June 29, 2006

Mr. Thomas J. Palmisano
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, UNITS 1 AND 2 - ISSUANCE OF AMENDMENTS RE: CONTAINMENT SPRAY AND COOLING SYSTEMS (TAC NOS. MC8942 AND MC8943)

Dear Mr. Palmisano:

The Commission has issued the enclosed Amendment No. 173 to Facility Operating License No. DPR-42 and Amendment No. 163 to Facility Operating License No. DPR-60 for the Prairie Island Nuclear Generating Plant (PINGP), Units 1 and 2, respectively. The amendments consist of changes to the Technical Specifications (TSs) in response to your application dated November 11, 2005, supplemented by letter dated March 23, 2006.

The amendments revise PINGP's Technical Specification (TS) 3.6.5, "Containment Spray and Cooling Systems," to incorporate changes to an existing condition and two surveillance requirements, and also to add a new condition that will allow continued plant operation with TS limitations when two containment cooling system fan coil units, one in each train, are inoperable.

A copy of our related safety evaluation is also enclosed. The Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

/RA/

Mahesh L. Chawla, Project Manager
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-282 and 50-306

Enclosures:
1. Amendment No. 173 to DPR-42
2. Amendment No. 163 to DPR-60
3. Safety Evaluation

cc w/encls: See next page

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NUCLEAR MANAGEMENT COMPANY, LLC

DOCKET NO. 50-282

PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 173
License No. DPR-42

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Nuclear Management Company, LLC (the licensee), dated November 11, 2005, supplemented by letter dated March 23, 2006, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-42 is hereby amended to read as follows:

Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 173, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of its issuance and shall be implemented within 90 days.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

L. Raghavan, Chief
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment: Changes to the Facility Operating License
and Technical Specifications

Date of Issuance: June 29, 2006

ATTACHMENT TO LICENSE AMENDMENT NOS. 173 AND 163

FACILITY OPERATING LICENSE NO. DPR-42 AND DPR-60

DOCKET NO. 50-282 AND 50-306

Replace the following page of Operating License No. DPR-42 with the attached revised page. The changed area is identifed by a marginal line.

REMOVE	INSERT
DPR-42, License Page 3	DPR-42, License Page 3
DPR-60, License Page 3	DPR-60, License Page 3

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE	INSERT
3.6.5-2	3.6.5-2
3.6.5-3	3.6.5-3

NUCLEAR MANAGEMENT COMPANY, LLC

DOCKET NO. 50-306

PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 163
License No. DPR-60

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Nuclear Management Company, LLC (the licensee), dated November 11, 2005, supplemented by letter dated March 23, 2006, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-60 is hereby amended to read as follows:

Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 163, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of its issuance and shall be implemented within 90 days.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

L. Raghavan, Chief
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment: Changes to the Facility Operating License
and Technical Specifications

Date of Issuance: June 29, 2006

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 173 TO FACILITY OPERATING LICENSE NO. DPR-42

AND AMENDMENT NO. 163 TO FACILITY OPERATION LICENSE NO. DPR-60

NUCLEAR MANAGEMENT COMPANY, LLC

PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNITS 1 AND 2

DOCKET NOS. 50-282 AND 50-306

1.0 INTRODUCTION

By letter dated November 11, 2005, as supplemented March 23, 2006, Nuclear Management Company, LLC, the licensee for the Prairie Island Nuclear Generating Plant (PINGP) Units 1 and 2, requested an amendment to facility operating license Nos. DPR-42 and DPR-60. The amendment request revises PINGP's Technical Specification (TS) 3.6.5, "Containment Spray and Cooling Systems," to incorporate changes to an existing condition and two surveillance requirements, and also to add a new condition that will allow continued plant operation with TS limitations when two containment cooling system fan coil units (FCUs), one in each train, are inoperable.

Specifically, the licensee proposed changes to TS 3.6.5 Conditions C, D, and E, Surveillance Requirements (SRs) 3.6.5.2 and 3.6.5.3, and associated Bases. Condition C would be restated, on the basis of containment FCU inoperability, to be consistent with the proposed new Condition D. A new TS 3.6.5 Condition D is proposed and current Condition D would be re-lettered as Condition E and modified. The new Condition D would provide the required actions and completion time for the situation in which one FCU in each train is inoperable. SR 3.6.5.2 and SR 3.6.5.3 would be revised to allow the SRs to be met for individual FCUs and to allow plant operation to continue while in Conditions C and D.

