NRR-PMDAPEm Resource

From: Kuntz, Robert
Sent: Thursday, September 22, 2016 9:16 AM
To: 'Loeffler, Richard A.'
Subject: Request for Additional Information RE: Monticello license amendment request for Battery Charger SR revision (CAC MF7576)

Mr. Loeffler,

By letter dated April 4, 2016 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16099A097), Xcel Energy (the licensee) requested an amendment to the Operating License for the Monticello Nuclear Generating Plant (MNGP). The licensee proposed changes to the Technical Specifications (TS) Surveillance Requirement (SR) 3.8.4.2 associated with TS 3.8.4, "DC Sources – Operating."

The Nuclear Regulatory Commission (NRC) staff is reviewing the submittal and has determined that the additional information below is needed to complete its review. A response to this request for additional information is expected by October 1, 2016. If Xcel Energy cannot supply a response by that date contact me.

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REQUEST FOR ADDITIONAL INFORMATION REGARDING
REVISION TO TECHNICAL SPECIFICATIONS
SURVEILLANCE REQUIREMENT SR 3.8.4.2 FOR BATTERY CHARGER
MONTICELLO NUCLEAR GENERATING PLANT
(CAC NO. MF7576)

RAI 1

TS Bases Page B.3.8.4-7, regarding SR 3.8.4.2 states as follows:

> The ampere requirements are based on the output rating of the chargers for Division 1 and the rating of circuit breakers in the associated distribution cabinet for Division 2. The voltage requirements are based on the charger voltage level after a response to a loss of AC power. The time period is sufficient for the charger temperature to have stabilized and to have been maintained for at least 2 hours.

Enclosure 1, Pages 5 and 6 of the LAR states:

> The 125 VDC System battery charger sizing was evaluated by calculating the re- charge times considering the coincident 125 VDC System loads also supplied by the charger, utilizing the IEEE 946-1985 methodology.
>
> MNGP Updated Safety Analysis Report [USAR] Section 8.5.2.1 states: Each 125 VDC [battery] charger is capable of carrying the normal 125 VDC load and at the same time supplying additional charging current to keep the batteries in a fully charged condition.

> IEEE 946-1985 recommends that a battery charger have an output current capability greater than the continuous loads plus the largest combination of non-continuous loads that would be likely to occur simultaneously during normal plant operation. This criterion is met if the battery charger output current exceeds the normal continuous system loads by an amount adequate to bound the non-continuous load combinations likely during normal plant operation.

Explain the above apparent discrepancy in terms of the basis for sizing of the 125 VDC battery charger in the TS bases statements and LAR and USAR statements.

RAI 2

In LAR Enclosure 2, the licensee provided MNGP Calculation 91-006, Revision 4, "125 VDC Battery Charger Sizing." According to this calculation, and consistent with USAR Section 8.5, "[e]ach 125 VDC charger is capable of carrying the normal load and at the same time supplying additional charging current to keep the batteries in a fully charged condition." Additionally, IEEE 946-1985 recommends that the charger output current capability is greater than the continuous loads plus the largest combination of non-continuous loads [as defined in IEEE 485-1983, Section 4.2.2] likely to occur simultaneously during normal plant operation.

IEEE 485-1983, Section 4.2.2, states as follows:

> Non-continuous loads are energized during only a portion of the duty cycle. These loads may come on at any time within the duty cycle and may be on for a set length of time; be removed automatically or by operator action; or continue to the end of the duty cycle. Typical non-continuous loads are:
>
> (1) Emergency pump motors
> (2) Critical ventilation system motors
> (3) Communication system power supplies
> (4) Fire protection systems

Provide the non-continuous loads and their ampere rating considered for the battery charger sizing based on normal operation criteria.

RAI 3

On page 11 of the Battery Charger Calculation attached to the LAR, the following is stated:

> Note that AR [action report] #01131103 documented an issue with the 2nd method of determining acceptance for Tech Specs surveillance requirement SR 3.8.4.2, i.e. that the battery chargers can accomplish a re-charge in <= 8 hours after a design basis discharge event (SBO). AR # 01456839 formally documented this issue as a non-conservative Tech Specs surveillance requirement and established administrative limit for the first method of meeting SR 3.8.4.2. The administrative limit 125 VDC system battery charger output current was established as >= 75 amps.

On pages 11 and 12 of the Battery Charger Calculation attached to the LAR, the following is also stated:

> Final resolution of the Tech Spec issue described in ARs 01131103 and 01456839 requires a permanent change to the 1st method of meeting SR 3.8.4.2. The criteria should be changed to >= 75 amps for 4 hours (as is presently administratively controlled).

On Page B.3.8.4-3 of TS basis, the following is stated: "Each station battery charger has sufficient excess capacity to restore the battery from the design minimum charge to its fully charged state within 24 hours while supplying normal steady state loads." However, the NRC staff notes that USAR, Section 8.5 does not provide

the basis for a battery charger capability of recharging a discharged battery within a certain time period for both 250 VDC and 125 VDC subsystems.

Explain why the USAR does not provide a basis for a battery charger capability of recharging a discharged battery within a certain time, consistent with TS bases and the LAR calculations for re-charging a discharged battery.

RAI 4

According to MNGP, USAR, Section 8.5.2.2, the 125 V Battery Chargers have a DC output rating of 80 Amps for main chargers and 50 Amps for the Common Standby Charger. In TS Bases 3.8.4, regarding Action A.3, the following is stated:

> Required Action A.3 limits the restoration time for the inoperable battery charger to 7 days. This action is applicable if an alternate means of restoring battery terminal voltage to greater than or equal to the minimum established float voltage has been used (e.g., balance of plant non-Class 1E battery charger). The 7 day Completion Time reflects a reasonable time to effect restoration of the qualified battery charger to OPERABLE status.

Based on above, the 7 day Completion Time is applicable if a spare [common standby] battery charger can serve the purpose of a Class 1E main battery Charger becoming inoperable for 7 days. Since the 125 VDC Common Standby Charger is rated only 50 amps, and the SR 3.8.4.2 for the main chargers is proposed to be revised from 50 amp to 75 amps, explain how the spare/Common Standby Battery Charger of 50 amp rating can serve the purpose of a main charger of 80 amp rating for 7 days, to meet the intent of TS 3.8.4, Action A.3.

RAI 5

According to the first option of the SR 3.8.4.2, the 125 VDC charger is required to verify that it can supply ≥ 75 amps at greater than or equal to the minimum established float voltage for ≥ 4 hours. However, TS Bases for SR 3.8.4.2 states charging only at the minimum established float voltage.

Explain how testing the battery at ≥ 75 amps at greater than or equal to the minimum established float voltage for ≥ 4 hours provides verification of the designed capability of the battery charger. Provide the charger specifications regarding its allowable output voltage and current limit setting ranges. Briefly explain how the SR is performed for the first option, and the actual output voltage and current limit settings used during performance of SR 3.8.4.2.

Hearing Identifier: NRR_PMDA
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Mail Envelope Properties (Robert.Kuntz@nrc.gov20160922091500)

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