Docket Nos. 50-315
and 50-316

October 1, 1991

Gene Fitzpatrick, Vice President
Indiana Michigan Power Company
c/o American Electric Power Service Corporation
1 Riverside Plaza
Columbus, Ohio 43216

Dear Mr. Fitzpatrick:

SUBJECT: AMENDMENT NOS. 157 AND 141 TO FACILITY OPERATING LICENSE NOS. DPR-58 AND DPR-74 (TAC NOS. M75796, M75797)

The Commission has issued the enclosed Amendment No. 157 to Facility Operating License No. DPR-58 and Amendment No. 141 to Facility Operating License No. DPR-74 for the Donald C. Cook Nuclear Plant, Unit Nos. 1 and 2. The amendments change the operating license expiration dates in response to your application dated December 27, 1989, as revised April 4, 1990 extending the expiration dates from 40 years from date of construction permit issuance to 40 years from date of operating license issuance.

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

Sincerely,

/s/

Timothy G. Colburn, Sr. Project Manager
Project Directorate III-1
Division of Reactor Projects III/IV/V
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 157 to DPR-58
2. Amendment No. 141 to DPR-74
3. Safety Evaluation

cc w/enclosures:
See next page

					OGC EHoller 9/12/91
LA/PD31 PShuttleworth 8/20/91	PM/PD31 WLong 8/19/91	PM/PD31 TColburn 8/19/91	BC/EMCB CYCheng 8/27/91	BC/PRPB LCunningham / /91	D/PD31 LMarsh 8/19/91

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

October 1, 1991

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and 50-316

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Indiana Michigan Power Company
c/o American Electric Power Service Corporation
1 Riverside Plaza
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Timothy G. Colburn

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Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 157 to DPR-58
2. Amendment No. 141 to DPR-74
3. Safety Evaluation

cc w/enclosures:
See next page

Mr. Gene Fitzpatrick
Indiana Michigan Power Company

Donald C. Cook Nuclear Plant

cc:

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U.S. Nuclear Regulatory Commission
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Attorney General
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Mayor, City of Bridgman
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Bridgman, Michigan 49106

Special Assistant to the Governor
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Nuclear Facilities and Environmental
Monitoring Section Office
Division of Radiological Health
Department of Public Health
3500 N. Logan Street
Post Office Box 30035
Lansing, Michigan 48909

DATED: October 1, 1991

AMENDMENT NO. 157 TO FACILITY OPERATING LICENSE NO. DPR-58 - COOK UNIT 1
AMENDMENT NO. 141 TO FACILITY OPERATING LICENSE NO. DPR-74 - COOK UNIT 2

Docket File
NRC & Local PDRs
PDIII-1 Reading
B. Boger
J. Zwolinski
L. Marsh
P. Shuttleworth
W. Long
T. Colburn
OGC-WF
D. Hagan, 3302 MNBB
G. Hill (8), P-137
Wanda Jones, MNBB-7103
C. Y. Cheng 7/D/4
L. Cunningham 10/D/4
C. Grimes, 11/F/23
ACRS (10)
GPA/PA
OC/LFMB
PD Cook Plant File
B. Clayton, R-III
Others as required

cc: Plant Service list

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

INDIANA MICHIGAN POWER COMPANY

DOCKET NO. 50-315

DONALD C. COOK NUCLEAR PLANT, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 157
License No. DPR-58

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

   A. The application for amendment by Indiana Michigan Power Company (the licensee) dated December 27, 1989, as revised April 4, 1990, 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, paragraph 3 of Facility Operating License No. DPR-58 is hereby amended to read as follows:

3. This license is effective as of the date of issuance and shall expire at midnight October 25, 2014.

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

FOR THE NUCLEAR REGULATORY COMMISSION

L. B. Marsh, Director
Project Directorate III-1
Division of Reactor Projects III/IV/V
Office of Nuclear Reactor Regulation

Attachment:
Page 5a of license

Date of Issuance: October 1, 1991

ATTACHMENT TO LICENSE AMENDMENT NO. 157

FACILITY OPERATING LICENSE NO. DPR-58

DOCKET NO. 50-315

Replace the following page of the Facility Operating License DPR-58 with the enclosed page. The revised page is identified by amendment number and contains a vertical line indicating the area of change.

