briefs could be performed concurrently with dose assessment by the on-shift staff.

RAI-3.a: Provide a description of the improved monitoring capabilities at North Anna and Surry that could be used for radioactivity releases that bypass the installed effluent radiation monitors. This description should include an analysis that these instruments can reliably identify and monitor radioactivity releases which bypass the installed effluent radiation monitors.

RAI-3.b: Provide a description of the Dominion Energy Virginia site-specific capabilities, that are unique to North Anna and Surry, that support the removal of a qualified individual to perform onsite field monitoring.

RAI-3.c: Provide an explanation of how the current Dominion Energy Virginia capabilities at North Anna support the removal of 13 RP individuals as 45 and 60-minute responders from the North Anna emergency plan.

RAI-3.d: Provide an explanation of how the current Dominion Energy Virginia capabilities at Surry support the removal of 13 RP individuals as 60-minute responders from the Surry emergency plan.

#### **RAI-4 (a, b, and c)**

Issue 4 (a, b, and c): As stated in Section 3.2.5.C, "Technical Support Major Task," of Enclosures 1 and 2,

The procedure analysis demonstrated that the on-shift STA [shift technical advisor] was able to perform required troubleshooting activities for the first 90 minutes after an event through implementation of event response procedures designed for restoration of safety functions to include use of defense-in-depth capabilities as needed. The analysis showed that there were no technical support activities requiring additional mechanical or electrical expertise needed for the first 90 minutes after event initiation.

and

Additionally, the Mechanical and Electrical Engineers assume responsibility for development of troubleshooting and repair strategies as well as transition from defense in depth applications to use of installed plant safety systems.

It is not apparent how an analysis of the procedures used by the on-shift staff supports changes to ERO augmentation. Additionally, there are specific training requirements for the STA, electrical engineers, and mechanical engineers. It is not apparent that the STA was qualified and proficient to perform the functions of the STA, mechanical engineer, and the electrical engineer functions during an event. Additionally, it is not apparent the site-specific procedural requirements to perform troubleshooting for each of these positions.

RAI-4.a: Explain how the STA can concurrently perform the duties of the STA, Reactor Engineer, Mechanical Engineer, and Electrical Engineer during an event. Please describe both the workload and qualifications for each of the positions.

RAI-4.b: Explain how the STA would use event response procedures to perform required troubleshooting.

RAI-4.c: Provide clarification for STA qualifications related to troubleshooting. Specifically, please describe whether the Dominion Energy Virginia STAs are qualified as electrical and mechanical engineers in accordance with the North Anna and Surry systematic approach to training in addition to their STA specific qualifications.

#### **RAI-5**

Issue 5: As stated in Section 3.2.5.C, "Repair and Corrective Action Major Task," of Enclosure 1,

The procedure analysis demonstrated that there were no repair or corrective activities required for the first 90 minutes after an event with the exception of installing jumpers to support actions directed by 1/2-ECA-3.3, *SGTR Without Pressurizer Pressure Control*, and 1/2-FR-H.3, *Response to Steam Generator High Level*.

It is not apparent if there is an impact on the current North Anna emergency response based on the information contained in the LAR.

RAI-5: For NAPS, please explain how the procedural step to install jumpers in response to steam generator high level would be performed if needed given that the requisite personnel may not be onsite when required.

**RAI-6 (a, b, c, and d)**

Issue 6 (a, b, c, and d): Section 3.2.5.C, "Repair and Corrective Action Major Task," of Enclosures 1 and 2, states:

Additionally, in the unlikely event of a failure of ECCS system capabilities at an impacted unit, additional defense in depth is provided by NAPS [SPS] procedures that address a loss of a safety function using installed non-safety plant systems and equipment at the affected unit, the ability to cross-connect some systems with the unaffected unit, and BDB [beyond design basis] strategies and equipment.

Section 3.1.1, "Performance-based Procedure Analysis" of Enclosures 1 and 2 further states:

NUREG-0737 identified the need to consider the following events involving multiple failures:

- Multiple tube failures in a single steam generator and tube rupture in more than one steam generator,
- Failure of Main and Auxiliary Feedwater,
- Failure of high-pressure reactor coolant makeup system,
- An Anticipated Transient Without Scram (ATWS) following a loss of offsite power (LOOP), stuck open relief valve or safety relief valve, or loss of main feedwater; and
- Operator errors of omission or commission.

The current ERO staffing recommendations of NUREG-0654 provide defense-in-depth protection for a broad range of events such as those listed above. Additionally, the staffing recommendations of NUREG-0654 were developed with the understanding that current nuclear power plants were built with emergency support functions (ESFs) that meet current site-specific technical specifications and those plants have incorporated a system-based approach to emergency operating procedures and Abnormal Operating Procedures. As such, the ESFs and current emergency response procedures at NAPS and SPS do not appear to support extensions in ERO augmentation timing.

Although the current ERO staffing recommendations were developed prior to improved BDB capabilities such as the Diverse and Flexible Coping Strategies (FLEX), the proposed LAR does not appear to provide sufficient detail of the current BDB/FLEX strategies at NAPS and SPS to justify the proposed changes to ERO staffing.

RAI-6.a: Provide a more detailed description of the current Dominion Energy Virginia capabilities and explain how these capabilities could be used to respond to a broad range of events. Include FLEX strategies and specifically provide justification for the proposed extension of ERO response times for the Electrical and Mechanical Engineers.

RAI-6.b: Provide a more detailed description of the current Dominion Energy Virginia capabilities and explain how these capabilities could be used to respond to a broad range of

events. This explanation should include FLEX strategies and specifically provide justification for the proposed extension of ERO response times for the ERO mechanical and electrical maintenance technicians. Note: this justification should support an ERO response time when the site could be solely relying on FLEX equipment to mitigate the event.

RAI-6.c: Provide a discussion that demonstrates how the “existing on-shift resources are able to perform troubleshooting activities to initiate restoration of a loss of safety function”, as stated in Section 3.2.6.C, “Protective Actions (In-Plant) Function,” when no qualified maintenance personnel will be available for 90 minutes in the proposed NAPS and SPS emergency plans.

RAI-6.d: Provide a discussion that demonstrates how the current Dominion Energy Virginia capability to respond to events, including FLEX strategies, justifies the proposed extension of RP personnel.