

September 17, 1998

Mr. R. P. Powers, Senior Vice President
Indiana Michigan Power Company
Nuclear Generation Group
500 Circle Drive
Buchanan, MI 49107 1395

SUBJECT: DONALD C. COOK NUCLEAR PLANT, UNITS 1 AND 2 - ISSUANCE OF
AMENDMENTS RE: HYDROGEN RECOMBINER SURVEILLANCE
REQUIREMENTS (TAC NOS. MA2045 AND MA2046)

Dear Mr. Powers:

The U.S. Nuclear Regulatory Commission has issued the enclosed Amendment No. 223 to Facility Operating License No. DPR-58 and Amendment No. 207 to Facility Operating License No. DPR-74 for the Donald C. Cook Nuclear Plant, Units 1 and 2. The amendments consist of changes to the Technical Specifications in response to your application dated March 3, 1998.

These amendments will remove the word "immediately" from the Unit-1 hydrogen recombiner surveillance requirement 4.6.4.2.b.4 and revise the Unit 1 and 2 Technical Specification 3/4.6.4 bases.

A copy of our related Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's next biweekly Federal Register notice.

Sincerely,

Original signed by:
John F. Stang, Sr. Project Manager
Project Directorate III-3
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Docket Nos. 50-315 and 50-316

Enclosures: 1. Amendment No. 223 to DPR-58
2. Amendment No. 207 to DPR-74
3. Safety Evaluation

cc w/encls: See next page

DOCUMENT NAME: G:\DCCOOK\CO2045.AMD

*See Previous Concurrence

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DATE	09/17/98		09/17/98		09/17/98		09/17/98		09/01/98	
OFFICE	EELB*	E	OGC*							
NAME	JCalvo		AHodgdon							
DATE	08/31/98		09/10/98							

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PDR ADOCK 05000315
P PDR

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DATE	09/17/98		09/17/98		09/17/98		09/17/98		09/01/98	

OFFICE	EELB*	E	OGC*							
NAME	JCalvo		AHodgdon							
DATE	08/31/98		09/10/98							

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

September 17, 1998

Mr. Robert P. Powers, Senior Vice President
Indiana Michigan Power Company
Nuclear Generation Group
500 Circle Drive
Buchanan, MI 49107 1395

SUBJECT: DONALD C. COOK NUCLEAR PLANT, UNITS 1 AND 2 - ISSUANCE OF
AMENDMENTS RE: HYDROGEN RECOMBINER SURVEILLANCE
REQUIREMENTS (TAC NOS. MA2045 AND MA2046)

Dear Mr. Powers:

The U.S. Nuclear Regulatory Commission has issued the enclosed Amendment No. ²²³ to Facility Operating License No. DPR-58 and Amendment No. ²⁰⁷ to Facility Operating License No. DPR-74 for the Donald C. Cook Nuclear Plant, Units 1 and 2. The amendments consist of changes to the Technical Specifications in response to your application dated March 3, 1998.

These amendments will remove the word "immediately" from the Unit-1 hydrogen recombiner surveillance requirement 4.6.4.2.b.4 and revise the Unit 1 and 2 Technical Specification 3/4.6.4 bases.

A copy of our related Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's next biweekly Federal Register notice.

Sincerely,

A handwritten signature in black ink, reading "John F. Stang, Sr.", is positioned above the typed name.

John F. Stang, Sr. Project Manager
Project Directorate III-3
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Docket Nos. 50-315 and 50-316

Enclosures: 1. Amendment No. ²²³ to DPR-58
2. Amendment No. ²⁰⁷ to DPR-74
3. Safety Evaluation

cc w/encls: See next page

Robert P. Powers
Indiana Michigan Power Company

Donald C. Cook Nuclear Plant
Units 1 and 2

cc:

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Department of Attorney General
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Buchanan, MI 49107

David A. Lochbaum
Union of Concerned Scientists
1616 P Street NW, Suite 310
Washington, DC 20036-1495

