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Prairie Island Nuclear Generating Plant Unit 1
Docket 50-282
License No. DPR-42

Second Response to NRC Request for Additional Information received October 15, 2010 related to Exigent License Amendment Request to Modify Technical Specifications Surveillance Requirement 3.8.1.10 for Prairie Island Nuclear Generating Plant Unit 1

References:
1. Letter from Northern States Power Company, a Minnesota corporation, to the Nuclear Regulatory Commission, "Exigent License Amendment Request to Modify Technical Specifications Surveillance Requirement 3.8.1.10 for Prairie Island Nuclear Generating Plant Unit 1," L-PI-10-098, dated October 14, 2010.

2. Letter from Northern States Power Company, a Minnesota corporation, to the Nuclear Regulatory Commission, "Response to NRC Request for Additional Information received October 15, 2010 related to Exigent License Amendment Request to Modify Technical Specifications Surveillance Requirement 3.8.1.10 for Prairie Island Nuclear Generating Plant Unit 1," L-PI-10-100, dated October 16, 2010.

In Reference 1, Northern States Power Company, a Minnesota corporation (NSPM), doing business as Xcel Energy, submitted a License Amendment Request (LAR) to request an exigent amendment to the Prairie Island Nuclear Generating Plant (PINGP) Unit 1 Technical Specifications (TS) surveillance requirements (SR). The proposed change would allow the 12 Battery Charger to not be energized during the Safety Injection testing until a modification is completed during the Unit 1 2011 refueling outage. Prior to start up from the 2011 refueling outage, the 12 Battery Charger will be tested in accordance with TS SR 3.8.1.10(c).

On October 15, 2010 the NRC transmitted to NSPM a request for additional information (RAI). A telephone conference with the NRC later that day clarified and modified certain questions from the NRC. In Reference 2, NSPM provided responses to the NRC's RAI

questions, except for 2 questions. Enclosure 1 provides the responses that were missing from reference 2.

The supplemental information provided in this letter does not impact the conclusions of the Determination of No Significant Hazards Consideration or Environmental Assessment presented in the Reference 1 submittal as supplemented on October 16, 2010.

In accordance with 10 CFR 50.91, NSPM is notifying the State of Minnesota of this LAR supplement by transmitting a copy of this letter to the designated State Official.

If there are any questions or if additional information is needed, please contact Jon Anderson at 651-388-1121 x7309.

Summary of Commitments

This letter contains no new commitments and no revisions to existing commitments.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on 10/17/16

Bradley J. Sawatzke
Director, Site Operations, Prairie Island Nuclear Generating Plant
Northern States Power Company - Minnesota

Enclosures (1)

cc: Administrator, Region III, USNRC
Project Manager, PINGP, USNRC
Resident Inspector, PINGP, USNRC
State of Minnesota

Enclosure 1

Second Response to NRC Request for Additional Information (RAI) Received October 15, 2010, Related to Exigent License Amendment Request to Modify Technical Specifications Surveillance Requirement 3.8.1.10 for Prairie Island Nuclear Generating Plant Unit 1

This enclosure includes responses from the Northern States Power Company, a Minnesota corporation (NSPM), to Requests for Additional Information (RAI) regarding exigent license amendment request (LAR) to modify Technical Specifications (TS) Surveillance Requirement (SR) 3.8.1.10(c) for Prairie Island Nuclear Generating Plant (PINGP) Unit 1.

These RAIs are associated with NSPM's request to modify SR 3.8.1.10(c) to add a note that allows the 12 Battery Charger to not be energized during the SI testing until a modification is completed during the Unit 1 2011 refueling outage. Prior to start up from the 2011 refueling outage, the 12 Battery Charger will be tested in accordance with SR 3.8.1.10(c).

In a submittal dated October 16, 2010, NSPM provided responses to NRC RAIs with the exception of two. This submittal provides the responses to the remaining two RAIs.

This Enclosure quotes each RAI question in italics and each question is followed by the NSPM response. Referenced documents are identified at the end of this Enclosure.

NRC Question EEEB-2

Provide details on any loads that are sequenced onto the EDGs [Emergency Diesel Generators] D1, D2, D5, and D6 and also need a permissive from a process signal (such as pressure level, temperature etc.). For example, the cooling water pump no. 121 may be loaded onto an EDG. Verify that simultaneous or normal starting of such loads was evaluated for voltage drop considerations.

NSPM Response

The calculation which analyzes the sequence loading on the EDGs D1, D2, D5 and D6 assumes that all loads are at maximum. No diversity factor less than 100% is assumed for intermittent loads or loads operating at less than maximum capacity such as pumps at less than full capacity. This provides the maximum loading for each step on the EDGs.

