

September 11, 1980

**REGULATORY DOCKET FILE COPY**

Docket No. 50-315

Mr. John Dolan, Vice President  
Indiana and Michigan Electric Company  
Post Office Box 18  
Bowling Green Station  
New York, New York 10004

Dear Mr. Dolan:

The Commission has issued the enclosed Amendment No. 41 to Facility Operating License No. DPR-58 for the Donald C. Cook Nuclear Plant, Unit No. 1. The amendment consists of changes to the Technical Specifications in response to your application transmitted by letter dated February 22, 1980.

This amendment revises the pressure-temperature operating limits for the D. C. Cook Unit No. 1 pressure vessel.

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

Sincerely,

Original signed by:  
S. A. Varga

Steven A. Varga, Chief  
Operating Reactors Branch #1  
Division of Licensing

Enclosures:

1. Amendment No. 41 to DPR-58
2. Safety Evaluation
3. Notice of Issuance

cc: w/enclosures  
See next page

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

Docket file  
50-315

September 11, 1980

Docket No. 50-315

Mr. John Dolan, Vice President  
Indiana and Michigan Electric Company  
Post Office Box 18  
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New York, New York 10004

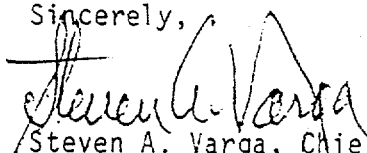
Dear Mr. Dolan:

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See next page

September 11, 1980

Mr. John Dolan  
Indiana and Michigan Electric Company

cc: Mr. Robert W. Jurgensen  
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Lake Township  
Baroda, Michigan 49101

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Lansing, Michigan 48913

Honorable James Bemenek, Mayor  
City of Bridgman, Michigan 49106

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Office of Radiation Programs (AW-459)  
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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

INDIANA AND MICHIGAN ELECTRIC COMPANY

DOCKET NO. 50-315

DONALD C. COOK NUCLEAR PLANT UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 41  
License No. DPR-58

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Indiana and Michigan Electric Company (the licensee) dated February 22, 1980, 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.

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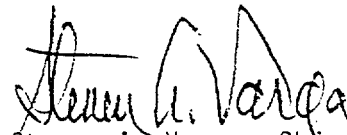
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-58 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 41, 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 its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Steven A. Varga, Chief  
Operating Reactors Branch #1  
Division of Licensing

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: September 11, 1980

ATTACHMENT TO LICENSE AMENDMENT

AMENDMENT NO. 41 TO FACILITY OPERATING LICENSE NO. DPR-58

DOCKET NO. 50-315

Revise Appendix A as follows:

Remove Pages

3/4 4-27

3/4 4-28

Insert Pages

3/4 4-27

3/4 4-28

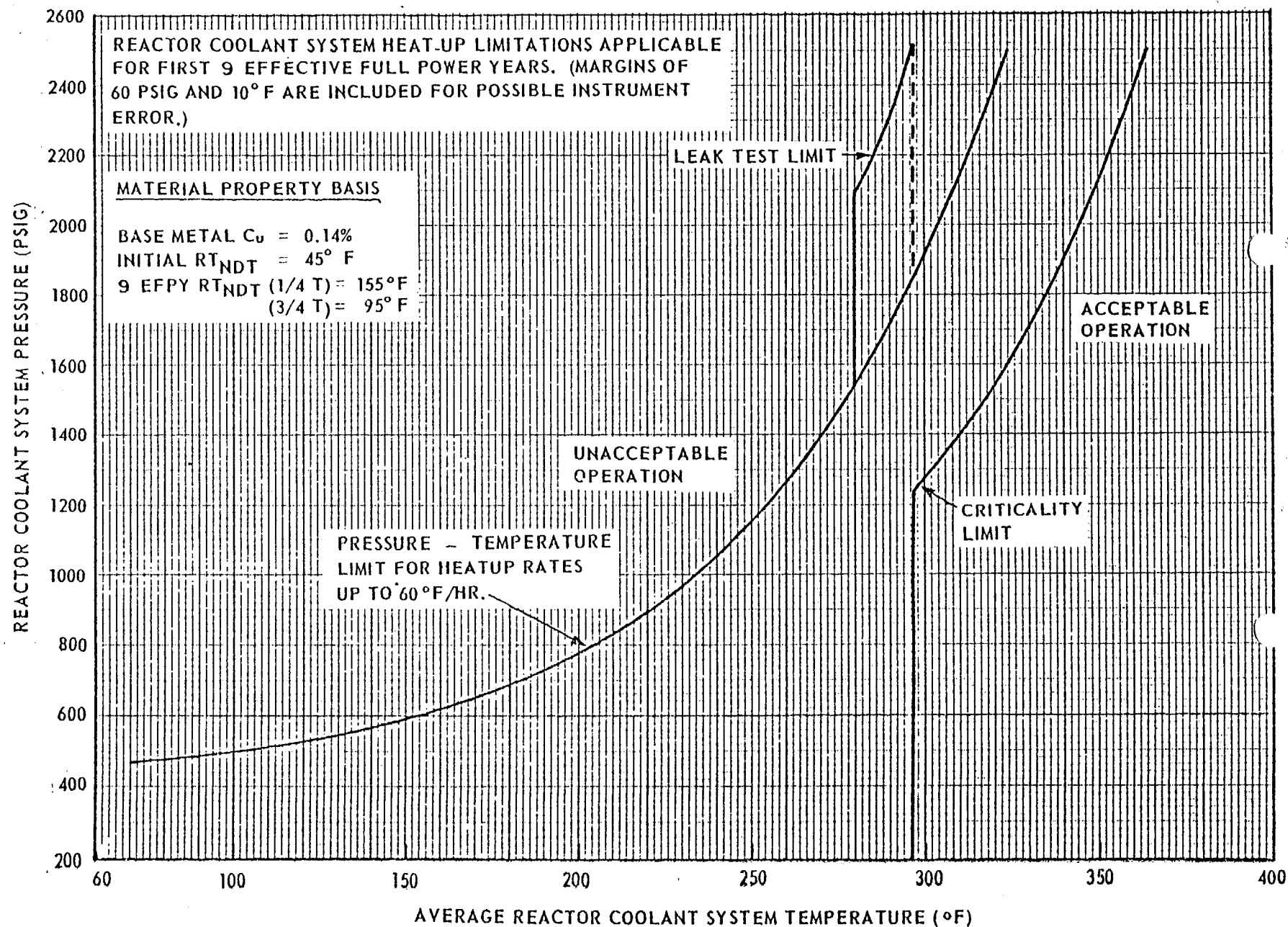


FIGURE 3.4-2

REACTOR COOLANT SYSTEM PRESSURE - TEMPERATURE LIMITS VERSUS 60 F/HOUR RATE -  
CRITICALITY LIMIT AND HYDROSTATIC TEST LIMIT

