

Burkhardt, Janet

From: Rankin, Jennivine
Sent: Wednesday, June 26, 2013 11:28 AM
To: Robert.Roehler@aps.com
Subject: Request for Additional Information - TSTF-500, "DC Electrical Rewrite - Update to TSTF-360"
Attachments: Request for Additional Information.doc

Rob,

By letter dated December 26, 2012 (Agencywide Documents Access and Management System Accession No. ML13002A197), Arizona Public Service Company (APS) submitted a License Amendment Request (LAR) to adopt Technical Specifications Task Force (TSTF) Traveler TSTF-500, Revision 2, "DC Electrical Rewrite – Update to TSTF-360," with one variation at Palo Verde Nuclear Generating Station, Unit Nos. 1, 2, and 3 (PVNGS). The proposed amendment would revise Technical Specification (TS) Limiting Condition for Operation (LCO) 3.8.4, "DC Sources – Operating," TS 3.8.5, "DC Sources – Shutdown," and TS 3.8.6, "Battery Parameters." In addition, new TS 5.5.19, "Battery Monitoring and Maintenance Program," is being proposed for Section 5.5, "Administrative Controls – Programs and Manuals."

The NRC staff has reviewed the information provided in the LAR and determined that additional information is required in order to complete its review.

A draft request for additional information (RAI) was transmitted on June 4, 2013, and a clarification call was held on June 25, 2013. Following the clarification call, it was determined that changes were necessary to the draft RAIs. As such, RAI#9 was modified to delete TS 3.8.4 RA [Required Action] A.1 and TS 3.8.5 RA A.1. In addition, RAI #12 was deleted in its entirety. Mr. Tom Weber of APS agreed to provide the response within 60 days of this email. Please treat this e-mail as formal transmittal of the RAI.

Thanks,
Jennie

Jennie Rankin, Project Manager
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Plant Licensing Branch IV
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Office of Nuclear Reactor Regulation

REQUEST FOR ADDITIONAL INFORMATION
PALO VERDE NUCLEAR GENERATING STATION, UNITS 1, 2, AND 3
LICENSE AMENDMENT REQUEST FOR ADOPTION OF
TECHNICAL SPECIFICATIONS TASK FORCE (TSTF) TRAVELER TSTF-500, REVISION. 2,
DC ELECTRICAL REWRITE – UPDATE TO TSTF - 360
DOCKET NOS. 50-528, 50-529, AND 50-530

By letter dated December 26, 2012 (Agencywide Documents Access and Management System Accession No. ML13002A197), Arizona Public Service Company (APS) submitted a License Amendment Request (LAR) to adopt Technical Specifications Task Force (TSTF) Traveler TSTF-500, Revision 2, "DC Electrical Rewrite – Update to TSTF-360," with one variation at Palo Verde Nuclear Generating Station, Unit Nos. 1, 2, and 3 (PVNGS). The proposed amendment would revise Technical Specification (TS) Limiting Condition for Operation (LCO) 3.8.4, "DC Sources – Operating," TS 3.8.5, "DC Sources – Shutdown," and TS 3.8.6, "Battery Parameters." In addition, new TS 5.5.19, "Battery Monitoring and Maintenance Program," is being proposed for Section 5.5, "Administrative Controls – Programs and Manuals."

The NRC staff has reviewed the LAR and determined that the following additional information is needed to complete its review.

1. In Attachment 1, Section 1 of the LAR, the licensee proposed relocating the requirements of TS Table 3.8.6-1, "Battery Surveillance Requirements," to the new TS 5.5.19, "Battery Monitoring and Maintenance Program."

Confirm that the Table 3.8.6-1 Categories A, B, and C values (electrolyte level, float voltage, specific gravity) that will be relocated to TS 5.5.19, will continue to be controlled at their current levels in the Battery Monitoring and Maintenance Program and that action to restore deficient values will be implemented in accordance with the licensee's corrective action program.
2. In Attachment 1, Section 2.2 of the LAR, the licensee states, "The Enclosure of this submittal contains a letter from the manufacturer of the batteries used at PVNGS Units 1, 2, and 3 verifying the acceptability of using float current monitoring instead of specific gravity monitoring as an indication of the state-of-charge of the battery and that this will hold true over the life of the battery." The enclosed letter from the manufacturer dated June 13, 2012, indicated that 1) "The concept of utilizing float current levels of a flooded, stationary string battery to determine state of charge throughout the life of the battery is reasonable." 2) "There is a relationship between percentage of ampere-hours returned

following a successful discharge capacity test and battery state-of-charge.” and 3) “The charge current of each battery can be affected by impurity levels, age operating environment and maintenance history.”