Remove Page	Insert Page
5a	5a

~~2.K.~~ 2.J Iodine Monitoring

Renumbered per Amdt. #70 2-22-83

The licensee shall implement a program which will ensure: the capability to accurately determine the airborne iodine concentration in vital areas under accident conditions.

1. Training of personnel,

2. Procedures for monitoring, and

3. Provisions for maintenance of sampling and analysis equipment.

Added per Amdt. #49 8-25-81

3. This license is effective as of the date of issuance and shall expire at midnight October 25, 2014.

Added per Amdt. #157

FOR THE NUCLEAR REGULATORY COMMISSION

See D.L. Order, 11-18-77

Original Signed by
Roger S. Boyd

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

Enclosure:
Appendix A - Technical Specification

Date of Issuance: March 30, 1976

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

INDIANA MICHIGAN POWER COMPANY

DOCKET NO. 50-316

DONALD C. COOK NUCLEAR PLANT, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 141
License No. DPR-74

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

   A. The application for amendment by Indiana Michigan Power Company (the licensee) dated December 27, 1989, as revised April 4, 1990, 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, paragraph 3 of Facility Operating License No. DPR-74 is hereby amended to read as follows:

3. This license is effective as of the date of issuance and shall expire at midnight December 23, 2017.

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

FOR THE NUCLEAR REGULATORY COMMISSION

L. B. Marsh, Director
Project Directorate III-1
Division of Reactor Projects III/IV/V
Office of Nuclear Reactor Regulation

Attachment:
page 11a of License

Date of Issuance: October 1, 1991

ATTACHMENT TO LICENSE AMENDMENT NO. 141

FACILITY OPERATING LICENSE NO. DPR-74

DOCKET NO. 50-316

Replace the following page of the Facility Operating License DPR-74 with the enclosed page. The revised page is identified by amendment number and contains a vertical line indicating the area of change.

Remove Page	Insert Page
11a	11a

2.I STEAM GENERATOR REPAIR PROGRAM

(1) The licensee is authorized to repair Unit 2 steam generators by replacement of major components. Repairs shall be conducted in accordance with the licensee's commitments identified in the Commission approved Donald C. Cook Nuclear Plant Unit No. 2 Steam Generator Repair Report dated November 7, 1986, as revised through Revision 6, and additional commitments identified in the staff's related Safety Evaluation dated

(2) The Technical Specifications identified in Table 3.2-2 of the Steam Generator Repair Report dated November 7, 1986, as revised through Revision 6 dated February 18, 1988, will not be applicable during the repair program. For purposes of Technical Specification applicability, the Steam Generator Repair Project will begin when the last fuel assembly from the Unit 2 core is placed in the spent fuel pool and will end when the first fuel assembly is removed from the spent fuel pool to refuel the Unit 2 core.

Added per Amdt. #100 3-8-88

3.~~H.2.~~ This license is effective as of the date of issuance and shall expire at midnight December 23, 2017.

Added per Amdt. #141

Renumbered per Amdt. #29 4-13-81

Renumbered per Amdt. #34 8-25-81

Original Signed by
Roger S. Boyd

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

Attachments:
1. Preoperational Tests, Startup Tests and Other Items Which Must Be Completed Prior to Proceeding to Succeeding Operational Modes
2. Appendix A - Technical Specifications

Date of Issuance: December 23, 1977

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 157 TO FACILITY OPERATING LICENSE NO. DPR-58

AND AMENDMENT NO. 141 TO FACILITY OPERATING LICENSE NO. DPR-74

INDIANA MICHIGAN POWER COMPANY

DONALD C. COOK NUCLEAR PLANT, UNITS NOS. 1 AND 2

DOCKET NOS. 50-315 AND 50-316

1.0 INTRODUCTION

By letter dated December 27, 1989, as revised April 4, 1990, the Indiana Michigan Power Company (the licensee) requested amendments to Facility Operating License Nos. DPR-58 and DPR-74 for the Donald C. Cook Nuclear Plant, Unit Nos. 1 and 2. The proposed amendments would change the OL expiration date for each unit to 40 years from the date of issuance of the operating license. The operating license for Unit 1 was issued on March 30, 1976. The operating license for Unit 2 was issued December 23, 1977. The amended expiration dates would thus be October 25, 2014 (Unit 1) and December 23, 2017 (Unit 2).

