

NRR-DRMAPEm Resource

From: Wentzel, Michael
Sent: Monday, August 5, 2019 8:33 AM
To: Wells, Russell Douglas
Cc: kdhulvey@tva.gov; cedmondson@tva.gov; Shoop, Undine; Saba, Farideh
Subject: Watts Bar Nuclear Plant - Second-Round Request for Additional Information Related to Application to Revise Technical Specifications Regarding DC Electrical Systems, TSTF-500, Revision 2 (EPID L-2018-LLA-0494)
Attachments: Watts Bar TSTF-500 Second Round RAIs (L-2018-LLA-0494).pdf

Dear Mr. Wells:

By application November 29, 2018 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML18334A389), as supplemented by letter dated June 7, 2019 (ADAMS Accession No. ML19158A394), Tennessee Valley Authority, requested an amendment to Facility Operating Licenses NPF-90 and NPF-96 for Watts Bar Nuclear Plant (WBN), Units 1 and 2. The proposed license amendment request would revise the WBN Units 1 and 2 Technical Specifications (TSs) to adopt Technical Specifications Task Force (TSTF) Traveler TSTF-500, Revision 2, "DC [direct current] Electrical Rewrite – Update to TSTF-360" (ADAMS Accession No. ML092670242).

The NRC's Electrical Engineering Operating Reactors Branch (EEOB) staff is reviewing the application and has identified areas where it needs additional information to support its review. The NRC staff's request for additional information (RAI) is provided below. A draft copy of the RAI was provided to your staff on July 25, 2019. Based on a clarification call with the licensee's staff on July 31, 2019, the NRC staff has revised the wording of EEOB RAI-9 to replace its request to identify cases for when the proposed Condition D would be entered with a request to explain when the proposed Condition would be entered. As discussed with you subsequent to the July 31, 2019, call, the NRC staff requests your response to the RAI by August 30, 2019.

If you have any questions, please contact me at (301) 415-6459 or michael.wentzel@nrc.gov.

Sincerely,

Michael Wentzel, Project Manager
Plant Licensing Branch II-2
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

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Related to Application to Revise Technical Specifications Regarding DC Electrical Systems, TSTF-500,
Revision 2 (EPID L-2018-LLA-0494)

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REQUEST FOR ADDITIONAL INFORMATION
REGARDING LICENSE AMENDMENT REQUEST TO
ADOPT TECHNICAL SPECIFICATIONS TASK FORCE (TSTF) TRAVELER
TSTF-500, REVISION 2, "DC ELECTRICAL REWRITE – UPDATE TO TSTF-360"
TENNESSE VALLEY AUTHORITY
WATTS BAR NUCLEAR PLANT, UNITS 1 AND 2
DOCKET NOS. 50-390 AND 50-391

Background

By letter dated November 29, 2018 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML18334A389), as supplemented by letter dated June 7, 2019 (ADAMS Accession No. ML19158A394), Tennessee Valley Authority (the licensee), requested an amendment to Facility Operating Licenses NPF-90 and NPF-96 for Watts Bar Nuclear Plant (WBN), Units 1 and 2. The proposed license amendment request would revise the WBN Units 1 and 2 Technical Specifications (TSs) to adopt Technical Specifications Task Force (TSTF) Traveler TSTF-500, Revision 2, "DC [direct current] Electrical Rewrite – Update to TSTF-360" (ADAMS Accession No. ML092670242). Specifically, the licensee proposed changes to the TS requirements related to DC electrical power systems in TS 3.8.4, "DC sources – Operating," TS 3.8.5, "DC Sources – Shutdown," and TS 3.8.6, "Battery Cell Parameters." Additionally, the licensee proposed to add to the TS Section 5.7, "Procedures, Programs, and Manuals," a new program titled "Battery Monitoring and Maintenance Program."

The licensee's letter dated June 7, 2019, responded to the Electrical Engineering Operating Reactors Branch (EEOB) staff's request for additional information (RAI) dated May 3, 2019 (ADAMS Accession No. ML19126A121). The EEOB staff has reviewed the licensee's responses and has determined that the following additional information is needed to complete the review of the WBN license amendment request.

Regulatory Requirements

Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.36, "Technical Specifications," requires, in part, that the operating license of a nuclear production facility include TSs. Section 50.36(c)(2) of 10 CFR requires that the TS include limiting conditions for operation (LCOs) which are the lowest functional capability or performance levels of equipment required for safe operation of the facility. When an LCO of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the technical specifications until the condition can be met.

Appendix A, "General Design Criteria [GDC] for Nuclear Power Plants," to 10 CFR Part 50. GDC-17, "Electric power systems," states, in part:

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

onsite electric power supplies, including the batteries, and the onsite electric distribution system, shall have sufficient independence, redundancy, and testability to perform their safety functions assuming a single failure.

