



# **NRC Meeting**

## **Revise Footnote in TS 3.8.1**

**March 3, 2011**

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## Xcel Energy Participants

Jon Anderson – Regulatory Affairs Manager

Corey Hessen – General Manager - Engineering

Thomas Roddey – Prairie Island Site Engineering  
Director

Marcia Thompson – Project Sponsor

Bob Flaaen – Plant Engineering Interface

Dale Vincent – Licensing Engineer

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# Agenda

- Introductions -Jon Anderson
  - Meeting purpose -Jon Anderson
  - Scope of LAR -Jon Anderson
  - LAR Background -Dale Vincent
  - Proposed TS and Bases changes -Dale Vincent
  - Battery Charger Modification -Marcia Thompson
  - Basis for Alternative Modification -Marcia Thompson
  - Requested Schedule Basis -Thomas Roddey
  - RAI discussion -Dale Vincent
  - Summary -Thomas Roddey
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## Meeting Goals

- Discuss LAR to revise SR 3.8.1.10.c footnote
  - Provide technical basis for battery charger modification
  - Schedule basis
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## Scope of LAR

- Revise footnote
- Battery charger modification under 10 CFR 50.59

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## LAR Background -1

- 12 Battery Charger manual actions identified
  - D2 operability question
  - Exigent LAR October 14, 2010
  - SR 3.8.1.10.c footnote added
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## LAR Background - 2

- October 2010 LAR stated:

NSPM is planning a modification to the 12 Battery Charger that will automatically shed the battery charger during an undervoltage event (e.g. LOOP, SI with LOOP or other undervoltage condition) and then repower the battery charger back on the bus within the 60 seconds required by the current TS.

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## LAR Background - 3

- Current SR 3.8.1.10.c footnote:

A modification will be installed during or prior to the Unit 1 2011 refueling outage to automatically shed the 12 Battery Charger from its normal bus and then automatically repower the charger from the bus within 60 seconds. Compliance with this SR will be demonstrated after implementation of the modification.

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## Proposed TS and Bases Changes - 1

- Revise SR 3.8.1.10.c footnote to read:

A modification will be installed during or prior to the Unit 1 2011 refueling outage to assure the 12 Battery Charger is automatically powered from its normal bus within 60 seconds. Compliance with this SR will be demonstrated after implementation of the modification.
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## Proposed TS and Bases Changes - 2

- Revise SR 3.8.1.10 Bases:

Note 3 is provided to allow D2 DG to be OPERABLE without requiring the 12 Battery Charger to be energized until completion of the Unit 1 2011 refueling outage.

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## Battery Charger Modification - 1

- Battery Charger Study options (October 2010):
    1. SI contact
    2. New chargers
    3. C&D Technologies, Inc. battery charger control modification
    4. Low voltage relay control modification
    5. Charger output based control modification
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## Battery Charger Modification - 2

- Selected modifications 1 and 4
    - Most viable
    - Equipment external to chargers
    - Opening/closing power supply breaker to charger based on charger input voltage
    - Automatic shedding and repowering of the chargers
  - NSPM approved modification concept
    - Early December 2010
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## Battery Charger Modification - 3

- PBNP Ametek SCI charger
    - Not susceptible to the C&D charger lockup
    - Identified late December 2010
    - Could meet PINGP performance requirements
    - Would not meet PINGP seismic and physical dimension requirements
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## Battery Charger Modification - 4

- VEGP Ametek SCI charger
    - Identified during reviews with Ametek
    - Meets PINGP design and performance requirements
    - Procure on expedited schedule
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## Battery Charger Modification - 5

- Internal control features of the Ametek SCI chargers
    - Not susceptible to conditions which cause PINGP charger lockup
    - Internal control relay
    - Prevent back feeding control circuit board
    - Relay senses incoming AC line voltage
      - Shut off charger - AC voltage below relay dropout setpoint
      - Restart charger - voltage returns above pickup setpoint
    - Instantaneous shutoff
    - Time delay on reset - a few seconds
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## Battery Charger Modification - 6

- PBNP prototype Ametek battery charger testing
    - PINGP has known voltage variations outside nameplate rating
    - Informational testing January 2011
    - Confirm engineering design review of the control circuit operation
    - Equipped with internal control function
    - Demonstrate charger capabilities, operation, shutdown, and automatic restart during anticipated voltage transients outside the nameplate rating of the chargers.
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## Battery Charger Modification - 7

