December 15, 2003

Mr. Joseph M. Solymossy
Site Vice President
Prairie Island Nuclear Generating Plant
Nuclear Management Company, LLC
1717 Wakonade Drive East
Welch, MN 55089

SUBJECT: PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNIT 1 - REQUEST FOR ADDITIONAL INFORMATION REGARDING STEAM GENERATOR TUBE INSPECTION SUMMARY REPORTS FROM THE FALL 2002 REFUELING OUTAGE (TAC NO. MB8804)

Dear Mr. Solymossy:

By letters dated December 13 and December 26, 2002, and two letters dated March 6, 2003, the Nuclear Management Company, LLC (NMC), submitted steam generator tube inspection summary reports in accordance with the Prairie Island Nuclear Generating Plant Technical Specifications. These inspection reports were from the fall 2002 refueling outage for Unit 1. The Nuclear Regulatory Commission staff finds that the additional information identified in the enclosure is needed.

A draft of the request for additional information was e-mailed to Mr. J. Kivi (NMC) on October 27, 2003. During a phone call on December 1, 2003, a mutually agreeable response date of February 6, 2004, was established.

Please contact me at (301) 415-4106 if future circumstances should require a change in this response date.

Sincerely,

/RA/

Anthony C. McMurtray, Senior Project Manager, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-282

Enclosure: Request for Additional Information

cc w/encl: See next page

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ADAMS Accession No. ML033380804

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<u>REQUEST FOR ADDITIONAL INFORMATION</u>
<u>REGARDING STEAM GENERATOR TUBE INSPECTION SUMMARY REPORTS</u>
<u>FROM THE FALL 2002 REFUELING OUTAGE</u>
<u>PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNIT 1</u>
<u>DOCKET NO. 50-282</u>

By letters dated December 13, 2002, December 26, 2002, and two letters dated March 6, 2003, Nuclear Management Company, LLC (NMC), submitted steam generator tube inspection summary reports for the Prairie Island Nuclear Generating Plant, Unit 1, from the fall 2002 outage. The Nuclear Regulatory Commission (NRC) staff has the following questions related to these letters (the questions are divided into several sections based on the reports):

<u>**Steam Generator Tube Support Plate Voltage-Based Repair Criteria 90-Day Report**</u>

1. On page 2 of the report, NMC indicates that all distorted signal indications (DSI) were inspected with a rotating probe to identify possible instances of wastage at outside-diameter stress-corrosion cracking (ODSCC) locations. NMC further indicates that “no such indications with voltages greater than the 2.0-volt limit were found at EOC [end of cycle] 21". Please clarify this last statement. Were indications of wastage found at any tube support location (regardless of voltage)? If so, how were indications attributed to wastage differentiated from indications attributed to closely spaced intergranular attack/ODSCC? Were all volumetric indications at tube supports plugged upon detection?

2. Per Generic Letter 95-05, "Voltage-Based Repair Criteria for Westinghouse Steam Generator Tubes Affected by Outside Diameter Stress Corrosion Cracking," locations with large mix residuals are to be inspected with a rotating probe. Please discuss whether any indications were found at locations with large mix residuals and discuss how these tubes were dispositioned (i.e., were indications found at large mix residual locations repaired upon detection)?

3. On page 3 of the report, it is indicated that the approach for assessing primary-to-secondary leakage under postulated accident conditions was consistent with one presented to the NRC in Reference 9 of the report. On page 21, it is indicated that the Monte Carlo methodology, “other than for occasional use of uncorrelated leak rate selections,” followed standard practice and was benchmarked. Please clarify whether the methodology used for assessing primary-to-secondary leakage under postulated accident conditions at Prairie Island Unit 1 was consistent with the NRC-approved methodology discussed in a letter dated March 27, 2002 (ADAMS Accession No. ML020870777). The NRC staff notes that this is an NRC-approved methodology for cases where the p-value exceeds 5 percent. If the NRC-approved methodology was not used, please provide a detailed description of the statistical analysis supporting the method that was used for assessing leakage under postulated accident conditions. In addition, clarify whether Figure 4.1 was calculated with the NRC-approved methodology. Further clarify how Figure 4.1 was used in the leakage analysis (e.g., does Figure 4.1 represent the 95/95 leakage value in those instances where “no leak rate correlation is assumed? If it does not, and it was used in assessing primary-to-secondary leakage under postulated accident conditions, discuss how the uncertainty in Figure 4.1 was modeled).

ENCLOSURE

4. Please provide a copy of Figure 2.8 from the report. Figure 2.8 was missing.

5. Please clarify the statement on page 17 of the report where it is indicated that the "maximum voltage observed in any simulation keeps increasing as the number of simulations increases since the analyst uncertainty is unbounded." In particular, is this statement implying that there is a potential that the maximum voltage can increase as the number of simulations increases or that the maximum voltage always increases?

6. Table 5.1 of the report provides the probability of burst associated with condition monitoring. Please verify the probability of burst values provided in this Table. If they are correct, discuss how the probability of burst at 2405 pounds per square inch (psi) can be greater than the probability of burst at 2560 psi. In addition, given that NMC projected a higher number and more severe indications for EOC 21 (made at beginning of cycle (BOC) 21 and reported in NMC's May 29, 2001, submittal (ADAMS Accession No. ML011550229)) than were actually observed at EOC 21, please clarify why the projected probability of burst (reported in Table 7-2 in the May 29, 2001, submittal) was less than the actual probability of burst (reported in Table 5.1 of the report).

7. On page 28 of the report, it is indicated that the composite voltage growth rate was -0.13 volts per effective full power year for Cycle 21. This does not appear to be consistent with Table 2.2 of the report. Please clarify.

8. Please clarify why the projected number of indications for EOC 21 provided in the May 29, 2001, submittal does not match those provided in the March 6, 2003, submittal (page 5 of the report).

9. Please indicate the length of Cycle 21.

<u>Inservice Inspection Summary 90-Day Report</u>

1. In the report, NMC indicates that one sleeved tube (R4C76) was not inspected due to an obstruction and was plugged. Please describe the nature of the obstruction and the type of sleeve used.

2. Table II of the report provides the location and extent of wall thickness penetration for each indication of an imperfection. Several indications listed in this table were in the freespan (e.g., indications 49, 146). Please describe the nature of the eddy current signals at these locations (e.g., discuss whether a flaw was present at this location, and if so, provide the size [length, depth, percent degraded area] and nature of the indication [primary water stress-corrosion cracking, ODSCC, etc.]).

3. Table III of the report indicates a single volumetric indication was detected in tube R10C69 at the weld centerline. Please discuss the nature and cause of this indication.

4. Table II of the report indicates various indications located at the first and second tube support plate on the cold leg side (R35C77, R31C82, etc.). Please discuss the nature of these indications (e.g., cold leg thinning, ODSCC). If the degradation was attributed to cold

leg thinning, please discuss how cold leg thinning can be differentiated from closely spaced stress-corrosion cracking or intergranular attack.

5. NMC indicates in Table I of the report that only 25 percent of the free-span dents were inspected with a rotating probe. Please discuss the results of the inspection. Please also discuss how the tubes that were to be examined were determined. For example, was it a random sample or were all dents above 5 volts examined with a rotating probe and the remaining sample was random. If cracks were found during this inspection, please discuss NMC's basis for not expanding the scope of the inspection.

Steam Generator Inspection Results - 15-Day Report

1. In the report, NMC indicates that several single axial indications (SAD) and multiple axial indications (MAD) were no longer detectable. Please discuss any insights NMC may have on why these indications are no longer detectable.

cc:

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