Regulatory Guidance

TSTF-500, Revision 2.

EEOB RAI-7.b.01

In its June 7, 2019, letter, in response to EEOB RAI-7, the licensee proposed to revise the TS LCO 3.8.4 statement for the diesel generator (DG) DC electrical power subsystems from “four DG DC electrical power subsystems” to “Train A and Train B DG DC electrical power subsystems”; and to revise the TS 3.8.4 and TS 3.8.6 conditions related to the DG electrical power subsystems. The licensee stated that the proposed change to the LCO 3.8.4 with respect to the DG DC electrical power subsystem supports the redundancy of the standby electrical power subsystem. The licensee provided the following explanation (emphasis added):

Each DG DC electrical power system is independent and dedicated to its respective DG. The DGs that are supported by the DG DC electrical power systems are arranged in redundant trains (i.e., DG 1A-A and DG 2A-A are in Train A, and DG 1B-B and DG 2B-B are in Train B). When one or two DGs in a train are inoperable, that train of standby electrical power is incapable of performing the safety function and must rely on the redundant DG train to mitigate an event. Likewise, if one or two of the DG DC trains that support the DGs in that train are inoperable, that train of standby electrical power is incapable of performing the safety function and must rely on the redundant train to mitigate an event. Therefore, the LCO requires Train A and Train B DG DC electrical power subsystems to be OPERABLE to support the redundancy of the standby electrical power system.

In its November 29, 2018, letter, Enclosure 1, Section 2.0, “Assessment,” the licensee states (emphasis added):

A DG battery subsystem is provided for each DG. Each subsystem is comprised of a battery, dual battery charger assembly, distribution center, and cabling.

The NRC staff has identified the following apparent discrepancies:

- It appears that the DC power for a DG is provided by a DG DC electrical power system in the June 7, 2019, letter but by a DG battery subsystem in the November 29, 2018, letter.
- It appears that a discussion provided in the June 7, 2019, letter did not describe the relationship between the DG DC trains and the DG DC subsystems.

The NRC staff requests the following information to address these discrepancies:

- 1- Clarify whether a DG DC subsystem or DG DC system supports each DG.
- 2- Clarify the relationship between the DG DC trains and the DG DC electrical power subsystems in the above-mentioned paragraph in the June 7, 2019, letter.

EEOB RAI-9

In its June 7, 2019, letter, the licensee proposed a revised TS 3.8.4 Condition D and associated Required Actions D.1, D.2, and D.3 to state:

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. One or two DG DC battery charger(s) on one train inoperable	D.1 Restore DG battery terminal voltage to greater than or equal to the minimum established float voltage.	2 hours
	AND	
	D.2 Verify battery float current ≤ 1 amp.	Once per 12 hours
	AND	
	D.3 Restore DG battery charger(s) to OPERABLE status.	72 hours

In its November 29, 2018, letter, Enclosure 1, Section 2.0, the licensee states:

A DG battery subsystem is provided for each DG. Each subsystem is comprised of a battery, dual battery charger assembly, distribution center, and cabling. [...] Each of the chargers (normal and alternate) in the dual charger assembly has a dedicated AC source from two respective 480V AC Diesel Generator Auxiliary Boards. If the normal charger is unavailable, the alternate charger is selected by the 125V DC transfer switch included in the assembly.

The TSTF-500, Revision 2, allows for a 72-hour CT for an inoperable battery charger based on the condition that an alternate means (e.g. spare battery charger) of restoring battery terminal voltage to greater than or equal to the minimum established float voltage has been used.

The NRC staff has identified the following apparent discrepancies:

- If the WBN DG dual battery charger for each DG battery subsystem on one train is designed such that the alternate battery charger is selected automatically when the normal battery charger becomes inoperable, TS 3.8.4 Condition D will be entered only after both the normal and alternate battery chargers become inoperable. In this case, it appears that there would be no alternate charger that would be used to restore the DG battery terminal voltage to greater than or equal to the minimum established float voltage within 2 hours (Required Action D.1); and thus, the proposed 72-hour CT for restoring the inoperable DG battery charger to operable status (Required Action D.3) could not be used.

The NRC staff requests the following information

1. Discuss the TS requirements for an operable DG battery subsystem and an operable DG DC train. Include in the discussion the number of operable battery charger in the dual assembly that is required for an operable DG battery subsystem and for an operable DG DC train.
2. Explain when Condition D will be entered and provide the alternate means that will be used to restore DG battery terminal voltage to greater than or equal to the minimum established float voltage within 2 hours to allow the 72-hour CT for the inoperable DG battery charger.