

May 30, 2001

Mr. Joel Sorensen
Site General Manager
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 AMENDMENT APPROVING THE USE OF BREAKAWAY
CERAMIC PINS TO RESTRAIN THE DOORS TO THE AUXILIARY BUILDING
SPECIAL VENTILATION ZONE (TAC NOS. MB0501 AND MB0510)

Dear Mr. Sorensen:

The Commission has issued the enclosed Amendment No. 157 to Facility Operating License No. DPR-42 and Amendment No. 148 to Facility Operating License No. DPR-60 for the Prairie Island, Units 1 and 2, respectively. The amendment approves the modification to Prairie Island Nuclear Generating Plant, Units 1 and 2, that was described in your application dated October 30, 2000.

The amendment approves the insertion of breakaway ceramic pins into the latches of eight double-leaf doors in the auxiliary building special ventilation zone in order to restrain the doors and reduce the frequency of open-door position alarms. The ceramic latch pins are designed to break at forces well below the differential pressure that would be generated in the auxiliary building as a result of a postulated high-energy line break (HELB), and thereby allow the doors to swing open and create a relief path from the auxiliary building. Therefore, the modification provides the restraints needed to reduce the frequency of open-door position alarms; but without impeding the doors' steam relief function that was assumed in the design-basis HELB analysis.

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/

Tae Kim, Senior Project Manager, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-282 and 50-306

Enclosures: 1. Amendment No. 157 to DPR-42
2. Amendment No. 148 to DPR-60
3. Safety Evaluation

cc w/encls: See next page

Prairie Island Nuclear Generating Plant,
Units 1 and 2

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The amendment approves the insertion of breakaway ceramic pins into the latches of eight double-leaf doors in the auxiliary building special ventilation zone in order to restrain the doors and reduce the frequency of open-door position alarms. The ceramic latch pins are designed to break at forces well below the differential pressure that would be generated in the auxiliary building as a result of a postulated high-energy line break (HELB), and thereby allow the doors to swing open and create a relief path from the auxiliary building. Therefore, the modification provides the restraints needed to reduce the frequency of open-door position alarms; but without impeding the doors' steam relief function that was assumed in the design-basis HELB analysis.

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PUBLIC PDIII-1 Reading OGC ACRS TKim GHill(4)
CCraig RLanksbury, RGN-III DDiec WBeckner RBouling GHubbard
SMiranda
*Provided SE input by memo

OFFICE	PDIII-1/PM	PDIII-1/PM	PDIII-1/LA	SPLB/SC*	OGC	PDIII-1/SC
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DATE	5/7/01	5/9/01	5/3/01	02/26/01	5/18/01	5/21/01

ACCESSION NO. ML011500057

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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. 157

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 October 30, 2000, 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, by Amendment No. 157, Facility Operating License No. DPR-42 is hereby amended to authorize the insertion of breakaway ceramic pins into the latches of eight double-leaf doors in the auxiliary building special ventilation zone, as set forth in the license amendment application dated October 30, 2000, and evaluated in the associated safety evaluation by the Commission's Office of Nuclear Reactor Regulation. The licensee shall update the Updated Final Safety Analysis Report by adding a description of this modification, as authorized by this amendment, and in accordance with 10 CFR 50.71(e).

3. This license amendment is effective as of its date of its issuance and shall be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Claudia M. Craig, Chief, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Date of Issuance: May 30, 2001

NUCLEAR MANAGEMENT COMPANY, LLC

DOCKET NO. 50-306

PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 148
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 October 30, 2000, 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, by Amendment No. 148, Facility Operating License No. DPR-60 is hereby amended to authorize the insertion of breakaway ceramic pins into the latches of eight double-leaf doors in the auxiliary building special ventilation zone, as set forth in the license amendment application dated October 30, 2000, and evaluated in the associated safety evaluation by the Commission's Office of Nuclear Reactor Regulation. The licensee shall update the Updated Final Safety Analysis Report by adding a description of this modification, as authorized by this amendment, and in accordance with 10 CFR 50.71(e).

3. This license amendment is effective as of the date of its issuance and shall be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Claudia M. Craig, Chief, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Date of Issuance: May 30, 2001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 157 TO FACILITY OPERATING LICENSE NO. DPR-42
AND AMENDMENT NO. 148 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 application dated October 30, 2000, Nuclear Management Company, LLC (the licensee), requested review and approval of a modification to the Prairie Island Nuclear Generating Plant, Units 1 and 2. The proposed modification would insert breakaway ceramic pins into the latches of eight double-leaf doors in the auxiliary building special ventilation (ABSV) zone in order to restrain the doors and reduce the frequency of open-door position alarms. The ceramic latch pins are designed to break at forces well below the differential pressure that would be generated in the auxiliary building as a result of a postulated high-energy line break (HELB), and thereby allow the doors to swing open and create a relief path from the auxiliary building. Therefore, the proposed modification would provide the restraints needed to reduce the frequency of open-door position alarms; but without impeding the doors' steam relief function, that was assumed in the design-basis HELB analysis.

