

MAR 24 1978

Docket No. 50-316

Indiana & Michigan Electric Company  
Indiana & Michigan Power Company  
ATTN: Mr. John Tillinghast  
Vice President  
P. O. Box 18  
Bowling Green Station  
New York, New York 10004

Gentlemen:

SUBJECT: ISSUANCE OF AMENDMENT NO. 4 - DONALD C. COOK NUCLEAR PLANT,  
UNIT NO. 2

The Commission has issued the enclosed Amendment No. 4 to Facility Operating License No. DPR-74 for the Donald C. Cook Nuclear Plant, Unit No. 2. This amendment authorizes power operation not to exceed 1695 megawatts thermal (50% of rated core power level).

Copies of the related Safety Evaluation and Notice of Issuance are also enclosed.

Sincerely,

151

Roger S. Boyd, Director  
Division of Project Management  
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 4 to License No. DPR-74
2. Safety Evaluation
3. Notice of Issuance

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See page 2

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Indiana and Michigan Electric Company  
Indiana and Michigan Power Company

- 2 -

March 24, 1978

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Division of Intergovernmental Relations  
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Mr. Wade Schuler, Supervisor  
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Mr. W. Mabry  
Mayor  
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Director, Technical Assessment Division  
Office of Radiation Programs (AW-459)  
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U. S. Environmental Protection  
Agency  
Federal Activities Branch  
Region V Office  
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INDIANA AND MICHIGAN ELECTRIC COMPANY  
INDIANA AND MICHIGAN POWER COMPANY

DOCKET NO. 50-316

DONALD C. COOK NUCLEAR PLANT, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 4  
License No. DPR-74

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The issuance of this license amendment is in compliance 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 license, as amended, 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, Facility Operating License No. DPR-74 is amended to authorize power operation not to exceed 1695 megawatts thermal (50% of rated core power level).
3. This amendment deletes conditions 3.B.3 and 3.B.4 of Amendment No. 2 to Facility Operating License No. DPR-74.
4. Conditions 3.B.1 and 3.B.2 of Amendment No. 2 to Facility Operating License No. DPR-74 are superseded by the following conditions:

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- A. Indiana and Michigan Power Company shall provide for staff review the results of qualification testing performed in conformance with IEEE 323-1971 requirements, for Foxboro EL1GM, Foxboro EL3DM and Barton 704 transmitters used in safety-related circuits inside containment for postulated steamline break and/or loss of coolant accident conditions. The results of this testing shall be provided on or before June 6, 1978.
- B. Indiana and Michigan Power Company shall provide for staff review the results of qualification testing performed in conformance with IEEE 323-1971 requirements for all electrical terminations in all safety-related circuits inside containment for postulated steamline break and/or loss of coolant accident conditions. The results of this testing shall be provided on or before June 6, 1978.

5. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

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Roger S. Boyd, Director  
Division of Project Management  
Office of Nuclear Reactor Regulation

Date of Issuance: MAR 24 1978

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SAFETY EVALUATION BY THE OFFICE OF  
NUCLEAR REACTOR REGULATION

AMENDMENT 4 TO DPR-74

INDIANA AND MICHIGAN ELECTRIC COMPANY  
INDIANA AND MICHIGAN POWER COMPANY

DONALD C. COOK NUCLEAR PLANT UNIT 2

DOCKET NO. 50-316

This safety evaluation presents NRC staff acceptance of documentation and analyses supporting the amendment of Facility Operating License No. DPR-74 for D. C. Cook Unit 2. This amendment involves resolution of the condition described in paragraphs 3.B.1 - 3.B.4 of Amendment 2 to Facility Operating License No. DPR-74. This condition relates to the environmental qualification of certain safety-related electrical equipment inside containment for a postulated steamline break accident. This safety evaluation discusses our review and approval of the licensees' resolution for each type of equipment reviewed.

Documentation of Qualification Test Procedures and Results for Safety-Related  
Electrical Equipment for a Postulated Steamline Break

On March 20, 1978 the licensees provided and the staff reviewed documentation of the qualification test procedures and results used to verify the ability of specific safety-related electrical equipment to function in the environment existing inside containment after a postulated steamline break. The staff reviewed the qualification documentation for the following equipment: Foxboro E11GM, Foxboro E13DM and Barton 764 transmitters, Continental instrument cable, and containment electrical penetrations. In addition, the staff reviewed documentation describing the different types of electrical terminations used on safety-related equipment inside containment and the environmental testing program in progress. Based on our review of documentation presented we have concluded that qualification test procedures and results are adequate to satisfy conditions 3.B.3 and 3.B.4 of Amendment No. 2 to Facility Operating License No. DPR-74. We have also reviewed the licensees' documentation presented in accordance with conditions 3.B.1 and 3.B.2 of Amendment No. 2 to Facility Operating License No. DPR-74 and have required that additional qualification testing be performed within a specified period of time. Our evaluation and requirements for additional testing and documentation follow for each type of equipment reviewed.

