



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

September 9, 2016

Mr. Jon A. Franke  
Site Vice President  
Susquehanna Nuclear, LLC  
769 Salem Boulevard  
NUCSB3  
Berwick, PA 18603-0467

SUBJECT: SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 2 – REQUEST FOR  
ADDITIONAL INFORMATION REGARDING TEMPORARY CHANGE OF UNIT 2  
TECHNICAL SPECIFICATIONS 3.7.1 AND 3.8.7 TO ALLOW REPLACEMENT  
OF UNIT 1 480 VOLT ENGINEERED SAFEGUARD SYSTEM LOAD CENTER  
TRANSFORMERS (CAC NO. MF7298)

Dear Mr. Franke:

By letter dated January 28, 2016, as supplemented by letter dated April 6, 2016 (Agencywide Documents Access and Management System Accession No. ML16029A031 and Package Accession No. ML16097A486, respectively), Susquehanna Nuclear, LLC (the licensee) submitted a license amendment request for the Susquehanna Steam Electric Station (SSES), Unit 2. The proposed amendment would temporarily modify the SSES, Unit 2, Technical Specification (TS) 3.7.1, "Residual Heat Removal Service Water (RHRSW) System and the Ultimate Heat Sink (UHS)," and TS 3.8.7, "Distribution Systems–Operating," to increase the completion time for Conditions A and B of TS 3.7.1 and Condition C of TS 3.8.7 from 72 hours to 7 days, in order to accommodate 480 volt engineered safeguard system load center transformer replacements on SSES, Unit 1.


To complete its review, the U.S. Nuclear Regulatory Commission staff requests responses to the enclosed Request for Additional Information. The draft questions were sent to Mr. Richard McIntosh of your staff to ensure that they were understandable, the regulatory basis for the questions was clear, and to determine if the information was previously docketed. Please respond within 30 days of the date of this letter.

J. Franke

- 2 -

If you have any questions, please contact me at (301) 415-1387 or [Tanya.Hood@nrc.gov](mailto:Tanya.Hood@nrc.gov).

Sincerely,

  
Tanya E. Hood, Project Manager  
Plant Licensing Branch I-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-388

Enclosure:  
Request for Additional Information

cc w/enclosure: Distribution via Listserv

REQUEST FOR ADDITIONAL INFORMATION  
LICENSE AMENDMENT REQUEST REGARDING  
REPLACEMENT OF LOAD CENTER TRANSFORMERS  
SUSQUEHANNA NUCLEAR, LLC  
SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 2  
DOCKET NO. 50-388

By letter dated January 28, 2016, as supplemented by letter dated April 6, 2016 (Agencywide Documents Access and Management System Accession No. ML16029A031 and Package Accession No. ML16097A4896, respectively), Susquehanna Nuclear, LLC (the licensee) submitted a license amendment request (LAR) for the Susquehanna Steam Electric Station (SSES), Unit 2. The proposed amendment would modify SSES, Unit 2, Technical Specification (TS) 3.7.1, "Residual Heat Removal Service Water (RHRSW) System and the Ultimate Heat Sink (UHS)," and TS 3.8.7, "Distribution Systems—Operating," to increase the Completion Time (CT) for Conditions A and B of TS 3.7.1 and Condition C of TS 3.8.7 from 72 hours to 7 days, in order to accommodate replacement of the 480 volt (V) engineered safeguard system load center transformers for SSES, Unit 1.

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the information submitted by the licensee and determined that additional information is required to complete its review. The specific request for additional information (RAI) is addressed below.

**RAI 1:**

When extending the CT of a TS in the proposed system lineup (i.e., 1X210 or 1X220 de-energized), the licensee will make one train of RHRSW and Emergency Service Water (ESW) inoperable by disabling power to the RHRSW array valves and the bypass valve. If during the revised CT of 7 days, the station experiences a dual unit loss of offsite power (LOOP) with a single failure of the redundant RHRSW train, both trains of RHRSW and ESW would be inoperable. The scenario presented in the enclosure to the LAR dated January 26, 2016 (pages 6 and 7 of 30) does not address this concern.

Based on this concern, provide results of an analysis stating how the station will mitigate a dual unit LOOP when in the revised CT of 7 days. The results of the analysis should do one of the following:

- a. Provide reasonable assurance, with specified compensatory actions in place at the start of the planned maintenance, that the probability of failure of the remaining train of RHRSW has been significantly reduced to justify the 7-day CT; or
- b. Assume the only remaining train of RHRSW has failed with the LOOP, and with defined compensatory actions in place at the start of the planned maintenance, demonstrate that RHRSW can be restored such that safe shutdown and cooldown to Mode 4 can be achieved for both units, including cooling of the spent fuel pool. In

Enclosure

your analysis, (i) assume the LOOP duration is the full 7 days; (ii) identify the minimum time Unit 1 must be shut down in order for your analysis to be valid, since Unit 1 will already be in Mode 4; (iii) describe the operator actions and the associated timeline needed to restore an RHRSW header to service in order to provide decay heat removal for both units.

