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U S Nuclear Regulatory Commission
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Prairie Island Nuclear Generating Plant Units 1 and 2
Dockets 50-282 and 50-306
License Nos. DPR-42 and DPR-60

Supplement to License Amendment Request (LAR) For Extension Of Technical Specification (TS) 3.8.1, "AC Sources-Operating," Emergency Diesel Generator Completion Time (TAC Nos. MC9001 and MC9002)

By letter dated November 21, 2005, Nuclear Management Company (NMC) submitted an LAR to revise the Emergency Diesel Generator (EDG) Completion Time in TS 3.8.1 Required Action B.4 from 7 days to 14 days. By letters dated June 16, 2006, August 31, 2006, and September 29, 2006, NMC provided supplemental information to this LAR. This letter supplements the LAR to provide additional information on the impact of this LAR on the defense in depth philosophy. NMC submits this supplement in accordance with the provisions of 10 CFR 50.90.

Enclosure 1 provides the assessment of the impact of this LAR on the defense in depth philosophy.

The supplemental information provided in this letter does not impact the conclusions of the Determination of No Significant Hazards Consideration and Environmental Assessment presented in the November 21, 2005 submittal as supplemented June 16, 2006, August 31, 2006 and September 29, 2006.

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

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 **OCT 30 2006**



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Enclosures (1)

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

Enclosure 1
Letter L-PI-06-077

Background

By letter dated November 21, 2005, the Nuclear Management Company, LLC (NMC) submitted an LAR to revise the Emergency Diesel Generator (EDG) Completion Time in Prairie Island Nuclear Generating Plant (PINGP) Technical Specification (TS) 3.8.1 Required Action B.4 from 7 days to 14 days. The EDG proposed Completion Time extension was based on NMC's deterministic engineering analysis and a risk evaluation which was developed in accordance with the guidelines established in Regulatory Guide (RG) 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Bases" and RG 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications".

In these Regulatory Guides, the NRC has identified five key principles which licensees should demonstrate are met when applying for Technical Specification (TS) changes. These key principles, stated in RG 1.174, Section 2 and RG 1.177, Section B, are:

1. The proposed change meets the current regulations unless it is explicitly related to a requested exemption or rule change.
2. The proposed change is consistent with the defense-in-depth philosophy.
3. The proposed change maintains sufficient safety margins.
4. When proposed changes result in an increase in core damage frequency or risk, the increases should be small and consistent with the intent of the Commission's Safety Goal Policy Statement.
5. The impact of the proposed change should be monitored using performance measurement strategies.

This enclosure supplements the EDG Completion Time extension license amendment request (LAR) with information on the determination that the proposed TS change is consistent with the defense-in-depth philosophy, as required by principle 2, above. The NRC glossary defines "defense-in-depth" as:

A design and operational philosophy with regard to nuclear facilities that calls for multiple layers of protection to prevent and mitigate accidents. It includes the use of controls, multiple physical barriers to prevent release of radiation, redundant and diverse key safety functions, and emergency response measures.

The impact of the proposed TS change was evaluated and determined to be consistent with the defense-in-depth philosophy.

The PINGP design is consistent with the defense-in-depth philosophy. The plant has diverse power sources available to cope with loss of the preferred AC source (offsite power). There are four offsite sources which supply power to the substation and four paths from the substation to each unit. Each safeguards bus can be powered by its dedicated EDG in the event of loss of offsite power (LOOP) or can be powered by the opposite unit same train EDG in the event of a station blackout (SBO). Diversity is provided in the EDG design in that the Unit 1 EDGs have a different manufacturer, different mechanical design and different cooling system design (river water cooling vice air cooled radiator) than the Unit 2 EDGs. Further plant design diversity is provided in the plant cooling water system which includes diesel driven pumps and electric motor driven pumps, and the auxiliary feedwater system which includes two redundant trains, one with a turbine driven pump and one with a motor driven pump, in each unit. The capability to cross connect the motor driven pump to the opposite unit provides additional redundancy.

Defense-in-Depth Assessment

RG 1.174 and RG 1.177 provide similar criteria for performing a deterministic engineering evaluation of the impact that a TS (or licensing basis) change has on the plant defense-in-depth. Since the criteria in RG 1.177, Section 2.2.1 are more detailed, they will be used in this evaluation.

RG 1.177 states that consistency with the defense-in-depth philosophy is maintained if the following criteria (listed below, with NMC's evaluation of compliance following each criterion) are met when a TS change is made:

RG Criterion

- **A reasonable balance among prevention of core damage, prevention of containment failure, and consequence mitigation is preserved, i.e., the proposed change in a TS has not significantly changed the balance among these principles of prevention and mitigation, to the extent that such balance is needed to meet the acceptance criteria of the specific design basis accidents and transients, consistent with 10 CFR 50.36. TS change requests should consider whether the anticipated operational changes associated with a TS change could introduce new accidents or transients or could increase the likelihood of an accident or transient (as is required by 10 CFR 50.92).**

NMC Evaluation

- This proposed change does not change the assumptions of any design basis accident (SBO is not a design basis accident); therefore, the balance among the principles of prevention and mitigation is maintained.

- The change is strictly to extend the EDG Completion Time. The non-design basis accident (DBA) event of concern is an SBO during the extended Completion Time. The only potential impact of an extension of the Completion Time is a minor effect on prevention; the change in risk due to this is quantifiable, has been evaluated, and determined to meet the RG 1.174 acceptance criteria.
- No operational changes are associated with the proposed change.

RG Criterion

- **Over-reliance on programmatic activities to compensate for weaknesses in plant design is avoided, e.g., use of high reliability estimates that are primarily based on optimistic program assumptions.**

NMC Evaluation

- The proposed TS change does not change the plant design and thus no programmatic changes are necessary or being implemented.