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(1) Instrumentation: Foxboro E11GM, Foxboro E13DM and Barton 764 Transmitters

The licensees have presented and the staff has reviewed documentation of qualification tests for Foxboro E11GM, Foxboro E13DM and Barton 764 transmitters. The licensees have provided documentation of the results of separate effects testing for each of these transmitters.

The licensees have presented and we have reviewed their justification for continued operation of D. C. Cook Unit 2 for the period ending June 6, 1978, during which qualification testing for the Foxboro E11GM, Foxboro E13DM and Barton 764 transmitters will be completed. The information provided supports short term operation pending completion of the ongoing environmental tests mainly because in the unlikely event of a design basis accident before June 6, 1978, the calculated conditions are not expected to exceed the currently available environmental qualification history for these transmitters. On the basis of the justification provided we have concluded that continued power operation including the escalation of power in accordance with the startup program is acceptable. Our approval is conditional upon the licensees' submittal on or before June 6, 1978 the results of a complete environmental qualification testing program for these transmitters in conformance with IEEE 323-1971. Test conditions must include sequential radiation exposure, seismic testing and exposure to environmental conditions expected following a postulated steamline break and/or loss-of-coolant accident, whichever is most limiting. This condition replaces condition 3.B.1 of Amendment No. 2 to Facility Operating License No. DPR-74.

(2) Electrical Cable Connections and Terminations in Safety-Related Circuits Inside Containment

The licensees identified the following types of electrical cable connections and terminations of safety-related equipment inside containment:

1. Instrumentation cable splices
2. Control cable terminal blocks
3. Power cable terminal blocks
4. Power cable motor connection
5. Power cable penetration splices
6. Instrument connections
7. Motor operated valve limit and torque switch terminations

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The environmental qualification of each of these electrical cable connections and terminations is discussed below.

a. Instrumentation Cable Splices

These connections, consisting of cables actually used in D. C. Cook Unit 2 and splices manufactured by Raychem Corporation, were tested and successfully passed environmental conditions expected during and subsequent to a main steam line break accident. The licensees provided completed environmental test information on the splices used which confirms suitability in the environment that could result from design basis accidents. This test information includes sequential testing of seismic, radiation, aging and accident environment. The staff considers these connections to be qualified and no further testing is necessary.

b. Control Cable Terminal Blocks, Power Cable Terminal Blocks, Power Cable Motor Connections and Power Cable Penetration Splices

These cable connections and terminations were recently tested by the licensee. The test procedures and results were provided to the staff on March 22, 1978. A review indicated that all the terminations except power cable terminal blocks successfully passed main steam line break environmental conditions. The licensees advised us that the failed terminal blocks would be replaced with qualified splices prior to operation above twenty percent power. On the basis of our review of this test information we conclude that D. C. Cook Unit 2 can be operated in the interim period until full sequential testing including radiation seismic and main steam line break/loss of coolant accident environmental conditions is completed. The tests need not include the splices used to replace power cable terminal blocks because sufficient data exists to demonstrate qualification.

c. Instrument Connections

The licensees provided to the staff information on the qualification of cable terminations at the electrical penetrations, Foxboro instruments, IIT Barton instruments, and Rosemont temperature detectors.

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The method used to connect the instrument cable running from the penetration to their respective instruments is by means of Raychem splices which have previously been shown to be qualified. The staff finds this acceptable and no further testing is required.

The licensees provided information regarding cable terminations at the Foxboro and Barton instruments which indicated that their terminations have been qualified by separate effects testing conducted on the instruments. This information is sufficient for an interim period until June 6, 1978 and will be verified during the full sequential testing to be performed on these instruments.