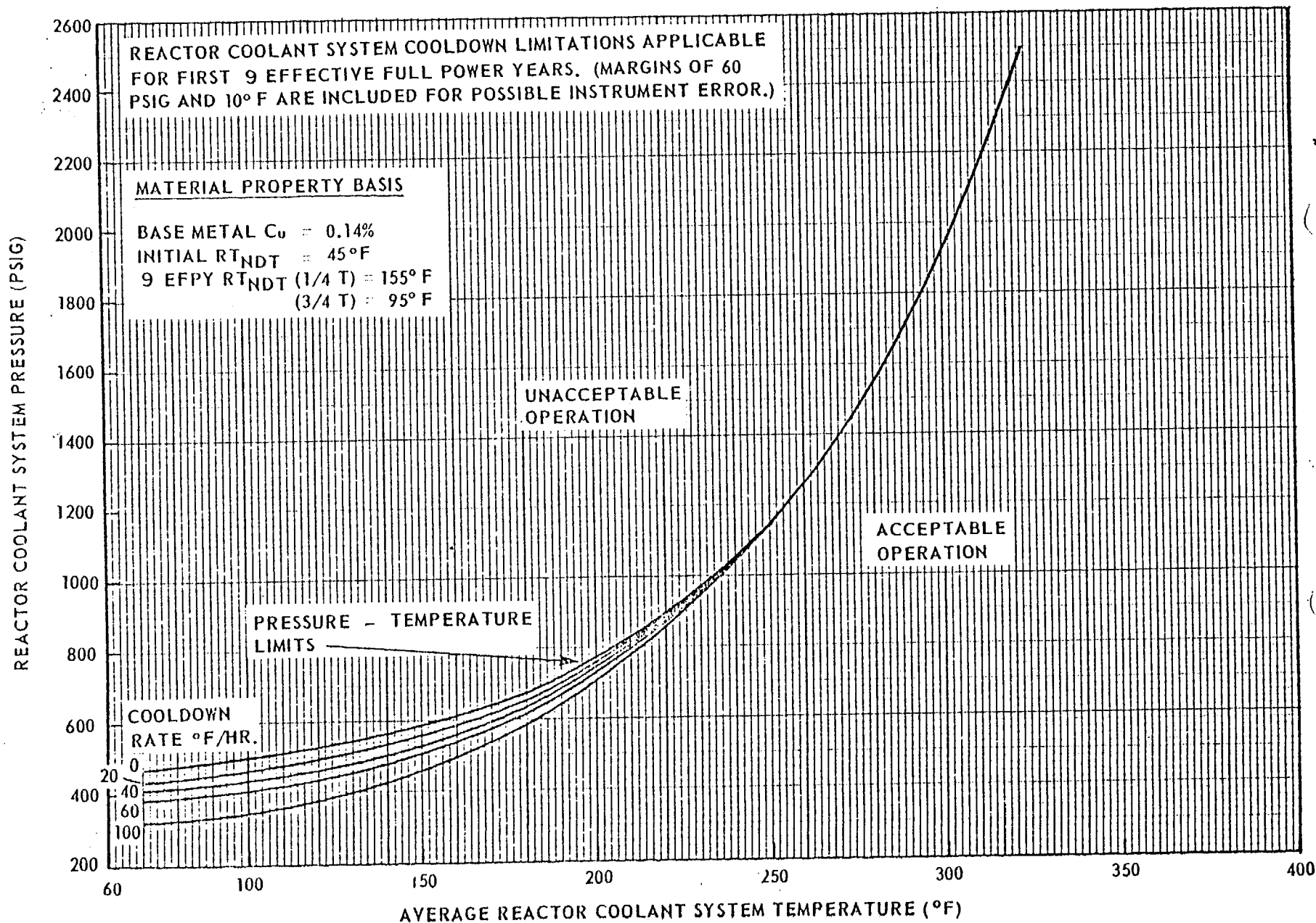


FIGURE 3.4.3

REACTOR COOLANT SYSTEM PRESSURE - TEMPERATURE LIMITS VERSUS COOLDOWN RATES





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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 41 TO FACILITY OPERATING LICENSE NO. DPR-58  
INDIANA AND MICHIGAN ELECTRIC COMPANY  
DONALD C. COOK NUCLEAR PLANT UNIT NO. 1  
DOCKET NO. 50-315

Discussion

10 CFR Part 50, Appendix G "Fracture Toughness Requirements," requires that pressure-temperature limits be established for reactor coolant system heatup and cooldown operations, inservice leak and hydrostatic tests, and reactor operation. These limits are required to ensure that the stresses in the reactor vessel remain within acceptable limits. They are intended to provide adequate margins of safety during any condition of normal operation, including anticipated operational occurrences.