Current TS 3.6.5 Condition C provides a required action and completion time (CT) when one containment cooling train is inoperable. Each train comprises two FCUs, supplied with cooling water (CL) from the same CL system header and provided with electrical power from the same engineered safety features (safeguards) alternating current train. Currently, if one FCU in each train is inoperable, Limiting Condition for Operation (LCO) 3.0.3 must be entered, since TS 3.6.5 does not specify a condition for that situation. LCO 3.0.3 requires plant shutdown within the allowed CT, unless corrective measures are completed that permit continued operation. The licensee states that the current TS is overly restrictive by not allowing one FCU from each train to be inoperable with appropriate TS controls. PINGP has experienced the simultaneous inoperability of one FCU in each train. In these cases, the TS-required plant shutdown track has been entered and, on some occurrences, the plant has shut down. The

licensee states that the proposed TS revisions clarify the containment cooling FCU operability requirement and provide operational flexibility.

The supplemental letter contained clarifying information, did not change the initial no significant hazards consideration determination, and did not expand the scope of the original *Federal Register* notice.

2.0 REGULATORY EVALUATION

2.1 General Design Criteria

The PINGP was designed and constructed to comply with the Atomic Energy Commission General Design Criteria as proposed on July 10, 1967 (AEC GDC) as described in the plant Updated Safety Analysis Report (USAR). AEC GDC 41 and 52 provide guidance for containment cooling system considerations.

AEC GDC 41, "Engineered Safety Features Performance Capability," requires that engineered safety features, such as emergency core cooling and containment heat removal systems, shall provide sufficient performance capability to accommodate partial loss of installed capacity and still fulfill the required safety function. As a minimum, each engineered safety feature shall provide this required safety function assuming a failure of a single active component.

For PINGP Units 1 and 2, the containment cooling system consists of two trains, each with the capacity to provide 100 percent of the post-accident cooling requirements for the system. The system design provides sufficient capacity for loss of one train following an accident. During identified system inoperabilities, the applicable TS condition is entered. When a system inoperability is under the control of a TS with limited time for continued plant operation with the inoperability, a single-failure is not postulated to occur (see clarification in Generic Letter 80-30 below).

AEC GDC 52, "Containment Heat Removal System," requires that, where active heat removal systems are needed under accident conditions to prevent exceeding containment design pressure, at least two systems, preferably of different principles, each with full capacity, shall be provided.

PINGP Units 1 and 2 do require active heat removal systems under accident conditions. The containment spray system and the containment cooling system fulfill AEC GDC 52 requirements.

2.2 Generic Letter 80-30, Clarification Of The Term "Operable" As It Applies To Single-Failure Criterion For Safety Systems Required By TSs

Generic Letter 80-30 provides clarification regarding the single-failure criterion, with respect to the TS requirements. The Generic Letter states:

> When the required redundancy is not maintained, either due to equipment failure or maintenance outage, action is required, within a specified time, to change the operating mode of the plant to place it in a safe condition. The specified time to take action,

usually called the equipment out-of-service time, is a temporary relaxation of the single-failure criterion, which, consistent with overall system reliability considerations, provides a limited time to fix equipment or otherwise make it OPERABLE.

Current PINGP TSs apply this guidance when one or both fan coil units in a single train are inoperable. In this condition as proposed, redundancy is not maintained, and action is required to place the plant in a safe condition and an equipment out-of-service time to take action (the CT) is specified during which the single-failure criterion is relaxed. During the CT, the remaining operable train provides the safety function.

The licensee proposes to apply this guidance when loss of redundancy occurs in both trains and the remaining operable equipment in both trains provides the safety function during the proposed CT. In this condition, as proposed, redundancy is not maintained, and action is required to place the plant in a safe condition, and a CT is specified during which the single-failure criterion is relaxed. Since a single-failure is not postulated during the CT, the two opposite train operable fan coil units provide the required safety function. The completion time of 7 days, for the proposed new condition with one inoperable FCU in each train, is the same as the current CT for an inoperable train.

3.0 TECHNICAL EVALUATION

The licensee states that its engineering evaluation demonstrated that any two FCUs are capable of removing more heat from containment following a design-basis accident than is credited in the USAR. The analysis was performed using the plant CL system thermal-hydraulic analyses models. The analysis methods are the same as those previously reviewed by the U.S. Nuclear Regulatory Commission (see supplemental letter dated March 23, 2006).