The licensee provided information indicating that the termination method used to interconnect the Rosemont temperature detector to the cable is by means of a terminal block in a vented metal terminal box. This configuration was tested to demonstrate its capability to function in the environment expected from main steam line break accident. This information is satisfactory for the interim period until June 6, 1978 when full sequential environmental testing can confirm qualification.

d. Motor-Operated Valve Cable Terminations

The licensees provided information that indicated that these terminations were qualified during the tests conducted on the valve operators by Limitorque Corporation. The test results are contained in Limitorque Reports Nos. 600456 and B-000-3. These reports are available for audit by the staff. The licensees advised that the cable terminations to these valve operators at D. C. Cook Unit 2 are the same as those in the tests conducted by Limitorque. We find this information an acceptable demonstration of qualification subject to audit verification of the test reports by our Office of Inspection and Enforcement.

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(3) Continental Cable

The licensees presented on March 20, 1978 the results of tests performed on the materials used in Continental instrument cable and on samples of this type of cable. In addition to the test results, an analysis was presented to demonstrate the environmental qualification of Continental cable currently installed. Based on our evaluation of the results of these tests and the analysis, we have found the environmental qualification of the Continental cable acceptable and have approved the licensees' documentation. This satisfies condition 3.B.3 of Amendment No. 2 to Facility Operating License No. DPR-74.

(4) Electrical Penetrations

The licensees provided on March 20, 1978, the results of and supporting documentation for the environmental qualification tests performed on electrical penetrations. In addition, the licensees have provided formal documentation of the results of Conax medium voltage penetration qualification tests which were performed during the D. C. Cook Unit 1 splice tests in November 1977. In addition, the licensees have provided a comparability study which demonstrates the equivalence of penetrations tested to those installed at the facility. Based on this information, we have found the qualification of the electrical penetrations acceptable and have approved the licensees' qualification tests, procedures and results. This approval satisfies condition 3.B.4 of Amendment No. 2 to Facility Operating License No. DPR-74.

Conclusion

We have concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the amendment does not involve a significant hazards consideration,

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(2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

151

M. M. Mlynczak, Project Manager  
Light Water Reactors  
Branch No. 2  
Division of Project Management

Original signed by  
K. Kniel

Karl Kniel, Chief  
Light Water Reactors  
Branch No. 2  
Division of Project Management

Dated: MAR 24 1978

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UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-316

INDIANA AND MICHIGAN ELECTRIC COMPANY  
INDIANA AND MICHIGAN POWER COMPANY

NOTICE OF ISSUANCE OF AMENDMENT TO FACILITY

OPERATING LICENSE

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 4 to Facility Operating License No. DPR-74, issued to Indiana and Michigan Electric Company and Indiana and Michigan Power Company, which authorizes power operation not to exceed 1695 megawatts thermal (50% of rated core power level of 3391 megawatts thermal) for the Donald C. Cook Nuclear Plant, Unit No. 2 (the facility) located in Berrien County, Michigan. The amendment is effective as of its date of issuance. This action is a part of the licensing action encompassed in the "Notice of Consideration of Issuance of Facility Operating Licenses and Notice of Opportunity for Hearing Pursuant to 10 CFR Part 50, Appendix D, Section C."

Amendment No. 2 to Facility Operating License No. DPR-74 contained conditions 3.B.1 - 3.B.4 requiring staff approval prior to power operation in excess of twenty percent of rated power. These conditions relate to the environmental qualification of certain safety-related electrical equipment inside containment for a postulated steamline break accident. Items 3.B.3 and 3.B.4 have been resolved to the satisfaction of the Commission and the appropriate restrictions have been removed in Amendment No. 4. Items 3.B.1 and 3.B.2 of Amendment No. 2 have been superseded by conditions 4.A and 4.B of Amendment No. 4 which require that the results of additional environmental testing of specific instrument transmitters and terminations

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in safety-related circuits inside containment be provided for staff review on or before June 6, 1978.

The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment.

The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR Part 51.5 (d) (4) an environmental impact statement, or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of this amendment.

For further details with respect to this action, see (1) Amendment No. 4 to License No. DPR-74, and (2) the Commission's related Safety Evaluation. These items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N. W., Washington, D. C. and at the Maude Preston Palenske Memorial Library, 500 Market Street, St. Joseph, Michigan. A copy of items (1) and (2) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Project Management.

Dated at Bethesda, Maryland, this 24<sup>th</sup> day of March 1978.

FOR THE NUCLEAR REGULATORY COMMISSION

Original signed by  
K. Kniel

Karl Kniel, Chief  
Light Water Reactors Branch No. 2  
Division of Project Management

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