From:	Sreenivas, V
Sent:	Wednesday, July 13, 2016 2:36 PM
To:	Pierce, Chuck R.
Cc:	Vidal, Ozzie C.; Joyce, Ryan M.; McElroy, G. Ken; Orenak, Michael; Foli, Adakou; Otto, Ngola; Zimmerman, Jacob
Subject:	EDWIN I. HATCH NUCLEAR PLANT, UNITS 1 AND 2 – REQUEST FOR ADDITIONAL INFORMATION (CAC NOS. MF6611 AND MF6612)

By letter dated August 11, 2015, as supplemented by letters dated March 16 and April 4, 2016, the Southern Nuclear Operating Company (SNC) submitted a license amendment request (LAR) to revise the Technical Specifications (TS) regarding TSTF-500, "DC [direct current] Electrical Rewrite – Update to TSTF-360," for the Edwin I. Hatch Nuclear Plant, Units 1 and 2. The LAR proposes to revise TS requirements related to DC electrical systems in TS limiting condition for operation (LCO) 3.8.4, "DC Sources - Operating," LCO 3.8.5, "DC Sources - Shutdown," and LCO 3.8.6, "Battery Cell Parameters." A new "Battery Monitoring and Maintenance Program" is being proposed for Section 5.5 "Administrative Controls – Programs and Manuals."

Upon reviewing the March 16 and June 17, 2016, supplements, the U.S. Nuclear Regulatory Commission staff has found that further information is needed to complete its review. The Electrical Engineering Branch has reviewed the LAR and developed the following questions to complete its review:

1. In Attachment 3 of the LAR dated August 11, 2015, the licensee proposed revised TS 3.8.5, Condition C that states: "One or more required diesel generators (DG) **or** station service DC electrical power subsystems inoperable for reasons other than Conditions A or B." Condition A applies to DG DC subsystems and Condition B applies to station service DC subsystems.

   Since Conditions A and B are applicable to two different DC subsystems (i.e., DG and station service), please address the conditions for inoperable DG DC subsystems and inoperable station service DC subsystems for consistency with TS 3.8.4. Please justify why two separate actions are not proposed.

2. In Attachment 3 of the LAR, the licensee proposed new TS 3.8.4, Condition B, which requires that the DG battery float current be verified to see whether it is less than or equal to 5 amps. The licensee explains that the HNP Units 1 and 2 station service batteries and DG batteries have different required float currents for determining that their respective batteries are charged. This requires different conditions for station service battery chargers inoperable and DG battery chargers inoperable, since different values of battery float current are required to be verified. In the proposed TS 3.8.4, Condition B requires that the DG battery float current be verified to see whether it is less than or equal to 5 amps. Similarly, in TS 3.8.4, Condition D requires that the station service battery float current be verified to see whether it is less than or equal to 20 amps. In the revised TS Bases, B3.8.4 states that the 5-amp and 20-amp values for the DG and station service battery float currents, respectively, is based on returning the battery to 95% charge and assumes a 5% design margin for the battery. However, the licensee did not provide an explanation

of how the actual values for the float current for the station service and diesel generator batteries were derived.

Please provide a summary of the evaluation used to establish the values of the 5-amp and 20-amp float currents for the HNP Units 1 and 2 DG DC batteries and station service DC batteries, respectively.

3. In Attachment 1 of the LAR, the licensee proposed a variation with respect to pilot cell selection. The licensee stated that HNP will not take temperature into account when selecting the battery pilot cells because the HNP station service and diesel generator batteries do not exhibit a temperature deviation across the battery of greater than 5 degrees Fahrenheit in accordance with the IEEE Standard 450-2002. As discussed in the TSTF-500, Section 4.0, "Technical Analysis," batteries are normally sized with temperature, aging, and design correction margins. Regarding the selection of pilot cells, the TSTF-500 states: "Previously, average battery temperature was monitored instead of pilot cell temperature. As a result, temperature was not a criterion with selecting a pilot cell. In order to use pilot cell temperature instead of the average battery temperature, temperature must be used as a criteria when selecting the pilot cell. […] For batteries where it could be shown that the maximum temperature deviation across the battery did not exceed the IEEE 450 recommended maximum of 5°F [degrees Fahrenheit], the NRC has accepted that the cell temperature was not a critical parameter. Therefore, for these batteries, cell temperature did not have to be taken into account when selecting pilot cells."

   Please provide information to support the fact that HNP station service and diesel generator batteries do not exhibit a temperature deviation across the battery of greater than 5 degrees Fahrenheit. Please provide analysis supporting temperature deviations for the HNP batteries based on operation experience. Also, please discuss provide the method for selection of pilot cells at HNP.

4. In HNP LAR, the licensee proposed a new SR 3.8.6.6 (relocation and revision of current SR 3.8.4.8), where the DG and station service battery capacity is verified to ensure that the battery capacity is greater than 80 percent of the manufacturer's rating. The licensee proposed to specify the surveillance frequency for new SR 3.8.6.6 in the Surveillance Frequency Control Program (SFCP) per the provisions of TSTF-425, Revision 3, "Relocate Surveillance Frequencies to Licensee Control – RITSTF Initiative 5b." Thus, new SR 3.8.6.6 frequency states "In Accordance with the Surveillance Frequency Control Program." However, HNP current SR 3.8.4.8 has 3 frequencies, as follows:

   In Accordance with the Surveillance Frequency Control Program
   AND
   12 months when battery shows degradation or has reached 85% of expected life with capacity less than 100% of the manufacturer's rating
   AND
   24 months when battery has reached 85% of expected life with capacity is greater than or equal to 100% of the manufacturer's rating.

