Watts Bar Nuclear Plant (WBN)

Pre-Submittal Meeting for Proposed License Amendment Adoption of TSTF-500

September 6, 2018

Agenda

- Opening Remarks
- Watts Bar Vital Direct Current (DC) Electrical Design
- Watts Bar Diesel Generator (DG) DC Subsystems
- Proposed Technical Specification (TS) Changes
- Variations from TSTF-500 and Model Safety Evaluation
- TSTF-500 Options
- Commitments
- Schedule for Submittal
- Summary and Closing Remarks

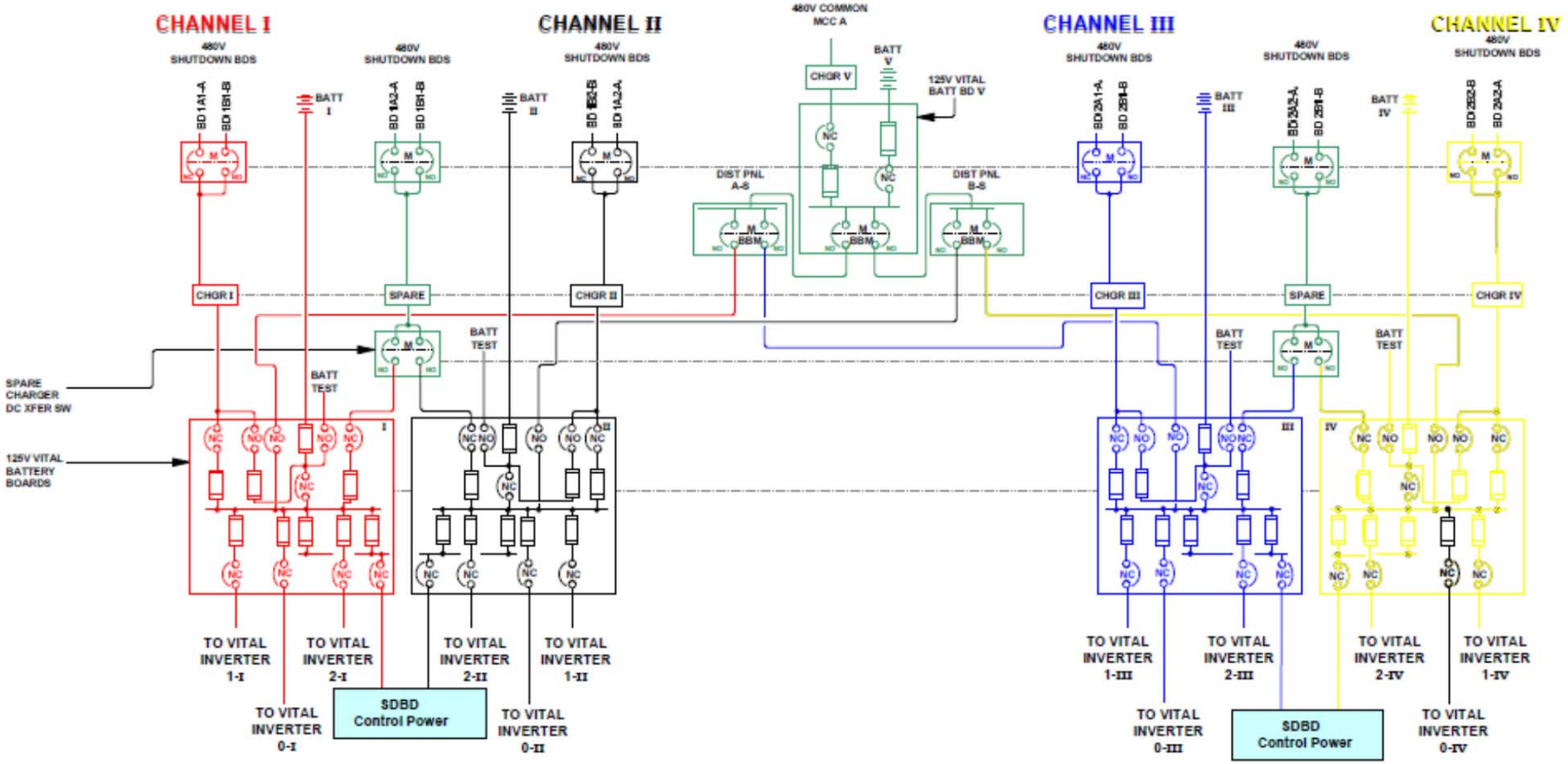
Opening Remarks

- Due to WBN Unit 1 and Unit 2 sharing the DC electrical power system, performing maintenance on an Alternating Current (AC) electrical power distribution subsystem (6.9 kilovolt (kV) shutdown board and associated 480 volt (V) shutdown boards) for a shutdown unit also affects the operating unit.
- Irrespective of inverter operability, the current two-hour completion time for an inoperable vital battery subsystem does not support maintenance on a set of 6.9 kV/480 V shutdown boards.
- The license amendment request (LAR) will adopt TSTF-500, thereby providing a separate Condition for an inoperable vital battery charger. This change will extend the completion time for restoring an inoperable vital battery charger from two hours to seven days.

Watts Bar Vital DC Electrical Design

- The onsite Class 1E AC electrical distribution system supplies electrical power to two power trains shared between the two units.
- The 125 VDC vital control power system is composed of four channels (Channels I, II, III, and IV) in two trains (Channels I and III in Train A and Channels II and IV in Train B.
- Vital Battery Boards I, II, III, and IV have manual access to two spare (backup) chargers for use upon loss of the normal charger.
- Vital Battery Boards I, II, III, and IV have manual access to a fifth 125 VDC Vital Battery System, that serves as a replacement for any one of the four 125 VDC vital batteries during testing, maintenance, and outages with no loss of system reliability under any mode of operation.

Watts Bar Vital DC Electrical Design



Watts Bar DG DC Subsystems

- 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 DG battery provides DC control power and field-flash when the charger is unavailable.
- If 480V AC is available, the charger supplies the normal DC loads, maintains the battery in a fully charged condition, and recharges the battery while supplying the required loads regardless of the status of the plant.