The pressure-temperature limits depend upon the metallurgical properties of the reactor vessel materials. The properties of materials in the vessel beltline region vary over the lifetime of the vessel because of the effects of neutron irradiation. One principal effect of the neutron irradiation is that it causes the vessel material nil-ductility temperature ( $RT_{NDT}$ ) to increase with time. The pressure-temperature operating limits must be modified periodically to account for this radiation induced increase in  $RT_{NDT}$  by increasing the temperature required for a given pressure. The operating limits for a particular operating period are based on the material properties at the end of the operating period. By periodically revising the pressure-temperature limits to account for radiation damage, the stresses and stress intensities in the reactor vessel are maintained within acceptable limits.

The magnitude of the shift in  $RT_{NDT}$  is proportional to the neutron fluence that the materials are subjected to. The shift in  $RT_{NDT}$  can be predicted from Regulatory Guide 1.99. To check the validity of the predicted shift in  $RT_{NDT}$ , a reactor vessel material surveillance program is required. Surveillance specimens are periodically removed from the vessel and tested. The results of these tests are compared to the predicted shifts in  $RT_{NDT}$ , and the pressure-temperature operating limits are revised accordingly.

Evaluation

By letter dated February 22, 1980, Indiana and Michigan Electric Company requested a change to the Technical Specifications of Cook 1 regarding the pressure-temperature operating limits for the reactor vessel. The proposed operating limits are applicable for 12 EFPY and are based on the test results from material surveillance capsule T. The fluence on this capsule is  $1.8 \times 10^{18}$  m/cm<sup>2</sup>. This fluence caused the  $RT_{NDT}$  of plate

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material to increase by 75°F and the RTNDT of weld material to increase by 130°F. The initial, or unirradiated RTNDT of the limiting plate and weld materials were assumed to be 55 and -70°F.

We have performed independent calculations to verify the validity of the proposed limits. We conclude that the limiting material is weld metal in the intermediate to lower shell circumferential seam. In accordance with Indiana and Michigan Power Company letter dated November 7, 1977, the initial RTNDT of this material is 0°F. The proposed operating limits are calculated for a radiated value of RTNDT of 155°F. Our calculations show that the limiting weld metal will reach this value at 9 EFPY. Our calculations agree with the remainder of the calculations submitted. Therefore, the proposed operating limits are acceptable for operation through 9 EFPY and are in accordance with Appendix G, 10 CFR 50 for this operating period. Conformance with Appendix G to 10 CFR Part 50 in establishing safe operating limitations will ensure adequate safety margins during operation, testing, maintenance and postulated accident conditions and constitutes an acceptable basis for satisfying the requirements to NRC General Design Criterion 31, Appendix A, 10 CFR Part 50.

#### Environmental Consideration

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and, pursuant to 10 CFR §51.5 (d)(4), that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

#### 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, (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 the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Date: September 11, 1980

UNITED STATES NUCLEAR REGULATORY COMMISSIONDOCKET NO. 50-315INDIANA AND MICHIGAN ELECTRIC COMPANYNOTICE OF ISSUANCE OF AMENDMENT TO FACILITY  
OPERATING LICENSE

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 41 to Facility Operating License No. DPR-58, issued to Indiana and Michigan Electric Company (the licensee), which revised Technical Specifications for operation of Donald C. Cook Nuclear Plant, Unit No. 1 (the facility) located in Berrien County, Michigan. The amendment is effective as of the date of issuance.

The amendment revises the pressure-temperature operating limits for the D. C. Cook Unit No. 1 pressure vessel.

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. Prior public notice of this amendment was not required since this amendment does not involve a significant hazards consideration.

The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR §1.5 (d)(4) an environmental impact statement or negative

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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) the application for amendment dated February 22, 1980, (2) Amendment No. 41 to License No. DPR-58 and (3) the Commission's related Safety Evaluation. All of 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 Reston Palenske Memorial Library, 500 Market Street, St. Joseph, Michigan 49085. A copy of items (2) and (3) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Division of Licensing.

Dated at Bethesda, Maryland, this 11th day of September 1980.

FOR THE NUCLEAR REGULATORY COMMISSION



Steven A. Varga, Chief  
Operating Reactors Branch #1  
Division of Licensing