NRR-PMDAPEm Resource

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Subject: REQUEST FOR ADDITIONAL INFORMATION: NORTH ANNA POWER STATION, UNIT 2: LICENSE AMENDMENT REQUEST TS 3.8.1 - AC SOURCES – (TAC NO. MF6261)

Virginia Electric and Power Company (Dominion) submitted a request for amendment dated May 22, 2015 (Agencywide Documents Access management System (ADAMS) Accession numbers ML15147A029) to the Technical Specifications (TS) for North Anna Power Station (NAPS) Unit 2. The proposed license amendment requests changes to technical specification (TS) 3.8.1, "Alternating Current (AC) Sources-Operating." TS 3.8.1 contains Surveillance Requirement (SR) 3.8.1.8, which requires verification of the capability to manually transfer Unit 1, 4.16 kV emergency safety features (ESF) bus AC power sources from the normal offsite circuit to the alternate offsite circuit. This surveillance is currently applicable to Unit 1 only. Dominion is developing a plant modification to install an alternate offsite power feed to each of the two 4.16 kV ESF buses for Unit 2, such that it will be similar to the Unit 1 design. Therefore, the proposed change would delete Note 1 to SR 3.8.1.8 to remove the limitation that excludes Unit 2 and to be consistent with the verification currently performed for Unit 1.

BACKGROUND:

Section 3.0 "Background" of Attachment 1 of the license amendment request (LAR) has the following statements, "Dominion is currently developing a plant modification to install an alternate offsite AC circuit to each Unit 2 Emergency Bus 2H and 2J" and that "the existing manual cross-tie between buses 2H and 2J will be permanently removed. The modifications will be evaluated in accordance with 10 CFR 50.59."

Section 4.0 "Technical Analysis & Safety Considerations" of Attachment 1 of the LAR has the following statements:

> The design function of the alternate required offsite circuit is the same as the preferred offsite power source. It provides sufficient power to support all Class 1E systems, structures, and components, and station auxiliaries in the event of a loss of the normal offsite AC power source. Therefore, the additional circuits that will feed the Unit 2 emergency buses from offsite AC power will be designed in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 50, Appendix A, General Design Criterion (GDC) 17.
>
> The modified Unit 2 configuration will be similar to the existing Unit 1 configuration. Interconnections will be provided between normal and emergency buses such that each emergency bus is capable of being powered from: (a) the preferred offsite source (normally assigned reserve station service transformer (RSST)), (b) the alternate required offsite circuit (assigned normal bus which can be powered from either an (station service transformer (SST)) or from an RSST which is different than the normally assigned RSST, or (c) the assigned Emergency Diesel Generator."
>
> If Bus 2H is cross-tied to Station Service Bus 2C, then the Unit 2 Main Generator MVAR will be limited to +300 MVAR Out (lagging) to ensure adequate Bus 2H voltage in accordance with GDC17. If Bus 2J is cross-tied to Station Service Bus 1A, then the Unit 1 Main Generator MVAR will be limited to +300MVAR Out (lagging) to ensure adequate Bus 2J voltage in accordance with GDC17.

Section 5.0 "Regulatory evaluation" of Attachment 1 of the LAR states that the proposed changes to Surveillance Requirement (SR) 3.8.1.8 do not involve a significant hazards consideration. It also states that the proposed changes do not create the possibility of a new or different kind of accident and don't reduce the margin of safety.

According to NAPS Updated Final Safety Analysis Report (UFSAR) section 3.1, Conformance with General Design Criteria", the plant is licensed to following requirements as delineated in Atomic Energy Commission General Design Criteria:

1. Criterion 5 "Sharing of Structures, Systems, and Components" which requires in part that Structures, systems, and components important to safety shall not be shared between nuclear power units unless it is shown that such sharing will not significantly impair their ability to perform their safety functions including, in the event of an accident in one unit, an orderly shutdown and cooldown of the remaining units.

2. Criterion 17 "Electric Power Systems," which states in part that an onsite electric power system and an offsite electric power system shall be provided to permit functioning of structures, systems, and components important to safety. The safety function for each system (assuming the other system is not functioning) shall be to provide sufficient capacity and a capability to ensure that (1) specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded as a result of anticipated operational occurrences, and (2) the core is cooled and containment integrity and other vital functions are maintained in the event of postulated accidents.

Based on the above, the staff requests the following additional information to better understand the request and its associated modification.

<u>QUESTIONS:</u>

1) Provide a brief description, including drawings, of the proposed changes in order to remove Note 1 from surveillance SR 3.8.1.8. The description and simplified drawings should identify the proposed configuration of the plant during all modes of operation.

2) The intent of the proposed plant modification is to provide flexibility in plant operation to ensure that two qualified offsite power sources are available per TS 3.8.1.a. After installation of the modification, a combination of offsite power sources will be available to supply power to safety busses of both units. As an example, the staff notes that in some cases, offsite power from Unit 1 (or Unit 2) busses may be used to supply Unit 2 (Unit 1) safety busses. To verify compliance with Criterion 17, please provide:

    a. A summary of load flow analyses (limiting cases) performed for the proposed electrical paths.

    b. The reason for mega volts-amps reactive (MVAR) limitations imposed on the Main Generator when Bus 2H or 2J is connected to the corresponding bus 2C or 1A respectively. For a plant configuration using offsite power through busses 2C and 1A, please provide a summary of safety bus voltages for a postulated accident in Unit 2, a controlled safe shutdown of Unit 1 with offsite power system (grid) at the minimum allowable voltage and the Main Generator at the maximum allowable MVAR limit. Please include a profile of bus voltages at the onset of the event, during load sequencing and steady state conditions.

    c. Provide clarification on the paths that will be tested when the limitation in TS SR 3.8.1.8 is removed.

3) With reference to GDC Criterion 5, please provide a summary of the analysis performed to demonstrate that degraded or fault conditions in one electrical path will not adversely impact safe shutdown of dual units.

4) Since a Generator Output Breaker is not planned for the Unit 2 main generator, the RSSTs or alternate offsite power sources may be used to power the auxiliaries. During this period, the SSTs and the RSSTs or alternate paths are paralleled prior to transfer to maintain uninterrupted power to the plant busses. Confirm that fault

conditions or other electrical transients during this period will not adversely impact operation of dual unit or dual unit safe shutdown capability.

If you have any questions please contact me at 301-415-2597. Please submit the response by October 13, 2015.

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