- Each DG battery has sufficient capacity when fully charged to supply the required loads for a minimum of four-hours following a loss of normal power.

Watts Bar DG DC Subsystems (Cont.)

- Each of the chargers (normal and alternate) in the dual charger assembly has a dedicated AC source from two respective 480 VAC Diesel Generator Auxiliary Boards. If the normal charger is unavailable, the alternate charger is selected by the 125 VDC transfer switch included in the assembly.

Proposed WBN 1 TS 3.8.4 Changes (similar for WBN 2)

3.8 ELECTRICAL POWER SYSTEMS

3.8.4 DC Sources - Operating

LCO 3.8.4 ~~Four channels of~~ The Train A and Train B vital DC electrical power subsystems and four Diesel Generator (DG) DC electrical power subsystems shall be OPERABLE.

---NOTES---

~~1.~~ Vital Battery V may be substituted for any of the required vital batteries.

~~2. The C-S DG and its associated DC electrical power subsystem may be substituted for any of the required DGs and their associated DC electrical power subsystem.~~

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or two required vital battery charger(s) on one subsystem inoperable.	A.1 Restore battery terminal voltage to greater than or equal to the minimum established float voltage. AND A.2 Verify battery float current ≤ 2 amps. AND A.3 Restore vital battery charger(s) to OPERABLE status.	2 hours Once per 12 hours 7 days
~~A~~B. One vital DC electrical power subsystem inoperable for reasons other than Condition A.	~~A~~B.1 Restore vital DC electrical power subsystem to OPERABLE status.	2 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~B~~C. Required Action and Associated Completion Time of Condition A or B not met.	~~B~~C.1 Be in MODE 3. AND ~~B~~C.2 Be in MODE 5.	6 hours 36 hours
D. One DG DC battery charger inoperable.	D.1 Restore DG battery terminal voltage to greater than or equal to the minimum established float voltage. AND D.2 Verify battery float current ≤ 1 amp. AND D.3 Restore DG battery charger to OPERABLE status.	2 hours Once per 12 hours 72 hours
~~C~~E. One DG DC electrical power subsystem inoperable for reasons other than Condition D.	~~C~~E.1 Restore DG DC electrical power subsystem to OPERABLE status.	2 hours
~~D~~F. Required Action and associated Completion Time of Condition ~~C~~D or E not met.	~~D~~F.1 Declare associated DG inoperable.	Immediately

