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OCT 16 2010

L-PI-10-100
10 CFR 50.90

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

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

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

Reference: 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.

In the referenced letter, 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. 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. A telephone conference with the NRC later that day clarified and modified certain questions from the NRC. Enclosure 1 to this letter provides NSPM's responses to the NRC's questions.

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 referenced submittal.

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 10/16/10

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

Enclosure

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

ENCLOSURE

RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION

13 pages follow

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

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).

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 IHPB-1 (Revised)

The licensee states, "In addition, currently and until the refueling outage in the spring of 2011, the Portable Battery Charger is stationed in the 12 Battery Room unless needed to support other required TS actions." Describe the required TS actions and other procedurally mandated actions that would take priority over re-establishing the 12 Battery Charger functions.

NSPM Response

In the referenced letter, NSPM stated that one of the compensatory measures to support restoring the 12 Battery Charger would be to station the Portable Battery Charger in the 12 Battery Room unless it is needed to support other required TS actions. In the event of an inoperable Safeguards Battery Charger in accordance with TS 3.8.4.A, the Portable Battery Charger would be moved as described below.

The Portable Battery Charger is currently stationed in the 12 Battery Room with a Caution Tag to maintain the Portable Battery Charger in the 12 Battery Room. When the Portable Battery Charger is stationed in the 12 Battery Room it is not connected in place of the 12 Battery Charger but is staged for rapid connectivity should the 12 Battery Charger fail. The Portable Charger will only be moved if another Safeguards Battery Charger fails and procedural guidance requires connection of the Portable Battery Charger for the inoperable Safeguards Battery Charger.

NRC Question IHPB-2

The licensee states, "NSPM is also providing a dedicated operator on each shift to perform the required actions to restore the 12 Battery Charger until the long-term solution described below is implemented. Define "dedicated" in terms of training, qualifications, responsibilities, priorities, license level (SRO, RO, AO, etc.), location in the plant, and whether this operator is an additional staff member or part of the normal crew staffing.

NSPM Response

NSPM is defining dedicated operator as follows:

The dedicated operator is in addition to the normal operating crew. The dedicated operator will not assume normal watch duties or fire brigade duties. The dedicated operator will remain in the protected area and not be allowed in the Auxiliary Building. The dedicated operator will be in constant contact with the Control Room via a pager. The dedicated operator may only perform tasks that can be stopped and placed in a safe condition immediately to ensure they can expeditiously proceed to the 12 Battery Room.

Training: The dedicated operator will have been trained and qualified on this task. Non-licensed operators (outplant operators), licensed reactor operators and licensed senior reactor operators will be used to stand this dedicated watch. All dedicated operators have been made aware that this action is their top priority.

NRC Question EEEB-1

Provide evaluation on minimum dropout voltage for contactors associated with motor control centers and minimum acceptable voltage for 120 V loads including cable voltage drop.

NSPM Response

The dropout of the contactors is tested per plant preventative maintenance (PM) procedures. The contactors are tested based on voltages applied to the 480 VAC side of the control circuit transformer. The test criteria of the contactors are that the dropout occurs between 140 VAC and 315 VAC. Some of the control circuits contain interposing relays to lessen the overall voltage drop to the contactor. The test criteria for these interposing relays are that the drop out occurs between 140 VAC and 315 VAC or between 200 VAC and 360 VAC depending on the size of the contactor and the type of the motor control center (MCC).

A PINGP calculation evaluates the minimum pickup voltage for contactors associated with motor control centers and minimum acceptable voltage for 120 V loads including cable voltage drop. The calculation determines the maximum allowable voltage drop values for each MCC motor starter circuit based on the starter test voltage used for PM testing. Using the maximum pickup voltages allowed by PM testing for the contactor or the interposing relay, the control circuit is analyzed to ensure that under degraded voltage conditions, the voltage drop in the control circuit will ensure adequate voltage to pickup the contactor.

The calculated worst-case voltage drop for each circuit is the product of the total circuit resistance and the total circuit load for both in-rush and steady state conditions. The resistance value includes the various components in the control circuit including control cables.

The MCC voltage is assumed to be the minimum allowable value under degraded voltage conditions. The difference between the minimum MCC voltage and the maximum pickup voltage is compared to the calculated circuit voltage drop under steady state and inrush conditions to determine if adequate voltage is present at the contactor.

If after the initial analysis using the minimum allowable MCC voltages, various contactors are determined to not be bounded by the conservative assumptions in the calculation, the actual MCC voltages under degraded voltage conditions as determined by analysis are used as the MCC voltage and the comparison is repeated under a subsequent calculation.

The results of this subsequent calculation resulted in four breakers that were not bounded by the standard pre-allowable pickup voltages used in the calculation under degraded voltage conditions. Initial resolution of these contactors was to implement

specific PMs for these four contactors to ensure the tested pickup voltage was below what was required by the calculation.

These four contactors were further evaluated by an engineering evaluation using revised degraded voltage values at the MCC and pickup voltages required for the specific contactors.