Per Updated Safety Analysis Report (USAR) Section 8.4.3, the sequence of loads onto the EDGs D1 and D2 is as follows:

Step 0: Safety Injection Pump and 480V Buses
Step 1: Residual Heat Removal Pump and Containment Spray Pump
Step 2: (No Loads for Unit 1)
Step 3: Component Cooling Water Pump and 2 Fan Coil Units
Step 4: Auxiliary Feedwater Pump (D2 only), 1 Air Compressor
Step 5: Pressurizer Heaters
Step 6: Control Room Chiller and Chiller Water Pump

Per USAR Section 8.4.3, the sequence of load onto the EDGs D5 and D6 is as follows:
Step 0: Safety Injection Pump and 480V Buses
Step 1: Residual Heat Removal Pump and Containment Spray Pump
Step 2: 121 Cooling Water Pump
Step 3: Component Cooling Water Pump and 2 Fan Coil Units
Step 4: Auxiliary Feedwater Pump (D5 only), 1 Air Compressor (D5 only)
Step 5: Pressurizer Heaters and EDG Auxiliaries
Step 6: Control Room Chiller and Chiller Water Pump

The various loads that have an automatic start signal other than the safety injection (SI) signal are as follows:

- Containment Spray Pump – Starts on Containment High-High Pressure Signal
- Air Compressor – Starts on Low Air Pressure Signal
- 121 Cooling Water Pump – Starts on Low Cooling Water Pressure or Diesel Cooling Water Pump Failure

The Containment Spray Pump is given a sequencer permissive during Step 1 of the load restoration scheme. The logic of the sequencer is such that the permissive only lasts for approximately one second and if the Containment Spray Pump was not required to automatically start and therefore did not start in sequence Step 1, its sequencer permissive is removed during Step 2 and then it is given a continuous permissive from the load sequencer in Steps 3 through 6 and also after the load sequence Step 6 has completed. Therefore, the Containment Spray Pump could start by sequence permissive in sequence Steps 1, 3, 4, 5, and 6 and any time after the sequence has completed when a containment high-high pressure signal is received.

The Air Compressors are given a sequencer permissive during Step 4 for EDGs D1, D2, and D5. This permissive remains through sequencer Steps 5 and 6 and also after the completion of sequencer Step 6. Therefore, the Air Compressors could start by sequence permissive in sequence Steps 4, 5, 6 and any time after the sequencer Step 6 has completed when a low air pressure signal is received.

The 121 Cooling Water pump is given a sequencer permissive during Step 2 of the load restoration scheme. This load is only applicable to EDGs D5 and D6. The 121 Cooling Water pump can be manually aligned to either D5 or D6. The logic of the sequencer is such that the permissive only lasts for approximately one second and if the Cooling Water Pump was not required to automatically start and therefore did not start in

sequence Step 2, the permissive from the sequencer is removed until load sequencer Step 6 has completed. Therefore, the 121 Cooling Water Pump could start by sequence permissive in sequence Step 2 or any time after the completion of sequencer Step 6 when a low cooling water pressure automatic start signal is received or a diesel driven Cooling Water pump is stopped.

In May 2010, the potential that out of sequence starting of loads may not have been considered in plant analyses was identified and documented in the NSPM corrective action process (CAP). In September 2010, a potential condition was identified and documented in a CAP, that while on offsite power, the condition experienced by 12 battery charger during the integrated SI test could exist for all four safety related chargers. A condition evaluation within the corrective action process reviewed this issue in parallel with the license amendment request (LAR) submittal. The condition evaluation reviewed the potential for low input voltage issues to affect all four safety related chargers when powered from either offsite power or the EDGs. This evaluation considered the effects of out of sequence starting of loads and their effect on the voltage at the battery charger.

The results of this evaluation have concluded that due to the unknown effect out of sequence loading on the EDGs may have on the battery charger during the occurrence of an SI event concurrent with a loss of offsite power (LOOP), there is a potential that the input voltage on the safety related battery chargers that are on the SI unit may dip low enough for the SI unit battery chargers to lockup during the SI starting sequence on the EDGs due to out of sequence loading.

An Operable But Nonconforming (OBN) condition under the CAP has been declared for the four safety related battery chargers due to the potential for multiple chargers to lockup during an SI with a LOOP. Compensatory measures have been implemented to address this condition. The evaluation of those compensatory measures is in process.

NRC Question EEEB-4

In the event of an accident signal causing a plant trip, resulting in grid perturbation and drop in 12 battery charger bus voltages, there is a potential for all safety related battery chargers to lockout similar to 12 battery charger. Has this been evaluated?

NSPM Response

A CAP written during the initial failure discovery and follow-up in 1997 reviewed the impact of the 12 battery charger failure mode for the following PINGP design basis accidents and applicability to the other chargers with the conclusions summarized here.

- Degraded or Undervoltage at the 4 kV Bus causing a transfer to another offsite source – chargers operate
- A LOOP without an SI signal – chargers operate
- SI signal with off-site power available – chargers operate

- SI signal with LOOP –12 battery charger will experience lockup

These conclusions were based on the analysis that was available in 1997 at the time the CAP was evaluated. Recent analysis and modeling capability have improved and include more detail.

The September 2010 CAP, discussed in response to EEEB-2 above, identified a potential condition in that while on offsite power, the condition experienced by 12 battery charger during the integrated SI test could exist for all four safety related chargers. A condition evaluation within the corrective action process reviewed this issue in parallel with the license amendment request (LAR) submittal. This evaluation included the potential for out of sequence loading to occur as identified in the May 2010 CAP which was not considered in the 1997 CAP.

The results of this evaluation have concluded that based on current analysis during the occurrence of a design basis accident (DBA) without a LOOP (dual unit trip with one unit in SI and one unit in hot shutdown), voltage on the safety related battery charges that are on the SI unit would dip low enough that the SI unit chargers potentially could experience a low voltage condition similar to that experienced by the 12 battery charger during the integrated SI test.

An OBN condition under the CAP has been declared for the four safety related battery chargers due to the potential for multiple chargers to lockup while on offsite power during a DBA. Compensatory measures have been implemented to address this condition. The evaluation of those compensatory measures is in process.