

NRR-PMDAPem Resource

From: Hood, Tanya
Sent: Friday, October 27, 2017 3:00 PM
To: Brad.berryman@TalenEnergy.com; Jennings, Jason (Jason.Jennings@TalenEnergy.com) (Jason.Jennings@TalenEnergy.com)
Cc: Krick, Melisa; McIntosh, Richard W
Subject: Susquehanna Steam Electric Station, Units 1 and 2 – Request for Additional Information Regarding Request to Revise Diesel Generator Surveillance Requirements (CAC NOs. MF9131 and MF9132)
Attachments: 2nd Round RAIs for Susquehanna Diesel.pdf

SUBJECT: SUSQUEHANNA STEAM ELECTRIC STATION, UNITS 1 AND 2 – REQUEST FOR ADDITIONAL INFORMATION REGARDING LICENSE AMENDMENT REQUEST TO REVISE DIESEL GENERATOR SURVEILLANCE REQUIREMENTS WITH NEW STEADY STATE VOLTAGE AND FREQUENCY LIMITS (CAC NOS. MF9131 AND MF9132)

By application dated January 25, 2017, as supplemented by letters dated March 21, 2017 and August 4, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML17044A149, ML17080A405, and ML17216A283, respectively), Susquehanna Nuclear, LLC (the licensee) submitted a license amendment request for Susquehanna Steam Electric Station, Units 1 and 2. The proposed amendments requested changes to certain surveillance requirements in Technical Specification 3.8.1, “AC [Alternating Current] Sources – Operating.” The requests are for changes in the use of steady state voltage and frequency acceptance criteria for the onsite standby power source of the diesel generators, allowing for the use of new and more conservative design analysis.

To complete its review, the U.S. Nuclear Regulatory Commission staff requests responses to the attached request for additional information. The draft questions were sent to Ms. Melisa Krick 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 by December 4, 2017.

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

Tanya E. Hood
Project Manager
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, Maryland 20852-2738
301-415-1387
Tanya.Hood@nrc.gov

Hearing Identifier: NRR_PMDA
Email Number: 3830

Mail Envelope Properties (Tanya.Hood@nrc.gov20171027150000)

Subject: Susquehanna Steam Electric Station, Units 1 and 2 – Request for Additional Information Regarding Request to Revise Diesel Generator Surveillance Requirements (CAC NOs. MF9131 and MF9132)

Sent Date: 10/27/2017 3:00:00 PM

Received Date: 10/27/2017 3:00:00 PM

From: Hood, Tanya

Created By: Tanya.Hood@nrc.gov

Recipients:

"Krick, Melisa" <Melisa.Krick@talenergy.com>

Tracking Status: None

"McIntosh, Richard W" <Richard.McIntosh@talenergy.com>

Tracking Status: None

"Brad.berryman@TalenEnergy.com" <Brad.berryman@TalenEnergy.com>

Tracking Status: None

"Jennings, Jason (Jason.Jennings@TalenEnergy.com) (Jason.Jennings@TalenEnergy.com)"

<Jason.Jennings@TalenEnergy.com>

Tracking Status: None

Post Office:

Files	Size	Date & Time
MESSAGE	1834	10/27/2017 3:00:00 PM
2nd Round RAIs for Susquehanna Diesel.pdf		106354

Options

Priority: Standard

Return Notification: No

Reply Requested: No

Sensitivity: Normal

Expiration Date:

Recipients Received:

REQUEST FOR ADDITIONAL INFORMATION
OFFICE OF NUCLEAR REACTOR REGULATION
LICENSE AMENDMENT REQUEST REGARDING
DIESEL GENERATOR SURVEILLANCE REQUIREMENTS
WITH NEW STEADY STATE VOLTAGE AND FREQUENCY LIMITS
SUSQUEHANNA NUCLEAR, LLC
ALLEGHENY ELECTRIC COOPERATIVE, INC.
SUSQUEHANNA STEAM ELECTRIC STATION, UNITS 1 AND 2
DOCKET NOS. 50-387 AND 50-388

By letter dated January 25, 2017,¹ as supplemented by letters dated March 21, 2017² and August 4, 2017³. Susquehanna Nuclear, LLC (the licensee) submitted a license amendment requests for Susquehanna Steam Electric Station, Units 1 and 2. The proposed amendment request changes to certain surveillance requirements (SRs) in technical specification (TS) 3.8.1, “AC [Alternating Current] Sources-Operating.” The changes are in the use of steady state voltage and frequency acceptance criteria for onsite standby power source of the diesel generators, allowing for the use of new and more conservative design analysis.

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

The NRC staff requested supplemental information, in a letter dated July 7, 2017⁴, to complete its review. In response to the NRC request, the licensee submitted a letter dated August 4, 2017. The licensee stated, in response to RAI-7a, that the impact of the DG voltage and frequency variations on the motors are explained in detail in the excerpts of calculation EC-024-1035 Section 7, which were submitted with the license amendment request (LAR) as Attachment 3.

¹ Agencywide Documents Access and Management System (ADAMS) Accession No. ML17044A149.

² ADAMS Accession No. ML17080A405

³ ADAMS Accession No. ML17216A283

⁴ ADAMS Accession No. ML17180A200

In Section 7.5, "Effects on Motors," of the LAR, the licensee determined the net effect of voltage and frequency variations on motor steady state speed using the change in speed (ΔS) equation. The ΔS equation is approximated by considering the motor speed-torque curves in the area of intersection with the pump speed-torque curve as straight lines. The NRC staff notes that this approximation introduces errors which are functions of the slopes of the motor speed-torque curves. Provide a discussion of any errors introduced by this approximation for the ΔS equation based on the DG's motor and pump loads speed-torque curves.

RAI 2

In Section 7.5, Table 11, "Speed & HP [horsepower] Variation Matrix of Major Motor Loads," provided the results of changes in motor speed and HP of major motor loads due to the changes in DG steady state voltage and frequency. The licensee stated that the maximum change in motor HP would occur when the DG is operating at maximum steady state voltage and frequency (i.e., 4400 V and 60.5 Hz).

The NRC staff notes that, based on Table 11, the HP of the major pumps loads would increase by at least 3% when the DG is operating at maximum steady state voltage and frequency (i.e., 4400 V and 60.5 Hz). For some major motor loads such as the reactor core spray (CS) pumps motors, the increased pump HP would be higher than the respective motor nameplate rating provided in the Susquehanna Updated Final Safety Analysis Report (UFSAR), Table 8.3-1.

For each DG major motor-pump sets loads (CS, residual heat removal (RHR), RHR service water, emergency service water), provide the following:

- a) Provide the values for the pumps' maximum brake HP and the motors' service factors. Also, provide a discussion of the impact of the increased HP on the motors' capabilities and performance.

The licensee also discussed, in Section 7.5 of Attachment 3, the change in motor rise temperature due to the DG frequency variations. Table 11 of Attachment 3 shows that the motor speed and HP are impacted by the cumulative DG voltage and frequency variations.

- b) Provide a discussion of the impact of the increased speed and HP resulting from the DG operating at maximum steady state voltage and frequency on all the DG motor loads operating temperatures.