

NRR-PMDAPEm Resource

From: Chawla, Mahesh
Sent: Tuesday, August 05, 2014 3:16 PM
To: Davis, J.Michael (J.Michael.Davis@nexteraenergy.com);
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Cc: Pelton, David; Zimmerman, Jacob; Foli, Adakou; Ray, Sheila; Haeg, Lucas; Steffes, Jakob;
Lipa, Christine; Phillips, Charles; Mathew, Roy; Martinez-Navedo, Tania
Subject: Request For Additional Information - Duane Arnold - LAR - TS Change Regarding Battery
Terminal and Charger Voltage and Amperage Section Affected 3.8.4 - MF2763

By letter dated August 29, 2013 (Agencywide Document Access Management System Accession Number (ML13247A275), Nextera Energy Duane Arnold, LLC (the licensee) requested an amendment to the Renewed Facility Operating License No. DPR-49 for the Duane Arnold Energy Center (DAEC). The proposed change would revise DAEC Technical Specifications (TS) Surveillance Requirements (SRs) 3.8.4.1 and 3.8.4.6 by changing the battery terminal voltage and the battery charger voltage and amperage to account for the replacement of the existing 58 cell batteries with new 60 cell batteries.

On May 28, 2014 (ML14154A007) the licensee provided response to NRC staff's request for additional information sent via an email on April 24, 2014 (ML14115A441). In its letter dated July 24, 2014 (ML14209A921), the licensee provided a letter from the battery manufacturer C&D Technologies, Inc., regarding the impacts of equalizing voltage range of 2.28-2.29 volts per cell on the DAEC batteries. The NRC staff reviewed the information provided in this letter and has following comments and additional request for information.

Request For Additional Information

This equalizing voltage range is outside the recommended equalizing voltage range for this type of cells; the recommended equalizing voltage range is 2.33 to 2.38 volts per cell. The manufacturer's letter stated that the time required for completing a recharge would be extended when the voltage is limited to 2.29 Vpc and there would be limited mixing of the electrolyte such that it would take a long time for the specific gravity reading to represent the strength of the electrolyte.

The licensee clarified that DAEC only discharges the batteries during extended/refuel outages and the equalization/recharge portion of the testing procedures continues until the batteries are properly charged and all the individual cell voltages and specific gravities are verified before the batteries are placed back on float charge.

1. DAEC Updated Final Safety Analysis Report (UFSAR) Chapter 8, Section 8.3.2.1.2, states:
"Each battery charger is sized to restore its battery to full charge after a 4-hour emergency discharge while carrying normal steady state DC loads."
 - a. Provide the design basis/duration for DAEC battery chargers to fully charge their respective batteries after a 4-hour emergency discharge while carrying normal steady state DC loads. In this case, discuss the impacts of the extended recharge time due to the lower equalizing voltage per cell on the battery chargers, the operability of the batteries, and the DC power systems.
 - b. Since the manufacturer's letter stated that it would take a long time for the specific gravity reading to represent the strength of the electrolyte, discuss how the licensee would ensure that the batteries are fully charge after a 4-hour emergency discharge while being connected to the DC system.
2. Confirm whether the battery recharge time is credited in an accident analysis. If so, discuss the impacts of a longer recharge time on the results of the analysis.

Please arrange a teleconference to discuss this information with the NRC staff at your earliest. Thanks

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