RG Criterion

- **System redundancy, independence, and diversity are maintained commensurate with the expected frequency and consequences of challenges to the system, e.g., there are no risk outliers. The following items should be considered.**
 - **Whether there are appropriate restrictions in place to preclude simultaneous equipment outages that would erode the principles of redundancy and diversity,**
 - **Whether compensatory actions to be taken when entering the modified AOT [allowed outage time] for pre-planned maintenance are identified,**
 - **Whether voluntary removal of equipment from service during plant operation should not be scheduled when adverse weather conditions are predicted or at times when the plant may be subjected to other abnormal conditions, and**
 - **Whether the impact of the TS change on the safety function should be taken into consideration. For example, what is the impact of a change in the AOT for the low-pressure safety injection system on the overall availability and reliability of the low-pressure injection function?**

NMC Evaluation

(Each of the above criteria is repeated below, with NMC's evaluation of compliance following.)

- **Whether there are appropriate restrictions in place to preclude simultaneous equipment outages that would erode the principles of redundancy and diversity,**
- The change is strictly to extend the EDG Completion Time. The non-DBA event of concern is an SBO during the extended Completion Time. Since the unit with the EDG out of service is already in a TS Required Action, redundancy is not affected by extending the Completion Time. Diversity is maintained. Current TS 3.8.1 Required Action B.2 requires that the opposite train safeguards equipment be operable. As part of this proposed LAR, commitments were made by supplement dated June 16, 2006 which require the opposite unit offsite paths, EDGs, and safeguards AC and DC subsystems to be operable while in the extended Completion Time. Appropriate restrictions will be imposed to preclude simultaneous equipment outages that would erode the principles of redundancy and diversity.
- **Whether compensatory actions to be taken when entering the modified AOT [allowed outage time] for pre-planned maintenance are identified,**
- Compensatory actions have been identified prior to entry into the extended Completion Time. Some of these have been included as commitments in the supplement dated June 16, 2006.
- **Whether voluntary removal of equipment from service during plant operation should not be scheduled when adverse weather conditions are predicted or at times when the plant may be subjected to other abnormal conditions,**
- Weather conditions are considered prior to entering the extended Completion Time. The proposed change may enhance EDG availability and reliability during the most probable periods of potentially severe weather by allowing maintenance to be performed during spring and fall. Specifically, the supplement dated June 16, 2006 committed to refrain from entering the extended Completion Time for elective maintenance if severe weather conditions are predicted.
- **Whether the impact of the TS change on the safety function should be taken into consideration. For example, what is the impact of a change in the AOT for the low-pressure safety injection system on the overall availability and reliability of the low-pressure injection function?**

- The impact of the proposed TS change on the safety function of the EDGs was taken into consideration. The overall availability and reliability of the EDGs is maintained and may be improved with the proposed Completion Time extension due to efficiencies gained in the maintenance process.

RG Criterion

- **Defenses against potential common cause failures are maintained and the potential for introduction of new common cause failure mechanisms is assessed, e.g., TS change requests should consider whether the anticipated operational changes associated with a change in an AOT or STI [surveillance test intervals] could introduce any new common cause failure modes not previously considered.**

NMC Evaluation

- The proposed change involves only the duration of the Completion Time, with no anticipated operational changes associated with the proposed change. Current TS 3.8.1 Required Action B.3 will continue to maintain defense against potential common cause failures in the same unit. Diversity of the EDG manufacturer and design in the opposite unit EDGs maintains defense against potential common cause failures with the opposite unit. Since the proposed change affects only the EDG Completion Time, no new common cause failure modes can be introduced.

RG Criterion

- **Independence of physical barriers is not degraded, e.g., TS change requests should address a means of ensuring that the independence of barriers has not been degraded by the TS change (e.g., when changing TS for containment systems).**

NMC Evaluation

- The proposed change does not involve a change to any physical barrier; the proposed change affects only the duration of the Completion Time.

RG Criterion

- **Defenses against human errors are maintained, e.g., TS change requests should consider whether the anticipated operation changes associated with a change in an AOT or STI could change the expected operator response or introduce any new human errors not previously considered, such as the change from performing maintenance during shutdown to**

performing maintenance at power when different personnel and different activities may be involved.

NMC Evaluation

- The proposed change involves only the duration of the EDG Completion Time, with no anticipated operational changes associated with the proposed change. These proposed changes do not require any new operator response or introduce any opportunities for human error not previously considered. The personnel performing the maintenance are expected to be essentially the same whenever the work is being performed. Controls over maintenance activities which previously may have been performed with the unit shutdown will be enhanced with this TS change due to fewer competing activities while the maintenance is performed.

RG Criterion

- **The intent of the General Design Criteria in Appendix A to 10 CFR Part 50 is maintained.**

NMC Evaluation

- The PINGP was designed and constructed to comply with the licensee's understanding of the intent of the AEC General Design Criteria (GDC) for Nuclear Power Plant Construction Permits, as proposed on July 10, 1967. The proposed change involves only the duration of the Completion Time. The intent of the AEC GDC and General Design Criteria, Appendix A to 10 CFR Part 50 is maintained.

Conclusion

The impact of the proposed TS change on the PINGP defense-in-depth philosophy has been assessed against the elements presented in RG 1.174 and RG 1.177. Based on this assessment, the proposed change is consistent with the defense-in-depth philosophy and therefore it is acceptable from the defense-in-depth perspective to extend the EDG Completion Time from 7 days to 14 days in TS 3.8.1 Required Action B.4.