This engineering evaluation identified that one of the four breakers continued to show that the required pickup voltage under degraded voltage conditions could not be satisfied by testing. This was identified and evaluated under a CAP and an operability recommendation (OPR) and appropriate compensatory measures were put in place to ensure that the ambient temperature at the identified MCC remained low enough to ensure adequate voltage would be present to pickup the MCC contactor.

NRC Question EEEB-2

Provide details on any loads that are sequenced onto the EDGs 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 answer to the question is under evaluation. A response to this question will be provided when complete.

NRC Question EEEB-3 (Revised)

a) *The licensee provided in the LAR a TS marked-up copy reflecting the proposed changes. Clarify that this is a "one time change for D2 EDG only". Provide an expiration date for the proposed change on TS SR 3.8.1.10(c).*

b) *Justify why proposed Note 3 of Surveillance Requirement (SR) 3.8.1.10 cannot include the proposed compensatory measures. This would test the proposed configuration and compensatory actions as an integrated package as intended by the original SR.*

NSPM Response

a) The proposed change described in the reference letter included a note that would be added to TS SR 3.8.1.10(c). The note stated:

12 Battery Charger is not required to be energized in SR 3.8.1.10(c) until completion of Unit 1, 2011 refueling outage.

NSPM also stated that the implication of this note was that the plant will not start up from the 2011 refueling outage (enter MODE 4) until the EDG meets the acceptance criteria of SR 3.8.1.10(c) test with the 12 Battery Charger load properly included.

By this NSPM is stating that the current situation will only last until the PINGP Unit 1 outage in 2011 is complete. Therefore, NSPM can state that this is a one-time change for PINGP Unit 1 only.

Currently the Unit 1 refueling outage in 2011 is scheduled to end by June 4, 2011, with MODE 4 (startup) occurring approximately 6 days prior to that date (May 29, 2011). Ending of the refueling outage is considered when the unit's generator output breaker is closed (i.e., realigned to the grid). However, due to equipment malfunctions, schedule changes, emergent work, etc that may arise during the course of the refueling outage, the length of the outage may be longer than presently scheduled.

b) NSPM has previously stated in the referenced letter that compensatory measures will consist of procedure changes to ensure that the 12 Battery Charger is restarted within 1 hour, stationing the portable battery charger as feasible in the 12 Battery Room and adding a dedicated operator to ensure the procedures are completed expeditiously.

NSPM does not believe that the TS require further revision to reflect the compensatory measures described in the referenced letter. The TS are limited to the term described in section a) above and will not be used after the completion of the Unit 1 refueling outage in 2011.

Therefore, NSPM would propose to modify the TS Bases to include the compensatory measures that are associated with note 3 for TS SR 3.8.1.10. The TS bases for TS SR 3.8.1.10 would be changed with the details of the compensatory measures and the specified duration of the compensatory measures. This will ensure that operations personnel are aware of the connection between the TS note and the compensatory measures put in place.

The NRC has asked to consider changing the TS to include the compensatory measures based on that this would test the proposed configuration and compensatory actions as an integrated package as intended by the original SR. However, this is not the case. The SR 3.8.1.10(c) requires the plant to be in shutdown conditions before executing the test. The specified frequency for the SR 3.8.1.10(c) test is every 24 months, which means the test is performed on a refueling outage frequency. Based on this, the next performance of the SR 3.8.1.10(c) test is during the next refueling outage which is in the Spring of 2011. NSPM will not be conducting any further testing in accordance with SR 3.8.1.10(c) prior to restoring the 12 Battery Charger to a testable configuration. Testing only the 12 Battery Charger without other loads on the D2 EDG would provide inconclusive results as the voltage perturbation occurring during the Integrated SI test would not be experienced by the charger.

NRC Question EEEB-4

In the event of an accident signal causing a plant trip, resulting in grid perturbation and drop in 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

The answer to the question is under evaluation. A response to this question will be provided when complete.

NRC Question EEEB-5

The proposed modification to battery charger(s) will eliminate voltage perturbation that may occur within 0-60 seconds. Explain how this modification will resolve the issue for battery charger operation due to grid perturbation after 60 seconds.

NSPM Response

In referenced letter, NSPM 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."*

The favored options for the proposed long term modification to the battery chargers will monitor the input voltage to the charger and trip the AC input to the charger before it reaches a point where it could expose the charger to an input condition that would cause lockup. These options also include a means to restore the AC input when voltage has recovered and with an appropriate time delay that results in automatic restoration of the charger. Based on the duration of the Integrated SI Test load sequence duration, we expect this will satisfy the 60 second requirement for energization which is currently required by PINGP TS 3.8.1.10(c). This control circuit will be in place during all operating modes.

NRC Question EEEB-6

Verify if plant procedure requires manual actions for Appendix R related scenarios? Confirm that the restoration of 12 battery charger is incorporated into fire mitigation strategies.

