

NRR-PMDAPEm Resource

From: Beltz, Terry
Sent: Tuesday, October 28, 2014 11:00 AM
To: Vincent, Dale M.
Cc: Anderson, Jon S.; Edmonds, Shavon; Pelton, David; Wall, Scott
Subject: Prairie Island Nuclear Generating Plant, Units 1 and 2 - Requests for Additional Information re: Revision to TS 3.8.1 Surveillance Requirements (TAC Nos. MF4259 and MF4260)
Attachments: Prairie Island Nuclear Generating Plant, Units 1 and 2 - Requests for Additional Information Regarding Revision to TS 3.8.1 SRs (TAC Nos. MF4259 and MF4260).docx

Dear Mr. Vincent:

By letter dated June 9, 2014 (Agencywide Documents Access and Management System Accession No. ML14160A593), Northern States Power Company (NSPM), a Minnesota corporation, submitted a license amendment request for the Prairie Island Nuclear Generating Plant, Units 1 and 2. The proposed license amendment would revise the steady-state voltage and frequency in certain Surveillance Requirements in Technical Specification 3.8.1.

The NRC staff in the Electrical Engineering Branch of the Office of Nuclear Reactor Regulation has reviewed the information provided by NSPM and determined that additional information is needed to complete its review.

On October 23, 2014, NSPM was provided draft requests for additional information (RAIs) for its review. In an October 28, 2014, phone call, you indicated that NSPM has reviewed the draft RAIs, and that the draft RAIs may be submitted as final RAIs. The final set of RAIs are provided as an attachment to this e-mail. Also during the phone call, you indicated that NSPM would provide its response to the attached RAIs by December 17, 2014.

If you have any additional questions, please don't hesitate to contact either Scott Wall at (301) 415-2855 or me.

Sincerely,

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Created By: Terry.Beltz@nrc.gov

Recipients:

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Tracking Status: None
"Edmonds, Shavon" <Shavon.Edmonds@nrc.gov>
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Tracking Status: None
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REQUESTS FOR ADDITIONAL INFORMATION
NORTHERN STATES POWER COMPANY- MINNESOTA
PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNITS 1 AND 2
LICENSE AMENDMENT REQUEST

TO REVISE TECHNICAL SPECIFICATION 3.8.1 SURVEILLANCE REQUIREMENTS

DOCKET NOS. 50-282 AND 50-306

(TAC NOS. MF4259 AND MF4260)

By letter dated June 9, 2014 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML14160A593), Northern States Power Company, a Minnesota corporation (the licensee), doing business as Xcel Energy, submitted a request to the U.S. Nuclear Regulatory Commission (NRC) to amend the Prairie Island Nuclear Generating Plant, Units 1 and 2 (PINGP), Operating Licenses DPR-42 and DPR-60. The license amendment request proposes to revise steady state voltage and frequency limits for Technical Specification (TS) Surveillance Requirements (SRs) 3.8.1.2, 3.8.1.6, and 3.8.1.9. The changes would modify the SRs by providing surveillance enhancements to improve operation and testing of the emergency diesel generators (EDGs), and provide a more restrictive voltage and frequency band for operation when not connected in parallel with electrical power.

The NRC staff in the Electrical Engineering Branch of the Office of Nuclear Reactor Regulation has reviewed the license amendment request (LAR) and developed the following questions regarding the proposed changes to TS 3.8.1, "AC Sources – Operating," SR related to EDG load, voltage, and frequency testing.

1. The LAR stated that EDG loading calculations during a loss of offsite power with a safety injection (SI) event at PINGP were reviewed. The results of these calculations demonstrate that PINGP EDG's are sized adequately to support safeguards loads when considering a frequency increase of 0.5 Hz (60.5 Hz) from the nominal 60 Hz. The EDG steady state loading for an SI event concurrent with a loss of offsite power (LOOP) indicates that D2 (Unit 1 Train B) has the least margin at a time interval of 5 minutes to 30 minutes with a total loading of 2333.72 kilowatts (kW) compared to the D2 continuous operation rating of 2750 kW.
 - a. Please confirm that the small break LOCA, large break LOCA, and main steam line break events have also been considered as part of the analysis of the EDG loading calculations mentioned above.
 - b. Engineering calculation ENG-EE-021 previously submitted in support of License Amendment Nos. 189 and 178 regarding a TS change to the EDG SR 3.8.1.9, dated October 21, 2008 (ADAMS Accession Number ML082490441), evaluated the worst-

case loading on the EDGs. This calculation indicated a higher loading than the 2333.72 kW discussed in this recent LAR.

Please confirm the maximum postulated loading on the EDGs when operating at worst-case voltage and frequency.

2. The LAR states that PINGP performed a degraded voltage case study that generated numerous plant configurations per the calculation. The degraded voltage relay (DVR) setpoints and analyses are referenced in the LAR as the bounding analyses to demonstrate operability of equipment and protective relay settings. The DVR setpoint analysis considers the safety buses powered from the offsite electrical power source which generally has a higher capacity to provide the reactive power needs of plant loads compared to the onsite electrical power systems which are exciter capability limited.
 - a. Please state the minimum starting voltage for large pump motors and the voltage drop at the remote safety buses associated with starting large pump motors that are a part of the EDG minimum voltage case study.
 - b. Please confirm that the motor acceleration time and trip relay set-points are bounded by the DVR analyses when the EDGs are supplying safety loads at the minimum voltage and frequency.
 - c. Please confirm that the voltage and frequency requirements, delineated in Regulatory Guide 1.9, Revision 4, "Application and Testing of Safety-Related Diesel Generators in Nuclear Power Plants," during load sequencing transients are maintained with the proposed steady state EDG frequency and voltage limits.
 - d. Please confirm that the degraded voltage relays do not actuate during EDG load sequencing and have to be reset in the event of a loss of offsite power when the EDG is required to supply plant loads.
3. The LAR states that DVR's monitor safeguards 4 kV bus voltage and are used in the EDG load shedding and load restoration scheme. The reset values for these DVR relays are 0.6 percent (%) above the dropout values. The actual plant setting for the DVR dropout is 95.4% of 4160 volts alternating current (VAC). Therefore, actual plant setting for the DVR reset would occur at 96.0%. However, the DVR dropout range identified in the setpoint calculation and Section 8.3.3 of the PINGP Updated Final Safety Analysis Report is $95.5 \pm 0.7\%$ (94.8% to 96.2%). With an upper limit of 96.2% as the DVR dropout value, the DVR reset value would be 96.8% (4027 VAC). Once the DVR is reset, a degraded voltage condition is not present. The proposed TS minimum voltage value of 4084 VAC will allow continued sequencing of safeguards loads onto the EDGs by providing adequate voltage to clear a degraded voltage condition.

Please verify that the DVR's do not have to be reset during a LOOP event when the EDG is operating at the minimum voltage of 4084 VAC and is required to supply plant loads.