- Factory Acceptance Testing (April 2011)
    - Per Ametek quality assurance program
    - Specified in NSPM purchase order
    - Formal documentation of charger capabilities
      - shut off and reset setpoints
      - time delays
      - other operating requirements
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## Battery Charger Modification - 8

- Ametek SCI battery charger controls accommodate AC input voltage variations
  - SR 3.8.1.10 footnote specifically states
    - modification will be installed to automatically “shed” and “repower” the 12 Battery Charger from its bus
  - SR 3.8.1.10 footnote requires revision to allow installation of the Ametek SCI battery charger
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## Battery Charger Modification - 9

- Schedule Milestones
    - Issue Ametek contract for Unit 1 chargers
    - Unit 1 30% EC Design Review meeting
    - Unit 1 90% EC Design Review meeting
    - Battery charger shipped to PINGP
    - Start Unit 1 2011 outage
    - Unit 1 outage installation and post-modification testing
    - Unit 1 integrated SI test
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## Basis for Alternative Modification - 1

- Battery charger considerations:
    - Required logic internal to charger
    - Modification performed in controlled shop environment
    - Testing performed in advance of installation
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## Basis for Alternative Modification - 2

- Plant design considerations:
    - Simpler design
    - Spare breaker on Bus 16 preserved
    - Maintenance sources at the 480V level preserved
    - Relay setting or logic design coordination not required
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## Basis for Alternative Modification - 3

- Plant modification considerations:
    - Simpler installation
    - Focus Engineering and procurement resources
    - Reduces procurement risk
    - Avoid:
      - new power cable installation
      - fire penetration work when routing new cables
      - additions to the load sequencer cabinets
    - Reduces outage work time and outage testing time
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## Requested Schedule Basis - 1

- Refueling outage schedule
  - Request review and approval by May 6, 2011
  - Current footnote specifies resolution by end of Unit 1 2011 refueling outage
    - Testing performed after modification
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## Requested Schedule Basis - 2

- Battery charger replacement decision  
January 2011
  - LAR submitted approximately one week after  
decision
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## RAI discussion - 1

1. Provide a comparison of the major electrical parameters including the minimum voltage requirement of the alternating current (AC) input breaker, drop out, reset for the existing and proposed new battery chargers. Discuss in detail the electrical parameters for the proposed new charger that are different than the existing 12 charger and how these parameters were determined to be acceptable.
  2. Discuss whether the description of existing and new battery chargers will be provided in a future revision of the PINGP Updated Final Safety Analysis Report (UFSAR).
  3. Confirm that the proposed new battery charger can recharge its associated battery to the fully charged state within 24 hours while supplying its normal loads after a battery discharge to the bounding design basis event discharge state in accordance with PINGP UFSAR Section 8.5.3 and Technical Specification Surveillance Requirement 3.8.4.2.
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## RAI discussion - 2

4. Industry operating experience has shown that momentary overvoltage or undervoltage transients experienced during switching, fault or lightning-related perturbations can trigger a self-protecting lockout feature in battery chargers resulting in disabling the chargers. Provide details on the magnitude and duration of transient and sustained overvoltage/undervoltage conditions resulting from grid perturbations (or the emergency diesel generator system) that have been evaluated for operation of the proposed battery charger.
  5. Technical Specification SR 3.8.1.10 NOTE 3 states that the 12 Battery Charger is not required to be energized during performance of SR 3.8.1.10(c) until the completion of Unit 1 2011 refueling outage. The license amendment request proposes a footnote stating that the battery charger equipment will be modified during or prior to the Unit 1 2011 refueling outage. State why NOTE 3 was not modified to apply only until the new equipment has been installed and tested.
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## RAI discussion - 3

- Proposed response schedule
  - Two weeks from receipt of letter

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## Summary

- TS require 12 Battery Charger modification during Unit 1 2011 refueling outage
  - Battery charger replacement modification assures battery charger function performed
    - does not involve “shedding” per TS footnote
  - This LAR proposes to revise footnote to allow battery charger replacement modification
  - Expedited review and approval requested
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