Proposed WBN 1 TS 3.8.4 Changes (Continued) (same for WBN 2)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.4.1	Verify vital battery terminal voltage is ~~≥ 128 V (132 V for vital battery V) on float charge~~ greater than or equal to the minimum established float voltage.	7 days
SR 3.8.4.2	Verify DG battery terminal voltage is ~~≥ 124 V on float charge~~ greater than or equal to the minimum established float voltage.	7 days
SR 3.8.4.3	Verify for the vital batteries that the alternate feeder breakers to each required battery charger are open.	7 days
SR 3.8.4.4	Verify correct breaker alignment and indicated power availability for each DG 125 V DC distribution panel and associated battery charger.	7 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
~~SR 3.8.4.5~~	~~Verify no visible corrosion at terminals and connectors for the vital batteries.~~ ~~OR~~ ~~Verify connection resistance for the vital batteries is ≤ 80 E-6 ohm for inter-cell connections, ≤ 50 E-6 ohm for inter-rack connections, ≤ 120 E-6 ohm for inter-tier connections, and ≤ 50 E-6 ohm for terminal connections.~~	~~92 days~~
~~SR 3.8.4.6~~	~~Verify no visible corrosion at terminals and connectors for the DG batteries.~~ ~~OR~~ ~~Verify connection resistance for the DG batteries is ≤ 80 E-6 ohm for inter-cell connections, ≤ 50 E-6 ohm for inter-tier connections, and ≤ 50 E-6 ohm for terminal connections.~~	~~92 days~~
~~SR 3.8.4.7~~	~~Verify battery cells, cell plates, and racks show no visual indication of physical damage or abnormal deterioration.~~	~~12 months~~
~~SR 3.8.4.8~~	~~Remove visible terminal corrosion and verify battery cell to cell and terminal connections are coated with anti-corrosion material.~~	~~12 months~~

(continued)

Proposed WBN 1 TS 3.8.4 Changes (Continued) (same for WBN 2)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
~~SR 3.8.4.9~~	~~Verify connection resistance for the vital batteries is ≤ 80 E-6 ohm for inter-cell connections, ≤ 50 E-6 for inter rack connections, ≤ 120 E-6 ohm for inter tier connections, and ≤ 50 E-6 ohm for terminal connections.~~	~~12 months~~
~~SR 3.8.4.10~~	~~Verify connection resistance for the DG batteries is ≤ 80 E-6 ohm for inter-cell connections, ≤ 50 E-6 ohm for inter-tier connections, and ≤ 50 E-6 ohm for terminal connections.~~	~~12 months~~
SR 3.8.4.~~11~~5	~~NOTE~~ ~~This Surveillance is normally not performed in MODE 1, 2, 3, or 4. However, credit may be taken for unplanned events that satisfy this SR.~~ Verify each vital battery charger ~~is capable of recharging its associated battery from a service or capacity discharge test while supplying normal loads~~ can recharge the battery to the fully charged state within 36 hours while supplying the largest combined demands of the various continuous steady state loads, after a battery discharge to the bounding design basis event discharge state. OR Verify each vital battery charger ~~is capable of operating for ≥ 4 hours at current limit 220 - 250 amps~~ supplies ≥ 200 amps at greater than or equal to the minimum established float voltage for ≥ 4 hours.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.4.~~12~~6	----------NOTE---------- Credit may be taken for unplanned events that satisfy this SR. ---------- Verify each ~~diesel generator~~ DG battery charger ~~is capable of recharging its associated battery from a service or capacity discharge test while supplying normal loads~~ supplies ≥ 20 amps at greater than or equal to the minimum established float voltage for ≥ 4 hours. OR Verify each DG battery charger can recharge the battery to the fully charged state within 24 hours while supplying the largest combined demands of the various continuous steady state loads, after a battery discharge to the bounding design basis event discharge state.	18 months
SR 3.8.4.~~13~~7	----------NOTES---------- 1. The modified performance discharge test in SR 3.8.4.~~14~~6.7 may be performed in lieu of the service test in SR 3.8.4.~~13~~7 ~~once per 60 months~~. 2. This Surveillance is not performed in MODE 1, 2, 3, or 4 for required vital batteries. Credit may be taken for unplanned events that satisfy this SR. ---------- Verify battery capacity is adequate to supply, and maintain in OPERABLE status, the required emergency loads and any connected nonsafety loads for the design duty cycle when subjected to a battery service test.	18 months

(continued)