FCU 24 is the limiting FCU for either unit at PINGP. FCU 24 is located at the upper floor (Elevation 755 feet) in the Unit 2 containment, at a higher elevation in containment than the other Unit 2 FCUs, and is provided with water from Train B of the CL system. FCU 13 is located at the upper floor (Elevation 755 feet) in the Unit 1 containment and is provided with water from Train A of the CL system. The licensee states that hydraulic analyses of the CL system have demonstrated that Train B of the cooling water system is more limiting than Train A. Thus, for a given accident condition, the CL flows and pressures at FCU 24 will present the limiting case for heat removal.

FCU heat removal is credited following either a loss-of-coolant accident (LOCA) or a main steamline break accident (MSLB). The FCU heat removal capability assumed in the PINGP USAR LOCA analysis is the same, or greater than, that assumed for the PINGP MSLB containment analysis. The licensee states that its analysis of the heat removal capability of FCU 24 was determined with the following limiting assumptions:

- A large-break LOCA is assumed to occur. Several sensitivities were performed with varying containment atmospheric temperatures of 270, 240, and 210 °F. A temperature of 270°F represents the peak containment temperature during the LOCA.
- A coincident loss of off-site power (LOOP) is assumed to occur. This minimizes the number of CL pumps that are operating. With the supply ring header split by the safety injection signal, there is only one pump operating on the header to provide the necessary cooling.

- The operating CL pump is assumed to be operating at the minimum in-service testing pump curve to demonstrate pump operability, which in this case is the 93 percent curve.

- Worst-case fouling factors are assumed for the FCU heat transfer surfaces.

- Maximum CL inlet temperature of 95 °F is assumed.

- The instrument air system is assumed not to be available. This results in air operated valves in the CL system failing open, which, in turn, maximizes the flow demand on the system. This minimizes the flow and pressure available to the FCUs. The instrument air compressors are non-safety related; however, the air compressors are automatically loaded on the emergency diesel generator and would be available during a LOOP. However, as the compressors are not safety-related components, credit is not taken for their operation during this scenario.

- FCU 22 is assumed to be isolated. FCU 22 and FCU 24 are the FCUs in the Unit 2 containment supplied from Train B of the CL system.

The objective of the analysis was to determine the total heat removal capability of two FCUs, with the other FCU in each train isolated. The analysis determines the FCU heat removal for FCU 24, which is the limiting FCU. The predicted heat removal capacity for FCU 24 was multiplied by two to obtain a conservative value for the heat removal capacity of two FCUs with the other FCU in each train isolated. The licensee states that the calculations demonstrated that the heat removal from two FCUs, each with the heat removal capability of FCU 24, would exceed the USAR credited heat removal rates. Since the calculations assumed the other FCU in the same train would be isolated, the proposed TS includes requirements to isolate the inoperable FCUs. The staff agrees with the licensee's approach to demonstrate heat removal capability, its conclusion that any two FCUs are capable of providing the required post-accident cooling, and its application of the guidance in Generic Letter 80-30.

The staff therefore concludes that the proposed Condition D is acceptable. The staff also concludes that the proposed restated Condition C is acceptable and consistent with proposed Condition D, and that the relettered Condition E is acceptable and properly applies the relevant required actions and CTs to proposed Conditions C and D. The staff also concludes the proposed changes to the SRs are acceptable because they are consistent with the changes in proposed Conditions C and D.

Summary

The licensee performed an analysis to determine the total heat removal capability of the limiting FCU in terms of its relative location and associated cooling water supply system. The staff agrees with the analysis approach and the conservative assumptions made in determining the heat removal capability of two FCUs with the other FCU in each train isolated. The staff agrees that the licensee has reasonably demonstrated that any two FCUs are capable of providing the required post-accident cooling. The staff also agrees with the licensee's application of the Generic Letter 80-30's guidance for a temporary relaxation of the single-failure criterion when loss of redundancy occurs in both trains and the remaining operable equipment in both trains

provides the safety function during specified CT. Therefore, the staff finds the licensee's proposal, to allow continued plant operation with TS limitations when two FCUs are inoperable on different trains, to be acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Minnesota State official was notified of the proposed issuance of the amendment. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes the requirements with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 or change the surveillance requirements. The staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration and there has been no public comment on such finding (71 FR 10074). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: Getachew Tesfaye

Date: June 29, 2006

Prairie Island Nuclear Generating Plant,
Units 1 and 2

cc:

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