

## **NRR-PMDAPEm Resource**

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**From:** Kuntz, Robert  
**Sent:** Wednesday, January 18, 2017 2:30 PM  
**To:** 'Jurek, Shane M.'  
**Subject:** Request for Additional Information: Prairie Island License Amendment Request to Revise Technical Specification 3.8.7 to Remove Non-Conservative Required Action

Mr. Jurek,

In a letter dated August 31, 2016 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16244A493) the Northern States Power Company, a Minnesota corporation, doing business as Xcel Energy (hereafter "NSPM" or "the licensee"), requested an amendment to Renewed Facility Operating License Nos. DPR-42 and DPR-60 in the form of changes to the Technical Specifications (TSs) for Prairie Island Nuclear Generating Plant, Units 1 and 2.

The License Amendment Request (LAR) proposes changes to Appendix A, TSs, to remove a non-conservative required action for TS 3.8.7. The Nuclear Regulatory Commission (NRC) staff is reviewing the submittal and has determined that the additional information below is needed to complete its review. As discussed during a call held 1/18/17 a response is to be submitted 30 days from the date of this email.

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**PRAIRIE ISLAND NUCLEAR GENERATING PLANT UNITS 1 AND 2 –**  
**REQUEST FOR ADDITIONAL INFORMATION**  
**REGARDING LICENSE AMENDMENT REQUEST TO REVISE TECHNICAL SPECIFICATIONS**  
**SURVEILLANCE REQUIREMENTS 3.8.7**  
**(CAC NOS. MF8319 AND MF8320)**

By letter dated August 31, 2016 (Agencywide Documents Access management System (ADAMS) Accession No. ML16244A493), Northern States Power Company (the licensee), requested an amendment to Renewed Facility Operating Licenses DPR-42 and DPR-60 for Prairie Island Nuclear Generating Plant (PINGP), Units 1 and 2. The proposed amendment would revise the Technical Specifications (TS) 3.8.7, "Inverters – Operating," to remove a non-conservatism by adopting the NUREG-1431, "Standard Technical Specifications: Westinghouse Plants," improved Standard TS (STS) language for TS 3.8.7. Specifically, the proposed changes would modify the actions for an inoperable Reactor Protection Instrument Alternating Current (AC) inverter by deleting the existing plant-specific requirements for one and two inoperable inverters and adding the Required Action and associated Completion Time (CT) for one inoperable inverter consistent with the improved STS.

The Nuclear Regulatory Commission (NRC) staff has reviewed the proposed TS changes in the license amendment request (LAR) and has determined that the following information is required to complete its review:

1. Section 3 of the LAR states the following:

Each unit is also provided with a minimum interruptible bus, denoted as Panels 117 for Unit 1 and Panel 217 for Unit 2. These panels are fed from the Unit's A Train 480 Volt AC [alternating current] safeguards bus via safeguards MCC [motor control centers]. Inverter loads are transferred to these panels when the inverter fails or must be removed from service for maintenance. Panel 117 (217) can be aligned to any of the four Reactor Protection Instrument AC Panels [safety-related] in the associated unit.

....

Panels 117 and 217 were downgraded from safety related to non-safety related in 2010, thereby eliminating the justification for considering the panels reliable to remain functional during a postulated DBA [Design Basis Accident].

PINGP Updated Safety Analysis Report (USAR) Section 8.6, "Instrumentation and Control AC Power Supply Systems," states "These panels [Panels 117 and 217] are fed from a 480 Volt safeguard bus via a safeguard MCC. Various important AC instrument and control loads that can tolerate an infrequent short interruption (approximately 10 seconds) are fed from these Panels. Inverter loads are transferred to these panels when the inverter fails or must be removed from service for maintenance."

PINGP USAR Section 7.10.2 "Equipment Classification Methodology," references Regulatory Guide 1.32 "Criteria for Power Systems for Nuclear Power Plants." RG 1.32, Revision (Rev.) 3 incorporates the Institute of Electrical and Electronics Engineers (IEEE) Standard (Std.) 308-2001, "IEEE Standard Criteria for Class 1E Electric Systems for Nuclear Power Generating Stations." IEEE Std. 308-2001 Section 5.2, "Alternating Current Power Systems," in part, states: "Features such as physical separation, electrical isolation, redundancy, and qualified equipment shall be included in the design to aid in preventing a mechanism by which a single design basis event could cause redundant equipment within the station's Class 1E power system to be inoperable."