Proposed WBN 1 TS 3.8.4 Changes (Continued) (same for WBN 2)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.4.14	NOTES This Surveillance is not performed in MODE 1, 2, 3, or 4 for required vital batteries. Credit may be taken for unplanned events that satisfy this SR.	
	Verify battery capacity is ≥ 80% of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test.	60 months AND 12 months when battery shows degradation or has reached 85% of expected life with capacity < 100% of manufacturer's rating AND 24 months when battery has reached 85% of the expected life with capacity ≥ 100% of manufacturer's rating

Proposed WBN 1 TS 3.8.5 Changes (same for WBN 2)

3.8 ELECTRICAL POWER SYSTEMS

3.8.5 DC Sources - Shutdown

LCO 3.8.5 Vital DC and Diesel Generator (DG) DC electrical power subsystems shall be OPERABLE to support the DC electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution Systems - Shutdown" and to support the Diesel Generators (DGs) required by LCO 3.8.2, "AC Sources - Shutdown."

---NOTES---

1. Vital Battery V may be substituted for any of the required vital batteries.

2. The C-S DG and its associated DC electrical power subsystem may be substituted for any of the required DGs and their associated DC electrical power subsystems.

APPLICABILITY: MODES 5 and 6,
During movement of irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or two required vital battery charger(s) on one subsystem inoperable. AND The redundant subsystem vital battery and charger(s) OPERABLE.	A.1 Restore battery terminal voltage to greater than or equal to the minimum established float voltage. AND A.2 Verify battery float current ≤ 2 amps. AND A.3 Restore battery charger(s) to OPERABLE status.	2 hours Once per 12 hours 7 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~A~~B. One or more required vital DC electrical power subsystems inoperable for reasons other than Condition A. OR Required Actions and associated Completion Time of Condition A not met.	~~A~~B.1.1 Declare affected required feature(s) inoperable. OR ~~A~~B.2.1 Suspend CORE ALTERATIONS. AND ~~A~~B.2.2 Suspend movement of irradiated fuel assemblies. AND ~~A~~B.2.3 Initiate action to suspend operations involving positive reactivity additions. AND ~~A~~B.2.4 Initiate action to restore required DC electrical power subsystems to OPERABLE status.	Immediately Immediately Immediately Immediately Immediately
~~B~~C. One required DG DC electrical power subsystem inoperable.	~~B~~C.1 Declare associated DG inoperable.	Immediately

Proposed WBN 1 TS 3.8.5 Changes (Continued) (same for WBN 2)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE				FREQUENCY
SR 3.8.5.1	----------NOTE---------- The following SRs are not required to be performed: SR 3.8.4.~~11~~5, SR 3.8.4.~~12~~6, and SR 3.8.4.~~13~~7 ~~and SR 3.8.4.14~~. ----------			
	For DC sources required to be OPERABLE, the following SRs are applicable:			In accordance with applicable SRs
	SR 3.8.4.1	SR 3.8.4.6	~~SR 3.8.4.11~~	
	SR 3.8.4.2	SR 3.8.4.7	~~SR 3.8.4.12~~	
	SR 3.8.4.3	~~SR 3.8.4.8~~	~~SR 3.8.4.13~~	
	SR 3.8.4.4	~~SR 3.8.4.9~~	~~SR 3.8.4.14~~	
	SR 3.8.4.5	~~SR 3.8.4.10~~		

Proposed WBN 1 TS 3.8.6 Changes (same for WBN 2)

3.8 ELECTRICAL POWER SYSTEMS

3.8.6 Battery ~~Cell~~ Parameters

LCO 3.8.6 Battery ~~cell~~ parameters for Train A and Train B electrical power subsystem 125 V vital batteries and 125 V diesel generator (DG) batteries shall be within ~~the~~ limits ~~of Table 3.8.6-1~~.

APPLICABILITY: When associated DC electrical power subsystems and DGs are required to be OPERABLE.

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each battery bank.