2.0 DISCUSSION

Section 103.c of the Atomic Energy Act of 1954 provides that a facility operating license (OL) may be issued for a specified period not to exceed 40 years. The Code of Federal Regulations at 10 CFR 50.51 specifies that each OL will be issued for a fixed period of time, to be specified in the license, not to exceed 40 years from the date of issuance. The Code of Federal Regulations at 10 CFR 50.57 allows the issuance of an OL pursuant to 10 CFR 50.56 after the construction of the facility has been substantially completed in conformity with the construction permit (CP) and when other provisions specified in 10 CFR 50.57 are met. The current term of the D. C. Cook OLs is 40 years beginning with the issuance of the CPs. Accounting for the time that was required for construction of the facilities, this represents an effective operating term of only 34 years and 5 months for Unit 1 and 31 years and 3 months for Unit 2. Consistent with Section 103.c of the Atomic Energy Act of 1954 and 10 CFR 50.51, 10 CFR 50.56 and 10 CFR 50.57 of the Commission's regulations, the licensee, by its application dated December 27, 1989, revised April 4, 1990, requested extensions of the expiration dates for the D. C. Cook Units 1 and 2 facilities to October 25, 2014 and December 23, 2017, respectively, such that the fixed period of the OLs would be 40 years from the date of issuance.

Prior to issuance of the LaSalle Unit 1 OL, OLs were issued for a 40-year term commencing with the date of CP issuance. Background information regarding the policy change on OL expiration dates is provided in a memorandum from William J. Dircks to the Chairman dated August 16, 1982.

The impact of the additional radiation exposure to the facility operating staff and the impact on the general population in the vicinity of the facilities are addressed in the NRC staff's Environmental Assessment.

3.0 SAFETY EVALUATION

The licensee's request for extension of the OL expiration dates is based on the fact that a 40-year service life was considered during the design and construction of the facilities and that maintenance, surveillance, and inservice testing programs are in place to monitor the material condition of safety-related systems, structures, and components. Surveillance and inspection programs have been implemented in accordance with the ASME Code for Inservice Inspection and Inservice Testing of Pumps and Valves, and Technical Specifications requirements to provide assurance that any unexpected degradation in plant equipment will be identified and corrected. The specified provisions and requirements for ASME Code testing are set forth in 10 CFR 50.55a.

In conducting its evaluation, the staff reviewed selected issues relating to aging and/or degradation of systems, structures, and components.

3.1 Mechanical Equipment

Reactor Vessel: The design of the reactor vessel and its internals gave due consideration for the effects of 40 years of operation. A comprehensive reactor pressure vessel material surveillance program is maintained in accordance with 10 CFR Part 50, Appendix H which ensures that the fracture toughness requirements of 10 CFR Part 50, Appendix G are met. As described in Section 4.5 of the Updated Final Safety Analysis Report (UFSAR) and as required by Technical Specification 4.4.9.1, capsules containing dosimeters and material surveillance specimens are periodically removed from the reactor for testing to evaluate the effects of irradiation on strength and toughness and to adjust pressure-temperature limits as necessary for conformance to Regulatory Guide 1.99, Revision 2. In its response to Generic Letter 88-11, "NRC Position on Radiation Embrittlement of Reactor Vessel Materials and Its Impact on Plant Operations," the licensee demonstrated that adequate toughness exists for 32 effective full power years which corresponds to a 40-year life.