PINGP USAR Section 7.1 "Summary Description," states, in part: "The reactor protection systems are designed in accordance with IEEE 279-1968. Furthermore, it is shown that the intent of the applicable criteria and codes at the time of construction, such as the GDCs referenced in Sections 1.2 and 1.5 and IEEE 279-1971 ... are reasonably met.... "

Based on the above considerations, the NRC staff requests the following information:

Since Panels 117 and 217 are currently non-safety-related, are powered via safeguards MCCs, and can be aligned to safety-related Reactor Protection Instrument AC Panels and safety-related loads, please

- a. Provide the technical basis including a summary of the failure modes and effects evaluation for having non-safety-related Panels 117 and 217 as back-up power supplies for the safety-related Reactor Protection Instrument AC Panels as opposed to safety-related back-up power sources as stated in NUREG-1431 STS Bases for TS 3.8.7 Required Action A.1.
- b. Provide a discussion regarding how the electrical isolation, independence, and separation requirements are maintained between the non-safety-related panels 117 and 217 and the safety-related power sources and loads in accordance with IEEE Std. 308-2001 as endorsed by RG 1.32, Rev. 3, IEEE Std. 279-1968, IEEE Std. 279-1971, and the Atomic Energy Commission (AEC) General Design Criteria (GDC) criteria 12, 20, 21, 22, 24, 37, and 39 stated in PINGP UFSAR Section 1.2.

2. The LAR proposes a new Required Action and Completion time for an inoperable Reactor Protection Instrument AC inverter (TS 3.8.7 Condition A) to resolve a non-conservative TS. Section 3.2 of the LAR states:

This non-conservatism exists based on a lack of train separation when Panel 117 [in Unit 1 Train A] (217 [in Unit 2 Train A]) is aligned to Reactor Protection Instrument AC panels 112 or 114 [in Unit 1 Train B] (212 or 214 [in Unit 2 Train B]) without a requirement to restore the inoperable inverter or to shutdown the plant. Specifically, for a worst-case single failure with Panel 117 (217) aligned to a Reactor Protection Instrument AC Panel, the required number of instrument buses to initiate an automatic Containment Spray system start would not be energized, thus defeating the automatic start function.

The proposed TS 3.8.7 new Required Action A.1 would require restoring an inoperable Reactor Protection Instrument AC inverter to operable status within 24 hours. The affected Reactor Protection Instrument AC panel is considered inoperable until it is re-energized from either the inverter internal bypass source or the Unit 1 Panel 117 (or Unit 2 Panel 217) within 2 hours (TS 3.8.9 Condition C).

The NRC staff notes that, when the affected Reactor Protection Instrument AC panel is re-energized from Panel 117 (217), the lack of train separation issue as described in the above statement still exists. Therefore, the NRC staff requests the following information:

- a. Provide a diagram which would provide a depiction of the following statement: “for a worst-case single failure with Panel 117 (217) aligned to a Reactor Protection Instrument AC Panel, the required number of instrument buses to initiate an automatic Containment Spray system start would not be energized, thus defeating the automatic start function.” For the case when one Train B Reactor Protection Instrument AC Inverter is inoperable, describe how independence/redundancy is maintained between Train A and Train B inverters and safety-related equipment while the affected Train B Reactor Protection Instrument AC panel is being powered by Train A Panel 117 (or Panel 217).
- b. Clarify whether the Reactor Protection Instrument AC panels are powered from Panel 117 (Unit 1) or Panel 217 (Unit 2) during normal, abnormal, and accident conditions other than during TS LCO conditions and maintenance activities.
- c. PINGP USAR Figure 8.5-1A, “125 VDC & 120 VAC Instrument Supply Unit Train A,” and Figure 8.5-2A, “125 VDC & 120 VAC Instrument Supply Unit 2 Train A,” show that Panel 117 in Unit 1 and Panel 217 in Unit 2 also power other panels (EM1-5, 1EMA, 2EMA, EM2-4, 1EMB, 2EMB).

Clarify whether panels EM1-5, 1EMA, 2EMA, EM2-4, 1EMB, 2EMB are safety-related or non-safety-related panels, and explain how the safeguards Reactor Protection Instrument AC panels are protected from faults that impact these above-mentioned panels.

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