~~CONDITION~~	~~REQUIRED ACTION~~	~~COMPLETION TIME~~
~~A. One or more batteries with one or more battery cell parameters not within Category A or B limits.~~	~~A.1 Verify pilot cells electrolyte level and float voltage meet Table 3.8.6-1 Category C limits.~~	~~1 hour~~
	~~AND~~	
	~~A.2 Verify battery cell parameters meet Table 3.8.6-1 Category C limits.~~	~~24 hours~~ ~~AND~~ ~~Once per 7 days thereafter~~
	~~AND~~	
	~~A.3 Restore battery cell parameters to Category A and B limits of Table 3.8.6-1.~~	~~31 days~~

~~(continued)~~

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or two required vital battery(ies) on one subsystem with one or more battery cells float voltage < 2.07 V.	A.1 Perform SR 3.8.4.1. AND A.2 Perform SR 3.8.6.1. AND A.3 Restore affected cell voltage ≥ 2.07 V.	2 hours 2 hours 24 hours
B. One or two required vital battery(ies) on one subsystem with float current > 2 amps.	B.1 Perform SR 3.8.4.1. AND B.2 Restore vital battery float current to ≤ 2 amps.	2 hours 12 hours
C. One DG battery with one or more battery cells float voltage < 2.07 V.	C.1 Perform SR 3.8.4.2. AND C.2 Perform SR 3.8.6.2. AND C.3 Restore affected cell voltage ≥ 2.07 V.	2 hours 2 hours 24 hours
D. One DG battery with float current > 1 amp.	D.1 Perform SR 3.8.4.2. AND D.2 Restore vital battery float current to ≤ 1 amp.	2 hours 12 hours

(continued)

Proposed WBN 1 TS 3.8.6 Changes (Continued) (same for WBN 2)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
----------NOTE---------- Required Action E.2 shall be completed if electrolyte level was below the top of plates. ----------	----------NOTE---------- Required Actions E.1 and E.2 are only applicable if electrolyte level was below the top of plates. ----------	
E. One or two required vital battery(ies) on one subsystem with one or more cells electrolyte level less than minimum established design limits. OR One DG battery with one or more cells electrolyte level less than minimum established design limits.	E.1 Restore electrolyte level to above top of plates. AND E.2 Verify no evidence of leakage. AND E.3 Restore electrolyte level to greater than or equal to minimum established design limits.	8 hours 12 hours 31 days
F. One or two required vital battery(ies) on one subsystem with pilot cell electrolyte temperature less than minimum established design limits. OR One DG battery with pilot cell electrolyte temperature less than minimum established design limits.	F.1 Restore battery pilot cell temperature to greater than or equal to minimum established design limits.	12 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
G. One or more batteries in redundant subsystems with battery parameters not within limits. OR More than one DG battery with battery parameters not within limits.	G.1 Restore battery parameters to within limits.	2 hours
~~B~~H. Required Action and associated Completion Time of Condition A, B, C, D, E, F, or G not met. OR One or two required vital battery(ies) on one subsystem with one or more battery cells float voltage < 2.07 V and float current > 2 amps. OR One DG battery with one or more battery cells float voltage < 2.07 V and float current > 1 amp. ~~One or more batteries with average electrolyte temperature of the representative cells < 60°F for vital batteries and < 50°F for DG batteries.~~ ~~OR~~ ~~One or more batteries with one or more battery cell parameters not within Category C values.~~	~~B~~H.1 Declare associated battery inoperable.	Immediately

Proposed WBN 1 TS 3.8.6 Changes (Continued) (same for WBN 2)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
~~SR 3.8.6.1~~	~~Verify battery cell parameters meet Table 3.8.6-1 Category A limits.~~	~~7 days~~
~~SR 3.8.6.2~~	~~Verify battery cell parameters meet Table 3.8.6-1 Category B limits.~~	~~92 days~~ ~~AND~~ ~~Once within 24 hours after a battery discharge < 110 V for vital batteries (113.5 V for vital battery V) or 106.5 V for DG batteries~~ ~~AND~~ ~~Once within 24 hours after a battery overcharge > 150 V for vital batteries (155 V for vital battery V) or 145 V for DG batteries~~
~~SR 3.8.6.3~~	~~Verify average electrolyte temperature of representative cells is ≥ 60°F for vital batteries and ≥ 50°F for the DG batteries.~~	~~92 days~~