**RAI 2:**

In Table 1 in the enclosure to the LAR dated January 28, 2016 (pages 16 through 27 of 30), the licensee listed Unit 2 and common loads that are powered by Unit 1 Class 1E 480 V transformers and are affected by de-energization with the associated Limiting Conditions for Operation (LCO) and Technical Requirements for Operation (TRO) implications.

In Enclosure 1 to the licensee's letter dated April 6, 2016, the licensee provided a listing of loads from the motor control centers (MCCs) powered by the Unit 1 Class 1E 480 V transformers that will be replaced as identified in the LAR.

From a correlation of the loads listed in Table 1 of the LAR dated January 28, 2016, with the loads identified Enclosure 1 of the letter dated April 6, 2016, the NRC staff notes that a small percentage of the loads listed in Enclosure 1 is subsequently identified in Table 1 of the LAR as affecting Unit 2 LCOs and TROs. Many of the affected loads listed in Enclosure 1 have identifiers that do not clearly distinguish between Unit 1, Unit 2, and common loads. Therefore, the NRC staff requests that the licensee:

- a. Provide a listing of all Unit 2 or common loads powered from the Unit 1 480 V transformers (1X210, 1X220, 1X230, and 1X240) listed in Enclosure 1 and that are: (1) safety related or Class 1E and (2) not already identified in Table 1.
- b. For any loads identified above, determine if any LCOs or TCOs are associated with these loads, and discuss additional actions (if applicable) necessary to justify the LAR.

**RAI 3:**

In Table 1 in the enclosure to the LAR dated January 28, 2016, the licensee has identified TRO 3.7.6 associated with the Engineered Safeguard Service Water (ESSW) Pumphouse Ventilation System. When either transformer 1X210 or 1X220 is being replaced, four ESSW fans are inoperable. The licensee stated in Table 1 that two ESW pumps and one RHRSW pump would be declared inoperable after 36 hours in accordance with TRO 3.7.6. The NRC staff does not have TRO 3.7.6 to review, and it is not clear why only one RHRSW pump would be inoperable. The staff requests that the licensee:

- a. Explain why only one RHRSW pump becomes inoperable after 36 hours with two RHRSW fans out of service when either 1X210 or 1X220 is being replaced.
- b. Provide a copy of TROs 3.7.6, 3.8.6, 3.7.9, 3.3.4, and 3.11.2.6 (i.e., TROs referenced in Table 1).

**RAI 4:**

On page 8 of the enclosure to the LAR dated January 28, 2016, the licensee provides the sequence/flow path for replacement of a 480 V Engineered Safeguard System (ESS) Load Center (LC) Transformer and information that applies throughout the evolution. The following questions relate to provisions that the license will make in order to limit the potential loss of power to Unit 2 equipment during the replacement of all Unit 1 480 V ESS LC Transformers that feed both units:

- a. The licensee provided a list of surveillances that will be performed prior to the transformer replacement sequence. What test/surveillance will the licensee perform to verify that all structures, systems, and components are operable prior to entering the transformer replacement sequence?
- b. What compensatory measures will the licensee take in order to limit the potential loss of power to Unit 2 during the replacement of all Unit 1 480 V ESS LC Transformers (e.g., scheduling the evolution in order to avoid anticipated severe weather conditions, corridor the work zone as a Protected Area, restrictions on the maintenance of the switchyard, contacting the grid system load dispatcher to ensure no significant grid perturbations are expected)?

**RAI 5:**

On page 3 of the enclosure to the LAR dated January 28, 2016, the licensee stated that the ESS LC supplies power to the individual 480 V loads and to MCCs that power instrument alternating current (AC) distribution panels, 125 and 250 V direct current (DC) battery chargers, and essential plant lighting. Discuss in detail the impact of the replacement of a Unit 1 480 V ESS LC Transformer on the Unit 2 instrument AC and DC power system loads. Explain how the Unit 2 DC power system continues to permit functioning of structures, systems, and components important to safety during the replacement of a Unit 1 480 V ESS LC Transformer.

**RAI 6:**

In Enclosure 1 to the April 6, 2016, letter, the licensee provided a table with the affected loads listed by transformer. For the Unit 2 Class 1E loads powered from Unit 1, identify the alternate source of power/alternate train that would be used during the Unit 1 transformer replacements.

**RAI 7:**

The enclosure to the LAR dated January 26, 2016 (pages 8 and 9 of 30) presents a list of bulleted items that will apply throughout the evolution and a flow path for replacement. Provide more complete justification, including time estimates for why a full 7-day CT is needed.

J. Franke

- 2 -

If you have any questions, please contact me at (301) 415-1387 or [Tanya.Hood@nrc.gov](mailto:Tanya.Hood@nrc.gov).

Sincerely,

*/RA/*

Tanya E. Hood, Project Manager  
Plant Licensing Branch I-2  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-388

Enclosure:  
Request for Additional Information

cc w/enclosure: Distribution via Listserv

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