The addition of the proposed breakaway pins increases the probability that the doors will not be free to open during an HELB, and this does not meet the criteria of 10 CFR 50.59. Accordingly, the licensee has submitted the proposed modification for review and approval.

2.0 EVALUATION

The licensee performed a plant walkdown to gather data for an updated HELB analysis and found that the ABSV zone doors were not configured as assumed in the Prairie Island, Units 1 and 2, design-basis HELB. These doors were found latched, which would prevent the doors from opening during an HELB event.

There are four sets of double-leaf doors, airlock type, in the ABSV zone. The as-found double-leaf door airlock configuration has one leaf made inactive by a manual latch with a 6-inch heavy-duty barrel bolt engaging the horizontal metal pin installed on the door frame. The other leaf is active and has a heavy-duty door closure mechanism at the center of door. In order to establish a configuration consistent with the assumptions in the HELB analysis that these doors would swing outward from the auxiliary building when the differential pressure

generated by HELB reaches 0.2 psi, the licensee removed the horizontal metal pins from the door frames and covered the manual latches with adhesive warning labels to prevent inadvertent relatching.

With the horizontal metal pins removed and the manual latches covered with adhesive warning labels, these doors are now held in place only by the resistance from the hinges and door closure mechanisms, which can be easily swung open by bumping an equipment cart against the doors. Also, the doors from one end of the airlock can be swung outward when doors from the other end of the airlock are opened due to the creation of a pressure wave that forces open doors at the other end of the airlock.

Door-position alarms associated with the current design configuration sound in the control room if these doors are not closed within a specified time period. The operators are required to respond to these alarms or establish administrative control of the ABSV zone boundary openings as required by plant procedures and Technical Specification (TS) 3.6.E.2.

Because numerous door-position alarms generated as a result of the current double-leaf airlock create distractions to operating staff, the licensee proposes to install ceramic pins to replace the removed horizontal metal pins on the door frames. The inactive leaves with existing manual latches will hold the doors closed during normal operations by engaging the newly installed horizontal ceramic pins. Access to the auxiliary building will continue to be provided by the active door leaves by opening and closing the door closure mechanisms.

The ceramic pin to be used is made of MACOR ultra high temperature machinable glass-mica. MACOR is a glass ceramic containing randomly oriented mica flakes in the microstructure, which are key to its strength and machinability. In order to determine the ceramic pin failure load, the licensee calculated a total load on the door during an HELB in which the pin must break away to satisfy the calculated differential pressure of 0.2 psi. The pin limiting load failure was calculated to be 525 lb.

To ensure that the ceramic pin will break way with a 95-percent confidence level, the measured failure load has to be less than the calculated limiting load failure. American Society for Testing and Materials (ASTM) Standard, C 1161-94, "Standard Test Method for Flexural Strength of Advanced Ceramic at Ambient Temperature," method was used to establish a minimum sample size to determine reasonable confidence limits on strength distribution parameters. A total of 30 MACOR ceramic rods were used. Each rod measured 13 inches long and 0.48 inches in diameter and was subsequently cut into four 3-inch pieces (pins). One pin from each of the 30 rods was included in the sample size and selected for destructive testing to ensure that the measured failure load was less than that of the calculated limiting load failure. Of the 30 pins tested, the maximum measured load at failure was substantially less than the calculated pin limiting load failure of 525 lb. At the 95-percent confidence level, the measured failure load for the ceramic pins was 375 lb.

The licensee stated that all 30 rods were machined from the same slab of MACOR, which represents a homogenous lot and destructive testing sample size using one test piece from each of the 30 machined ceramic rods is consistent with guidance in American Society of Mechanical Engineers Code, Section III.

With the installation of ceramic pins in the door latching mechanisms, door-position alarms will continue to annunciate in the control room if doors are not closed within a specified time. Operators will continue to respond to these alarms or establish administrative control of the ABSV zone boundary openings as required by plant procedures and TS 3.6.E.2. However, the latch mechanisms with the ceramic pins should minimize unwanted door positioning alarms.

On the basis of its review of the proposed license amendment, the staff concludes that the measured failure load for the MACOR ceramic pins is significantly less than the calculated limiting load failure required to open airlock-type doors in the ABSV zone and that there is a reasonable assurance that the proposed ceramic pins would break away and allow these doors to swing open when the differential pressure generated by an HELB reaches 0.2 psi. The staff, therefore, finds that the proposed license amendment request acceptable.

3.0 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.

4.0 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. 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 (66 FR 15928). 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.

5.0 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: D. Diec

Date: May 30, 2001