SURVEILLANCE		FREQUENCY
SR 3.8.6.1	----------NOTE---------- Not required to be met when vital battery terminal voltage is less than the minimum established float voltage of SR 3.8.4.1. ---------- Verify each vital battery float current is ≤ 2 amps.	7 days
SR 3.8.6.2	----------NOTE---------- Not required to be met when DG battery terminal voltage is less than the minimum established float voltage of SR 3.8.4.2. ---------- Verify each DG battery float current is ≤ 1 amp.	7 days
SR 3.8.6.3	Verify each required vital battery and each DG battery pilot cell float voltage is ≥ 2.07 V.	31 days
SR 3.8.6.4	Verify each required vital battery and each DG battery connected cell electrolyte level is greater than or equal to minimum established design limits.	31 days
SR 3.8.6.5	Verify each required vital battery and each DG battery pilot cell temperature is greater than or equal to minimum established design limits.	31 days
SR 3.8.6.6	Verify each required vital battery and each DG battery connected cell float voltage is ≥ 2.07 V.	92 days

Proposed WBN 1 TS 3.8.6 Changes (Continued) (same for WBN 2)

SURVEILLANCE		FREQUENCY
SR 3.8.6.7	----------NOTES---------- This Surveillance is not performed in MODE 1, 2, 3, or 4 for required vital batteries. Credit may be taken for unplanned events that satisfy this SR. ---------- Verify battery capacity is ≥ 80% of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test.	60 months AND 12 months when battery shows degradation or has reached 85% of expected life with capacity < 100% of manufacturer's rating AND 24 months when battery has reached 85% of the expected life with capacity ≥ 100% of manufacturer's rating

~~Table 3.8.6-1 (page 1 of 1)~~
~~Battery Cell Parameters Requirements~~

~~PARAMETER~~	~~CATEGORY A: LIMITS FOR EACH DESIGNATED PILOT CELL~~	~~CATEGORY B: LIMITS FOR EACH CONNECTED CELL~~	~~CATEGORY C: ALLOWABLE LIMIT FOR EACH CONNECTED CELL~~
~~Electrolyte Level~~	~~> Minimum level indication mark, and ≤ 1/4 inch above maximum level indication mark (a)~~	~~> Minimum level indication mark, and ≤ 1/4 inch above maximum level indication mark (a)~~	~~Above top of plates, and not overflowing~~
~~Float Voltage~~	~~≥ 2.13 V~~	~~≥ 2.13 V~~	~~> 2.07 V~~
~~Specific Gravity (b)(c)~~	~~≥ 1.200~~	~~≥ 1.195~~ ~~AND~~ ~~Average of all connected cells > 1.205~~	~~Not more than 0.020 below average of all connected cells~~ ~~AND~~ ~~Average of all connected cells ≥ 1.195~~

~~(a) It is acceptable for the electrolyte level to temporarily increase above the specified maximum level during equalizing charges provided it is not overflowing.~~

~~(b) Corrected for electrolyte temperature and level. Level correction is not required, however, when battery charging is < 2 amps when on float charge for vital batteries and < 1.0 amp for DG batteries.~~

~~(c) A battery charging current of < 2 amps when on float charge for vital batteries and < 1.0 amp for DG batteries is acceptable for meeting specific gravity limits following a battery recharge, for a maximum of 31 days. When charging current is used to satisfy specific gravity requirements, specific gravity of each connected cell shall be measured prior to expiration of the 31 day allowance.~~

Proposed New WBN 1 TS, “Battery Monitoring and Maintenance Program” (same for WBN 2)

5.7.2.22 Battery Monitoring and Maintenance Program

This Program provides controls for battery restoration and maintenance. The program shall be in accordance with IEEE Standard (Std) 450-2002, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications," as endorsed by Regulatory Guide 1.129, Revision 2 (RG), with RG exceptions and program provisions as identified below:

a. The program allows the following RG 1.129, Revision 2 exceptions:

1. Battery temperature correction may be performed before or after conducting discharge tests.

2. RG 1.129, Regulatory Position 1, Subsection 2, "References," is not applicable to this program.

3. In lieu of RG 1.129, Regulatory Position 2, Subsection 5.2, "Inspections," the following shall be used: "Where reference is made to the pilot cell, pilot cell selection shall be based on the lowest voltage cell in the battery."

4. In Regulatory Guide 1.129, Regulatory Position 3, Subsection 5.4.1, "State of Charge Indicator," the following statements in paragraph (d) may be omitted: "When it has been recorded that the charging current has stabilized at the charging voltage for three consecutive hourly measurements, the battery is near full charge. These measurements shall be made after the initially high charging current decreases sharply and the battery voltage rises to approach the charger output voltage."