In addition to the above, the reactor vessels are subject to the requirements of the Pressurized Thermal Shock (PTS) Rule, 10 CFR 50.61. Section 50.61 prescribes screening criteria which establish a threshold for actions which must be taken to reduce susceptability to PTS events. Analyses performed for Unit 1 in March of 1990 (Ref. Licensee letter dated August 7, 1990) found the limiting material PTS reference temperature to be 216° F for 32 effective full power years (EFPY) of operation. This is well below the 300°F screening criterion. The limiting material for Unit 2 was found to be a plate weld for which the reference temperature was found to be 217°F. This is well below the 270°F screening criterion for a plate weld.

Reactor Coolant System: Table 4.1-10 of the UFSAR identifies the number of transient thermal and loading fatigue cycles for which the reactor coolant system (RCS) is designed (e.g., 200 heatup cycles, 400 trips from full power, 5 primary side or secondary side hydrostatic tests, 50 primary side leak tests, etc). These events are monitored and recorded by the licensee. Should any of the limits be exceeded the facility will not be operated without additional evaluation. Information provided by the licensee predicts that the additional years of operation will not result in service beyond the design fatigue limits.

Steam Generators: The licensee has experienced steam generator corrosion problems in both units. Technical Specifications amendments for Unit 1 permit operation at reduced temperature and pressure to minimize U-tube corrosion and permit sleeving of degraded tubes. Unit 2 has had the lower assemblies of its steam generators replaced. The licensee is monitoring technological advancements and operating improvements to minimize additional corrosion. Technical Specifications prescribe an augmented inservice inspection program. This program ensures that the condition of the steam generators is closely monitored.

3.2 Electrical Equipment:

Aging analyses have been performed for safety-related electrical equipment in accordance with 10 CFR 50.49. The licensee has identified qualified lifetimes for this equipment and incorporated this information into equipment maintenance and replacement practices to ensure that all safety-related electrical equipment remains qualified and available to perform its safety-related function regardless of the overall age of the facilities. The staff's Safety Evaluation for Environmental Qualification of Safety-Related Electrical Equipment - D. C. Cook Units 1 & 2, was issued on January 11, 1985. The findings of the staff's inspection of the licensee's compliance with 10 CFR 50.49 are reported in an inspection report issued August 12, 1986. Deficiencies found in the inspection have been corrected and the staff has concluded that the licensee has implemented an environmental qualification program meeting the requirements of 10 CFR 50.49.

3.3 Structures

The safety-related structures at Donald C. Cook are constructed of reinforced concrete and steel. Industrial experience has shown that a service life considerably in excess of forty years can be expected. Surveillance testing and inservice inspection programs are in place to monitor the condition of all important structures so that degradation can be identified and corrected. This includes local and integrated leak rate testing of primary containment. The construction of the plant structures and the ongoing surveillance testing and inservice inspection programs ensure that the structures are adequate for an operating lifetime of over 40 years.

3.4 Summary of Findings

The staff concludes, from its considerations of the design, operation, testing, and monitoring of the systems, structures, and components of the facilities, that extensions of the authorized licensed terms to 40 years are acceptable. The revision of the OL expiration dates is consistent with the Safety Analysis Reports, Safety Evaluation Reports (SERs) and submittals made by the licensee

and there is reasonable assurance that the units can continue to operate safely for the additional periods of operation authorized by the proposed amendment. The facilities have and are expected to continue to operate in compliance with the Commission's regulations and issues associated with plant degradation have been adequately addressed.

In summary, the staff finds that the extensions of the OLs for Donald C. Cook Nuclear Plant are consistent with the FES, the SERs, and subsequent Safety Evaluations and that the Commission's previous findings are not changed.

4.0 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.

5.0 ENVIRONMENTAL CONSIDERATION

A Notice of Issuance of an Environmental Assessment and Finding of No Significant Impact relating to the proposed extension of facility operating license termination dates for the Donald C. Cook Nuclear Plant, Unit Nos. 1 and 2 was published in the Federal Register on September 27, 1991 (56 FR 49212).

6.0 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: W. Long

Date: October 1, 1991