NSPM Response

The fire response procedures to support safe shutdown of the plant do not prevent the operators from using other procedures or equipment to shutdown the plant. Procedure 1C20.9 AOP4 can be used to restore the 12 Battery Charger locally. There are two procedures for safe shutdown in the event of a fire, one for Appendix R III.G.3 Alternative Shutdown, and one for Appendix R III.G.1/III.G.2 where the control room does not need to be abandoned.

For a fire affecting the control/relay room (the procedure to shutdown the plant remotely), train A equipment is credited in the Appendix R III.G.3 alternate shutdown scenario,. The 12 Battery Charger (Train B) is not credited for the alternate shutdown scenario so no actions are required to restore the 12 Battery Charger.

For fires affecting the other areas of the plant, (the procedure for safe shutdown in the event of a fire), cables for offsite power have been analyzed and offsite power would not be lost in most fire scenarios. Therefore the 12 Battery Charger would remain powered from offsite power. For a scenario where offsite power could be lost, a procedure provides guidance for equipment affected by the fire, but does not limit operators from using other procedures so 1C20.9 AOP4 will provide adequate guidance to restore the 12 Battery Charger if needed.

NRC Question EEEB-7

Confirm that the battery aging factor was considered in the 2 hour 35 minutes battery capability as stated in page 9 of 20 of the LAR? When was the battery associated with 12 battery charger installed?

NSPM Response

The battery aging factor was considered in the sizing of 12 Battery. The calculation referenced IEEE-485-1997 which states that the battery's rated capacity should be at least 125% of the normal load expected to compensate for end of service life. Therefore, an aging factor of 1.25 is conservatively used when performing the battery sizing calculation. The calculation concluded that the battery was appropriately sized to carry the design loads (12 Battery contains 5.91% margin using aging factor of 1.25).

The two hours and 35 minutes battery capability as stated in the LAR was determined and documented in an engineering change evaluation. The evaluation, used data from two recent performances (March 7, 2008 and September 30, 2009) of the 12 Battery Refueling Outage Discharge Test to determine the battery discharge time. The acceptance criteria for the evaluation were stated as the 12 Battery terminal voltage is required to be maintained at 109.55 VDC (rounded to 109.6 VDC) so that required device voltages can be met. The results of the evaluation determined the time to reach 109.6 VDC was two hours and 49 minutes and two hours and 45 minutes from two recent performances of the 12 Battery Refueling Outage Discharge test. The 2 hours and 45 minutes (most conservative time) was selected and a 5% margin (rounded to 10 minutes) was included to obtain 2 hours and 35 minutes. Since the inputs used for the evaluation were obtained from recent 12 Battery Refueling Outage Discharge tests, actual aging factors that would impact battery performance would have been present and considered in the results. In addition, the load profile used in 12 Battery Refueling Outage Discharge test was verified to be higher than the load profile evaluated by calculation. Therefore, NSPM has concluded that the evaluation demonstrates that 12 Battery has a two hour and 35 minute capability.

The 12 Battery Charger is the normal source to the 12 Battery. The 12 Battery was replaced per Prairie Island modification 99DC02, "Replace 12 and 22 Batteries". Modification 99DC02 was approved on November 8, 2001 with final plant acceptance on April 20, 2004.

NRC Question EEEB-8

Verify if there are any shared common loads on the safety related batteries. Does the battery loading (associated with 12 battery charger) change if the redundant battery is inoperable?

NSPM Response

NSPM has determined the following are shared common loads between the 12 and 22 safeguard batteries:

Panel 14	Panel 14 transfer switch
Panel 18	Panel 18 transfer switch

NSPM hasdetermined the following are shared common loads between the 11 and 21 safeguard batteries:

Bus 11 Switchgear	Bus 11 transfer switch
Bus 21 Switchgear	Bus 21 transfer switch
Bus 12 Switchgear	Bus 12 transfer switch
Bus 22 Switchgear	Bus 22 transfer switch
Panel 17	Panel 17 transfer switch
Panel 19	Panel 19 transfer switch

A review of plant calculations indicate that the shared loads identified are included in the loading profiles for both batteries. Therefore, the battery loading profile for the 12 Battery Charger will not change if the 22 Battery is inoperable.

NRC Question EEEB-9

Provide a brief discussion on current control room alarm setpoint for "12 DC Panel Undervoltage" as identified on page 10 of 20 of LAR.

NSPM Response

The 12 Battery Charger nominal float voltage for the 58 cell battery is 129.4 V. The nominal full charge open circuit battery voltage is 120 V. The 12 DC Panel alarm set-point is 121.5 V. This setpoint is between the battery charger float voltage setpoint and the full charge open circuit battery voltage. During nominal operating conditions the 12 DC panel voltage is above the alarm setpoint. When the 12 Battery Charger lockup occurs the 12 DC Panel voltage will drop to the open circuit battery voltage resulting in the actuation of the 12 DC Panel Voltage alarm.

Reference

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.