5. In lieu of RG 1.129, Regulatory Position 7, Subsection 7.6, "Restoration", the following may be used: "Following the test, record the float voltage of each cell of the string."

b. The program shall include the following provisions:

1. Actions to restore battery cells with float voltage < 2.13 V;

2. Actions to determine whether the float voltage of the remaining battery cells is ≥ 2.13 V when the float voltage of a battery cell has been found to be < 2.13 V;

3. Actions to equalize and test battery cells that had been discovered with electrolyte level below the top of the plates;

4. Limits on average electrolyte temperature, battery connection resistance, and battery terminal voltage; and

5. A requirement to obtain specific gravity readings of all cells at each discharge test, consistent with manufacturer recommendations.

Variations from TSTF-500 and Model SE

- Current Limiting Condition for Operation (LCO) 3.8.4 refers to 'four Channels of vital DC.' The proposed change refers to 'Train A and Train B vital DC electrical power subsystems' to align the WBN TS to TSTF-500 and NUREG-1431. The proposed changes also make the LCO consistent with current Action statements that refer to subsystems.
- WBN TS includes requirements for DG DC electrical power subsystems. The proposed changes also apply the TSTF-500 changes to the DG DC electrical power subsystems. This variation requires separate Actions and Surveillance Requirements where necessary to reflect the design differences.
- WBN Units 1 and 2 designed with a fifth qualified vital battery. Therefore, proposed changes include addition of the word "required" to indicate that only four of the five vital batteries are required to be operable in Modes 1 through 4.
- WBN Unit 1 LCO 3.8.4 and LCO 3.8.5 Notes refer to substituting the C-S DG and associated DC subsystems for any required DG and associated DC subsystem. These notes are being removed, consistent with WBN Unit 2 TS and change made to WBN Unit 1 LCO 3.8.1 Note in Amendment 84 (dated July 6, 2010).
- These variations do not affect the applicability of the published Model Safety Evaluation (SE).

TSTF-500 Options

- TVA is proposing a Completion Time longer than 72 hours for restoring an inoperable vital battery charger to operable status.
- TVA is not requesting a Completion Time longer than 72 hours for restoring an inoperable DG battery charger to operable status.
- TVA is not requesting a Completion Time longer than 12 hours to restore battery float current with one or two required battery chargers on one subsystem inoperable.
- TVA is not requesting a Completion Time longer than 2 hours for one or two batteries on one subsystem inoperable.
- TVA is requesting adoption of new LCO 3.8.5, Condition A, as the potential exists to require both vital DC electrical power subsystems during a portion of the LCO 3.8.5 Applicability.
- These variations do not affect the applicability of the published Model SE.

Commitments

TVA is planning to include the following regulatory commitments in the LAR, as prescribed in TSTF-500, Revision 2:

- Include in the FSAR a requirement to maintain a 2 percent design margin for the vital batteries which corresponds to a 2 amp float current value that is an indication that the battery is 98 percent charged.
- Include in the FSAR a requirement to maintain a 2 percent design margin for the DG batteries which corresponds to a 1 amp float current value that is an indication that the battery is 98 percent charged.
- The licensee-controlled program, required and described in TS Section 5.7.2, "Programs and Manuals," and titled, “Battery Monitoring and Maintenance Program,” will require verification of the selection of the pilot cell or cells when performing SR 3.8.6.5.
- A licensee-controlled program will require the availability of a means to charge the batteries that is capable of being supplied power from a power source that is independent of the offsite power supply.

Schedule for Submittal

- September 2018 – Pre-submittal meeting with NRC
- October 2018 – Submit LAR to NRC
- Request NRC approval by October 2019 with a 90-day implementation period to support the WBN Unit 1 outage scheduled for Spring 2020 (U1R16).
- December 2018 – Telecon or meeting to discuss any NRC questions

Summary

The proposed TS adopts TSTF-500 and adds completion times for inoperable vital and DG DC battery chargers.

Closing Remarks

- Proposed LAR is needed to support a two-unit operating site at WBN.
- Due to the commonality of the AC electrical power systems, performing maintenance on 6.9 kV (and associated 480 V) shutdown boards for a shutdown unit affects operability on the operating unit.
- The LAR will extend the completion times for inoperable vital and DG DC battery chargers and moves the battery preventative maintenance requirements to the Battery Monitoring and Maintenance Program.
- This LAR is needed to support the WBN Unit 1 outage scheduled for Spring 2020.


TVA