DATED: September 17, 1998

AMENDMENT NO. 223 TO FACILITY OPERATING LICENSE NO. DPR-58, DONALD C. COOK
NUCLEAR PLANT, UNIT 1

AMENDMENT NO. 207 TO FACILITY OPERATING LICENSE NO. DPR-74, DONALD C. COOK
NUCLEAR PLANT, UNIT 2

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G. Grant, RIII

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T. Harris (TLH3, copy of SE only)



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
WASHINGTON, D.C. 20555-0001

INDIANA MICHIGAN POWER COMPANY

DOCKET NO. 50-315

DONALD C. COOK NUCLEAR PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 223
License No. DPR-58

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Indiana Michigan Power Company (the licensee) dated March 3, 1998, 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 1;
 - 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-58 is hereby amended to read as follows:

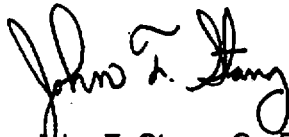
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(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No.²²³, 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 the date of issuance, with full implementation within 45 days.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in black ink, appearing to read "John F. Stang".

John F. Stang, Sr. Project Manager
Project Directorate III-3
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical
Specifications

Date of Issuance: September 17, 1998



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
WASHINGTON, D.C. 20555-0001

ATTACHMENT TO LICENSE AMENDMENT NO. 223

TO FACILITY OPERATING LICENSE NO. DPR-58

DOCKET NO. 50-315

Revise Appendix A Technical Specifications by removing the pages identified below and inserting the attached pages. The revised pages are identified by amendment number and contain vertical lines indicating the area of change.

REMOVE

6-25
B6-3

INSERT

6-25
B6-3

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.6 CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

3. Verifying during a recombiner system functional test that the heater sheath temperature increases to $\geq 1200^{\circ}\text{F}$ within 5 hours and is maintained for at least 4 hours.
4. Verifying the integrity of all heater electrical circuits by performing a continuity and resistance to ground test following the above required functional test. The resistance to ground for any heater phase shall be $\geq 10,000$ ohms.

3/4 BASES

3/4.6 CONTAINMENT SYSTEMS

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

3/4.6.2.1 CONTAINMENT SPRAY SYSTEM

The OPERABILITY of the containment spray system ensures that containment depressurization and cooling capability will be available in the event of a LOCA. The pressure reduction and resultant lower containment leakage rate are consistent with the assumptions used in the accident analyses.

3/4.6.2.2 SPRAY ADDITIVE SYSTEM

The OPERABILITY of the spray additive system ensures that sufficient NaOH is added to the containment spray in the event of a LOCA. The limits on NaOH minimum volume and concentration, ensure that 1) the iodine removal efficiency of the spray water is maintained because of the increase in pH value, and 2) corrosion effects on components within containment are minimized. These assumptions are consistent with the iodine removal efficiency assumed in the accident analyses.

3/4.6.3 CONTAINMENT ISOLATION VALVES

The OPERABILITY of the containment isolation valves ensures that the containment atmosphere will be isolated from the outside environment in the event of a release of radioactive material to the containment atmosphere or pressurization of the containment. Containment isolation within the time limits specified ensures that the release of radioactive material to the environment will be consistent with the assumptions used in the analyses for a LOCA.

The opening of containment purge and exhaust valves and locked or sealed closed containment isolation valves on an intermittent basis under administrative control includes the following considerations: (1) stationing a qualified individual, who is in constant communication with control room, at the valve controls, (2) instructing this individual to close these valves in an accident situation, and (3) assuring that environmental conditions will not preclude access to close the valves and that this action will prevent the release of radioactivity outside the containment.

3/4.6.4 COMBUSTIBLE GAS CONTROL

The OPERABILITY of the equipment and systems required for the detection and control of hydrogen gas ensures that this equipment will be available to maintain the hydrogen concentration within containment below its flammable limit during post-LOCA conditions. Either recombiner unit is capable of controlling the expected hydrogen generation associated with: 1) zirconium-water reactions; 2) radiolytic decomposition of water; and 3) corrosion of metals within containment.

