From: Mahesh Chawla
To: gabor.salamon@nmcco.com
Date: 4/4/06 11:35AM
Subject: Request for additional information on PI LAR - MC9001/MC9002

By letter dated November 21, 2005, the Nuclear Management Company, LLC (NMC) proposed changes to Prairie Island Nuclear Generating Plant (PINGP) Units 1 and 2 Technical Specifications (TS) for extension of the Completion Time associated with TS 3.8.1 Required Action B.4 from 7 days to 14 days. In order for the staff to proceed with its review of the proposed change, the following information is needed. Please arrange a teleconference to discuss the following information.

1. In another amendment request, PINGP proposed to revise SR 3.8.1.3 to reduce testing of emergency diesel generators (EDGs) D5 and D6 from the current 5100 kW to at or above 4000 kW because of problems at or near rated load for these EDGs during the monthly testing. Considering the above mentioned request, address how EDGs D5 or D6 can adequately demonstrate the ability to provide back-up power for the Unit 1 inoperable EDG bus during the extended allowed outage time (AOT).

2. Describe the excess capacity of each EDG (that will be used as an alternate power source) beyond its normally available safe shutdown capacity for the loss of offsite power (LOOP) condition. The description should be sufficient to establish that the alternate power source can power the LOOP loads of the inoperable EDG bus.

3. Describe those compensatory measures needed when the alternate AC source becomes inoperable during the extended AOT.

4. Clarify the PINGP bus transfer schemes. Specifically address transfers for safety loads.

5. Discuss and provide information on the reliability and availability of offsite power sources relating to the proposed change. The discussion should include duration, cause, date and time of each LOOP (partial or complete) event. Also, provide the current reliability and availability of all EDGs at PINGP.

6. Consistent with Regulatory Guide 1.177 address what compensatory measure will be taken to ensure that:

A. No maintenance or testing will affect the reliability of the train associated with OPERABLE DG;

B. Discretionary maintenance on the main auxiliary or startup transformers associated with the unit will be controlled;

C. Communication with the system load dispatcher is maintained to ensure that grid load changes during extended AOT are not such that unacceptable voltage would occur following a unit trip; and

D. Elective maintenance will not be performed when grid stress conditions are high such as during extreme summer temperatures and/or high demand.

7. Discuss what, if any, contingency plans will be developed to restore the inoperable EDG in the event of unanticipated adverse weather or degraded grid conditions occurring during the AOT which can significantly increase the probability of losing offsite electrical power.

8. Provide more detail regarding those measures which assure operating crews are briefed on the EDG work plan and procedural actions regarding: LOOP and SBO, 4kV safeguards bus cross-tie, and Reactor Coolant System bleed and feed. Discuss when any needed briefings will be performed (upon or prior to assuming the watch for the first time, after having scheduled

days off while the AOT is in effect, etc.) Discuss whether such a briefing will include both normal and emergency operating procedures.

9. Regulatory Guide 1.174 Tier 2 evaluation is intended to establish an early evaluation to identify and preclude potentially high risk plant configurations. The Configuration Risk Management Program (CRMP) can be used to determine such configurations. Tier 3 evaluation is the establishment of a CRMP at the time of the plant equipment outage. The need for this third tier stems from the difficulty of identifying all possible risk- significant configurations under Tier 2 that will be encountered over extended periods of plant operations. Please provide details of the Tier 2 evaluation for the requested emergency diesel generator (EDG) completion time (CT) extension request; i.e., identify for the 14-day outage time any high risk plant configurations that may occur and the compensatory measures/commitments to ensure these configurations do not occur during the extended CT.

10. In Section 4.4.3 of the license amendment request, Tier 3 credits the capability at Prairie Island Nuclear Generating Plant (PINGP) to perform a configuration dependent assessment of the overall impact on risk of proposed plant configurations prior to, and during, the performance of maintenance activities that remove equipment from service. Risk is re-assessed if an equipment failure, malfunction or emergent condition produces a plant configuration that has not previously been assessed. Does this configuration dependent assessment credit recovery of the out-of-service equipment? If "yes" describe how the CRMP will correctly assess and manage risk during online performance of EDG maintenance. For example, if the manufacturer's recommended maintenance is performed at power instead of during shutdown, the EDG will not be recoverable in the same amount of time as previously assumed.