The staff notes that the proposed frequency for new SR 3.8.6.6 is a change from the HNP current TS and a deviation from TSTF-500, Rev. 2 (Improved Standard TS (ISTS) Rev. 1) SR 3.8.6.6. TSTF-500, SR 3.8.6.6 frequencies states: "60 months AND 12 months when battery shows degradation or has reached 85% of expected life with capacity less than 100% of the manufacturer's rating AND 24 months when battery has reached 85% of expected life with capacity is greater than or equal to 100% of the manufacturer's rating."

Furthermore, according to TSTF-425, all frequencies can be relocated to the SFCP except frequencies that are related to specific conditions (e.g., battery degradation, age and capacity). The 12-month and 24-month frequencies of HNP current SR 3.8.4.8 and TSTF-500, SR 3.8.6.6 are related to battery degradation and age and, therefore, should not be relocated to the SFCP.

Please provide justification for the deviation from HNP current TS and TSTF-500, Rev. 2 (ISTS Rev. 1) with regards to the frequency for new SR 3.8.6.6. Also, if the 12-month and 24-month frequencies for HNP current SR 3.8.4.8 are relocated to the SFCP for new SR 3.8.6.6, please provide justification for relocating these degradation and age-related frequencies to the SFCP.

5. In Attachment 3 of the HNP LAR, the licensee proposed new Condition E to TS 3.8.6 that applies to a battery found with a pilot cell electrolyte temperature less than the minimum established design limit. The required action associated with new Condition E requires the licensee to restore the pilot cell electrolyte temperature to greater than or equal to the minimum established design limits within 12 hours. In Attachment 1 of the LAR, the licensee states: "SNC verifies that temperature excursion could reasonably expect to be detected and corrected prior to the average battery electrolyte temperature dropping below the minimum electrolyte temperature."

   Please discuss how the battery room temperature is monitored at HNP, and provide the minimum frequency at which the temperature of the battery room is monitored. Also, please explain how the licensee would restore battery room temperature if it was outside the temperature design limits.

6. In Attachment 3 of the LAR, the licensee proposed adopting TSTF-500 TS 3.8.4, Condition A and Condition E as new Condition B and revised Condition G, respectively, for HNP TS 3.8.4. HNP TS 3.8.4 new Condition B applies when the Unit DG DC battery charger on one subsystem is inoperable. When the required action and associated completion time associated with new Condition B are not met, revised Condition G requires the plant to be in Mode 3 in 12 hours and Mode 4 in 36 hours. However, TSTF-500, Condition E requires the DG associated with the battery charger to be declared inoperable immediately when the required action and completion time of Condition A are not met.

   Please provide justification for deviating from the required action and completion time for TSFT-500, TS 3.8.4, Condition E.

7. In Attachment 3 of the LAR, the licensee proposed adding new Conditions A and B to HNP Units 1 and 2 TS 3.8.5.

   New Condition A states: "One required battery one or more required DG DC subsystems inoperable AND the redundant subsystem battery and required chargers OPERABLE."

   New Condition B states: "One or more required battery chargers on one required station service DC subsystems inoperable AND the redundant subsystem battery and required chargers operable."

   The actions statements for new Conditions A and B actions are based on the adoption of TSTF-500 TS 3.8.5 Condition A. Per TSTF-500, Condition A is included in the TS only when the plant-specific implementation of TS 3.8.5 may require both a DC electrical power subsystem and its redundant subsystem to be operable.

   Please clarify whether HNP Units 1 and 2 TS requires the above-mentioned redundant subsystems to be operable. If the redundant subsystems are required to be operable, please consider adding the terms "required DG DC" and "required station service DC" to the redundant subsystems in Condition A and Condition B, respectively, for consistency with the first parts of the Conditions. If the redundant subsystems are not required per TS 3.8.5, please justify the adoption of TSTF-500, TS 3.8.5, Condition A.

8. In Attachment 3 of the LAR, the licensee proposed a battery cell float voltage limit of "greater than 2.07 Volt" as reflected in proposed TS 3.8.6 required action A.3, SR 3.8.6.2, and SR 3.8.6.5. According to TSTF-500 TS 3.8.6, the battery cell float voltage limit is "greater than or equal to 2.07 Volt."

   Please provide justification for deviating from the TSTF-500 TS 3.8.6 with respect to the battery cell float voltage limit.

9. In Attachment 3 of the LAR, the licensee proposed an alternative criterion for new TS SR 3.8.4.2 which states, "Verify each 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." 24 hours is bracketed in TSTF-500.

   Please explain the basis for 24 hours.

Please provide your response by August 12, 2016. If you have any questions, please call me at 301-415-2597 or Mike Orenak at 301-415-3229.

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