- a) Confirm that the use of float current monitoring instead of specific gravity monitoring is a reliable and accurate indication of the state-of-charge for the PVNGS safety-related batteries.
 - b) Provide a summary of the evaluation used to establish the value of the float current at which the battery is capable of performing its design function considering the factors affecting the battery state-of-charge and the charge current mentioned in the letter from the manufacturer.
3. In Attachment 1, Section 2.2 of the LAR, the licensee stated that the connection resistance limit, which would be relocated to the TS 5.5.19, “Battery Monitoring and Maintenance Program,” is 30 micro ohms based on a maximum 20 millivolts drop assumption for intercell battery connections.
- a) Clarify whether 30 micro ohms is the overall connection resistance limit or the resistance limit for each intercell connection, each inter-rack connection, each inter-tier connection, and each terminal connection.
 - b) Provide a summary table that includes current baseline resistance values or the battery manufacturer’s recommended resistance limits for each type of battery connections.
 - c) Provide the basis for the connection resistance values that you proposed relocating to TS 5.5.19.
4. In Attachment 1, Section 2.2 of the LAR, the licensee stated that APS will verify or revise the PVNGS Updated Final Safety Analysis Report (UFSAR) to include how a 5 percent design margin for the batteries corresponds to a 2 amperes (amps) float current value indicating that the battery is 95 percent charged consistent with the model application referenced in the TSTF-500.

Explain how maintaining a “5 percent design margin” and “95 percent charge” will ensure that the PVNGS safety-related batteries are fully charged (i.e., capable of performing their design function).

5. In Attachment 1, Section 2.3 of the LAR, the licensee proposed adopting TSTF-500 TS 3.8.5, new Condition A with the exception of the statement, “AND the redundant subsystem battery and charger(s) operable,” on the basis that it was not addressed in the NRC staff model safety evaluation. Per PVNGS TS Bases 3.8.5, only one Direct Current (DC) electrical power subsystem is required to be operable during shutdown. However, per TSTF-500, Page 9, the new Condition A is included only when the plant-specific implementation of TS 3.8.5 may require both trains of the DC electrical power system to be operable.

- a) Justify your request to adopt TS 3.8.5, Condition A even though PVNGS requires only one DC electrical power subsystem to be operable during shutdown.
 - b) Provide a technical justification for the proposed deviation (i.e., the partial adoption of new Condition A).
6. In Attachment 3 of the LAR, the licensee proposed adding new Condition D to TS 3.8.6 which would apply to a battery found with a pilot cell electrolyte temperature less than the minimum established design limit. The Required Action (RA) associated with new Condition D would require the licensee to restore the pilot cell electrolyte temperature to greater than or equal to minimum established design limits within 12 hours.
- a) Discuss how the battery room temperature is periodically monitored at PVNGS and provide the minimum frequency at which the temperature of the battery room is monitored.
 - b) Explain how the licensee would restore battery room temperature if it was outside the temperature limits.
 - c) Provide the method of selection of pilot cells at PVNGS.
 - d) In Section 8.3.2.1.2.1 of the PVNGS UFSAR, the licensee stated that initial battery capacity is at least 25% greater than required to allow for a battery replacement criterion of 80% rated capacity. Provide the margins (e.g., temperature, aging, and design) that were used to size each safety-related battery and confirm that these margins are still maintained at these levels.
7. In Attachment 3 of the LAR, the licensee proposed a float voltage limit of 2.07 Volts (V) in the TS 5.5.19, "Battery Monitoring and Maintenance Program." TSTF-500 indicates a bracketed float voltage limit of 2.13V for this program.

Provide the basis for the proposed float voltage limit of 2.07 V.

8. In Attachment 3 of the LAR, the Completion Time (CT) for TS 3.8.4, new Condition C is 6 hours. In attachment 4 of the LAR, the CT for TS 3.8.4, new Condition C is 1 hour.

Clarify this apparent discrepancy.

9. In Attachment 3 of the LAR, the licensee proposed certain CTs for TS 3.8.4 RAs A.2, A.3, TS 3.8.5 RAs A.2, A.3, and TS 3.8.6 RA B.2. These CTs are bracketed values in TSTF-500.

Explain how these values are applicable to PVNGS.

10. The proposed change to SR 3.8.4.6 to verify each battery charger can recharge the battery to the fully charged state within '24' hours is not consistent with PVNGS UFSAR 8.3.2.1.2.2 which requires that the battery charger be capable of recharging the battery to the fully charged state within 12 hours.

Provide justification for the deviation from the PVNGS UFSAR.

11. In Attachment 3 of the LAR, the licensee proposed a battery cell float voltage limit of greater than or equal to 2.07 V which is reflected in TS 3.8.6 RA A.3, SR 3.8.6.5, and SR 3.8.6.8. However, the current TS Bases for TS Table 3.8.6-1 states that the Category C allowable value for float voltage is based on vendor recommendations which state that a cell voltage of 2.07 V or below, under float conditions and not caused by elevated temperature of the cell, indicates internal cell problems and may require cell replacement.

Justify the deviation from the vendor's recommendations and current TS Table 3.8.6-1.