11. Please provide the detailed Human Reliability Analysis (HRA) for the manual action to cross-tie the 4kV buses between the units. Please provide importance measures for the action (e.g. Fussell-Vesely). How was dependency of this operator action on other operator actions addressed in the model? Describe the operator training content and periodicity for this action. Has the cross-tie capability ever been demonstrated? Please provide a sensitivity of risk if this value is assumed to be an order of magnitude higher.

12. At the February 2, 2006, meeting the licensee stated that the PRA model only had the site Loss of Offsite Power (LOOP) initiating event, but not a separate initiating event for a unit LOOP. Depending upon how the initiating event data was developed, this could be conservative or could miss some LOOP risk (non-conservative). Please provide details on how LOOP initiating event (IE) frequency was developed. Were plant-centered LOOP events screened out from the data? If yes, what would be the IE frequency if unit LOOP events had not been screened out? Please provide a sensitivity analysis with unit LOOP events included or otherwise justify that the LOOP risk has been appropriately identified for the EDG CT extension.

13. Please provide a detailed breakdown of the historical and estimated EDG unavailability on all 4 EDGs for preventative and corrective maintenance. How long is periodic EDG maintenance, currently performed while shut down, expected to take? Please justify and explain why 14 days are needed for the CT.

14. How was common cause failure treated when calculating risk for corrective maintenance? For preventative maintenance? Were common cause failure differences between corrective and preventive maintenance factored into the risk assessment of CDF and LERF increases (Tables 2 and 3 of the license amendment request)?

15. Why is the core damage frequency (CDF) at unit 2 higher than at unit 1? Why are the large early release frequency (LERF) values exactly the same? Please provide a summary of the differences between the units as they impact the calulation of these risk metrics.

16. Please provide a discussion on the effects of the proposed CT extension on dominant accident sequences (sequences that contribute more that 5% to risk, for example) to show that the proposed change does not create risk outliers or exacerbate existing risk outliers. Please provide core damage contributions by initiating event and by sequence type for the base case and the extended CT case.

17. In section 4.4.2 of the LAR, it states "It is the intent of management at PINGP to limit the use of the extended Completion Time to no more than once per EDG per refueling cycle." The staff notes that the risk assessment uses this assumption as an input. However, this intention is not captured in the proposed revised Technical Specification pages or in the list of commitments. How do you propose to track this intention?

18. The risk assessment appears to assume that the capability to cross-tie the 4 kV buses across the units is available. However, the proposed revised Technical Specification pages and the list of commitments does not address whether extended EDG CTs could be entered on both units at the same time. How do you propose to track this assumed availability of the other unit's 4 kV cross-tie capability under the proposed CT extension? Also, the risk assessment does not show plant configurations where an EDG from each unit is out of service at the same time. This implies that an extended CT would not be planned for more than one EDG at a given time. Is this the intent of PINGP? How do you proposed to track this analysis assumption?

19. Discuss and provide information on the reliability and availability of offsite power sources relating to the proposed change. Provide the basis the LOOP frequencies and non-recovery probabilities used in the probabilistic risk assessment (PRA) models. Were they adjusted as a result of the New York area blackout of August, 2003? If not, why not? How is the potential for loss of offsite power given a non-LOOP initiating event (e.g., "consequential LOOP") modeled in the PINGP PRA models? Please provide a sensitivity analysis of the risk assessment for the proposed EDG CT extension to a change in LOOP frequency.

20. Please provide the results of an uncertainty analysis for the risk assessment of the proposed EDG CT extension. Alternately, provide a sensitivity analysis to key assumptions for this application.

21. The proposed Technical Specification change would increase the EDG CT from 7 to 14 days. The proposed change also seeks to increase the LCO "total time" to 21 days, but no basis for this increase has been provided. The risk assessment does not appear to consider the risk of combinations of LCO parts (e.g., offsite power source; EDG) that combine for a 21 day LCO total time. Please provide a justification for the requested increase in "total time" and a risk assessment of the possible combinations of LCO parts that could result in the 21 day total time.

CC: EDG

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Subject: Request for additional information on PI LAR - MC9001/MC9002
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