The acceptance criterion of 10,000 ohms is based on the test being performed with the heater element at an ambient temperature, but can be conservatively applied when the heater element is at a temperature above ambient.



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
WASHINGTON, D.C. 20555-0001

INDIANA MICHIGAN POWER COMPANY

DOCKET NO. 50-316

DONALD C. COOK NUCLEAR PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 207
License No. DPR-74

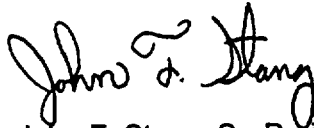
1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Indiana Michigan Power Company (the licensee) dated March 3, 1998, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter 1;
 - 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-74 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No.²⁰⁷, 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 the date of issuance, with full implementation within 45 days.

FOR THE NUCLEAR REGULATORY COMMISSION



John F. Stang, Sr. Project Manager
Project Directorate III-3
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical
Specifications

Date of Issuance: September 17, 1998



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
WASHINGTON, D.C. 20555-0001

ATTACHMENT TO LICENSE AMENDMENT NO. 207

FACILITY OPERATING LICENSE NO. DPR-74

DOCKET NO. 50-316

Revise Appendix A Technical Specifications by removing the pages identified below and inserting the attached pages. The revised pages are identified by amendment number and contain vertical lines indicating the area of change.

REMOVE

B6-4

INSERT

B6-4

3/4 BASES
3/4.6 CONTAINMENT SYSTEMS

3/4.6.4 COMBUSTIBLE GAS CONTROL

The OPERABILITY of the equipment and systems required for the detection and control of hydrogen gas ensures that this equipment will be available to maintain the hydrogen concentration within containment below its flammable limit during post-LOCA conditions. Either recombiner unit is capable of controlling the expected hydrogen generation associated with: 1) zirconium-water reactions; 2) radiolytic decomposition of water; and 3) corrosion of metals within containment. These hydrogen control systems are consistent with the recommendations of Regulatory Guide 1.7, "Control of Combustible Gas Concentrations in Containment Following a LOCA," March 1971.

The acceptance criterion of 10,000 ohms is based on the test being performed with the heater element at an ambient temperature, but can be conservatively applied when the heater element is at a temperature above ambient.

3/4.6.5 ICE CONDENSER

The requirements associated with each of the components of the ice condenser ensure that the overall system will be available to provide sufficient pressure suppression capability to limit the containment peak pressure transient to less than 12 psig during LOCA conditions.

3/4.6.5.1 ICE BED

The OPERABILITY of the ice bed ensures that the required ice inventory will 1) be distributed evenly through the containment bays, 2) contain sufficient boron to preclude dilution of the containment sump following the LOCA and 3) contain sufficient heat removal capability to condense the reactor system volume released during a LOCA. These conditions are consistent with the assumptions used in the accident analyses.

The minimum weight figure of 1333 pounds of ice per basket contains a 5% conservative allowance for ice loss through sublimation. In the event that observed sublimation rates are equal to or lower than design predictions after three years of operation, the minimum ice baskets weight may be adjusted downward. In addition, the number of ice baskets required to be weighed each 18 months may be reduced after 3 years of operation if such a reduction is supported by observed sublimation data.

3/4.6.5.2 ICE BED TEMPERATURE MONITORING SYSTEM

The OPERABILITY of the ice bed temperature monitoring system ensures that the capability is available for monitoring the ice temperature. In the event the monitoring system is inoperable, the ACTION requirements provide assurance that the ice bed heat removal capacity will be retained within the specified time limits.



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 223 TO FACILITY OPERATING LICENSE NO. DPR-58
AND AMENDMENT NO. 207 TO FACILITY OPERATING LICENSE NO. DPR-74
INDIANA MICHIGAN POWER COMPANY
DONALD C. COOK NUCLEAR PLANT, UNITS 1 AND 2
DOCKET NOS. 50-315 AND 50-316

1.0 INTRODUCTION

By letter dated March 3, 1998, the Indiana Michigan Power Company (the licensee) requested amendments to the Technical Specifications (TS) appended to Facility Operating License Nos. DPR-58 and DPR-74 for the Donald C. Cook Nuclear Plant, Units 1 and 2. The proposed amendments would remove the word "immediately" from surveillance requirement 4.6.4.2.b.4 for Unit 1 such that the Technical Specification for the two units would be consistent. Additionally, the bases for this Technical Specification will be modified.

2.0 EVALUATION

Technical Specification 3.6.4.2 requires that two independent containment hydrogen recombiner systems be operable during modes 1 and 2. The hydrogen recombiner is used to prevent containment hydrogen concentration from exceeding 4 volume percent following a postulated loss of coolant accident. The hydrogen recombiner accomplishes this function by heating containment air to a temperature greater than 1150°F. At these temperatures, the hydrogen contained within the air reacts with oxygen to form water.

A series of periodic surveillance requirements have been established to demonstrate the capability of this equipment to perform its safety function. Surveillance requirement 4.6.4.2.b.4 demonstrates the integrity of the electrical circuits through continuity and ground resistance checks. A minimum acceptance criterion of 10,000 ohms has been established for the insulation resistance to ground for any heater phase. This test is sequenced to follow surveillance requirement 4.6.4.2.b.3 which requires a functional test of the hydrogen recombiner. During this functional test, the hydrogen recombiner is heated to temperatures equal to or greater than 1200°F. These two surveillance requirements are independent tests that are sequenced together to ensure that any unexpected degradation of the heater circuit

integrity due to full temperature operations would be identified prior to declaring the equipment operable.

There is an inconsistency in the description of surveillance requirement 4.6.4.2.b.4 between the Unit 1 and 2 Technical Specifications for Donald C. Cook Nuclear Plant. The Unit 1 surveillance requires the continuity and resistance to ground test "immediately" following the functional test defined in surveillance requirement 4.6.4.2.b.3. The Unit 2 surveillance requires the same test sequencing but does not specify any specific timing between the two surveillance requirements. This amendment would eliminate the word "immediately" from surveillance requirement 4.6.4.2.b.4 for the Unit 1 Technical Specification.

Removal of the word "immediately" from the Unit 1 surveillance requirement 4.6.4.2.b.4 for the Unit 1 Technical Specification will allow the continuity and resistance to ground test to be performed at ambient conditions. Performing the resistance to ground test when the heater has reached ambient conditions will allow for better trending of insulation resistance values taken from consecutive surveillance tests to early identify negative trends. This will facilitate identification of equipment degradation prior to equipment failure. Magnesium oxide is the insulation material used for the heater elements. The resistance characteristics of magnesium oxide are inversely proportional to temperature above 1000°F such that insulation resistance values will increase as the heater unit cools. Therefore, 10,000 ohms will be used as the acceptance criteria for surveillance requirement 4.6.4.2.b.4 for a test performed at ambient conditions and conservatively applied for tests performed at higher temperatures.

The licensee has also proposed editorial changes and additional statements to be added to Bases 3/4.6.4 for the Technical Specifications for Donald C. Cook Nuclear Plant Unit 1 and 2.

The staff has reviewed the bases changes and finds them acceptable. Based on the above evaluation the staff finds the proposed change requested to Surveillance Requirement 4.6.4.2.b.4 is acceptable. This approval is based on an acceptable level of assurance that the testing specified under this surveillance is sufficient to ensure the integrity of the heater electrical circuits such that the equipment will not be prevented from performing its safety function. This change does not reduce the margin of safety specified in the Technical Specifications and does not represent a condition adverse to the health and safety of the public.

3.0 STATE CONSULTATION

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

4.0 ENVIRONMENTAL CONSIDERATION

These amendments change 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 amendments involve 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 amendments involve no significant hazards consideration and there has been no public comment on such finding (63 FR 35990). Accordingly, the amendments meet 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 amendments.

5.0 CONCLUSION

The staff 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 amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: John Stang
Chris Nolan

Date: September 17, 1998