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Docket No. 50-315

AUG 27 1976

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

Gentlemen:

Enclosed is a signed original of an Order for Modification of License issued by the Commission for the Donald C. Cook Nuclear Station Unit No. 1. This Order amends Facility Operating License DPR-58 by requiring submittal of a corrected ECCS analysis as soon as possible.

A copy of the Order is being filed with the Office of the Federal Register for publication.

Sincerely,

Original Signed by:  
Dennis L. Ziemann

~~Dennis L. Ziemann~~, Chief  
Operating Reactors Branch #2  
Division of Operating Reactors

Enclosure:  
Order for Modification  
of License

cc: See next page

OFFICE	OR:ORB #2	OR:ORB #2	OELD	OR:AD/OR	OR:AD/OT	OR:VStello
SURNAME	MHFletcher	DLZiemann		KRGoller	DEisenhut	VStello
DATE	8/21/76	8/27/76	8/1/76	8/27/76	8/27/76	8/27/76

*Handwritten notes:*  
- Above table: "Am Oke", "Approved", "8/27/76"  
- Above table: "NRR: D/DIR", "EGCase", "8/27/76"  
- Above table: "NRR: DIR", "BRusche", "8/27/76"

Indiana & Michigan Electric Company  
Indiana & Michigan Power Company

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AUG 27 1976

cc w/enclosure:  
Mr. Robert Hunter  
Vice President  
American Electric Power Service  
Corporation  
2 Broadway  
New York, New York 10004

Gerald Charnoff, Esquire  
Shaw, Pittman, Potts &  
Trowbridge  
1800 M Street, N. W.  
Washington, D. C. 20036

Businessmen for the Public  
Interest  
109 North Dearborn Street  
Suite 1001  
Chicago, Illinois 60602

Maude Reston Palenske Memorial Library  
500 Market Street  
St. Joseph, Michigan 49085

Mr. Wade Schuler, Supervisor  
Lake Township  
Baroda, Michigan 49101

Honorable W. Mabry  
Mayor, City of Bridgman  
Bridgman, Michigan 49106

cc w/enclosure and cy of I&MEC  
dtd. 8/18/76:  
Executive Officer of the Governor  
Division of Intergovernmental  
Relations  
Lewis Cass Building, 2nd Floor  
Lansing, Michigan 48913

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

In the Matter of )

INDIANA & MICHIGAN ELECTRIC COMPANY )

INDIANA & MICHIGAN POWER COMPANY ) Docket No. 50-315

(Donald C. Cook Nuclear Plant Unit )  
No. 1) )

ORDER FOR MODIFICATION OF LICENSE

I.

Indiana & Michigan Electric Company and Indiana & Michigan Power Company (the Licensee) is the holder of Facility Operating License No. DPR-58 which authorizes the operation of a nuclear power reactor known as Donald C. Cook Nuclear Plant Unit No. 1 (the facility) at steady state reactor power levels not in excess of 3250 thermal megawatts (rated power). The facility is a pressurized water reactor (PWR) located at the Licensee's site in Berrien County, Michigan.

II.

In conformance with evaluations of the performance of the Emergency Core Cooling System (ECCS) of the facility submitted by the Licensee on September 6, 1974, October 31 and December 12, 1975, January 9 and 26, 1976 and in a letter NS-CE-832 dated November 4, 1975 from C. Eicheldinger (Westinghouse) to B. C. Rusche (NRC), the Technical Specifications issued March 30, 1976 for the facility limit the reactor total nuclear peaking factor ( $F_Q$ ) to 1.98. The ECCS performance evaluation submitted by the Licensee was based upon a previously approved ECCS evaluation model

developed by the Westinghouse Electric Corporation (Westinghouse), the designer of the facility, to conform with the requirements of the Commission's ECCS Acceptance Criteria, 10 CFR Part 50, §50.46 and Appendix K. The evaluation indicated that with a total nuclear peaking factor limited as set forth above, and with the other limits set forth in the facility's Technical Specifications, the ECCS cooling performance for the facility would conform with the criteria contained in 10 CFR §50.46(b) which govern calculated peak clad temperature, maximum cladding oxidation, maximum hydrogen generation, coolable geometry and long term cooling.

Due to the configuration of the Westinghouse reactor vessel design, a small portion of reactor inlet water which is cooler than outlet water is directed through several nozzles located on the periphery of the vessel to cool the upper portion of the vessel head. Accordingly, upper head temperatures used in evaluating ECCS performance were assumed to be equal to the reactor inlet water temperature. However, recent operating data gathered at the Connecticut Yankee facility has indicated that, contrary to this expectation, the temperature of the water in the upper head is higher than the reactor inlet water temperature, by about 60% of the difference between reactor inlet and reactor outlet temperature. This higher upper head water temperature would have the effect of increasing the calculated peak clad temperature in the event of a loss of coolant accident.

In a meeting with the staff on August 9, 1976, Westinghouse presented generic evaluations of the effect on calculated peak clad temperature for the worst break identified in previous calculations for each type of Westinghouse reactor and fuel design using an upper head water temperature exceeding reactor inlet water temperature by an amount equal to 75% of the reactor inlet - reactor outlet differential. On August 12, 1976, the staff instructed the licensee to submit an analysis similar to the Westinghouse evaluation with the clearly conservative assumption of upper head water temperature equal to reactor outlet temperature (100% of the reactor outlet - reactor inlet differential) and to operate the facility in accordance with the results of this analysis. The results of the evaluation submitted for the D. C. Cook Unit No. 1 reactor indicated that with this modification of the upper head water temperature the calculated peak clad temperature for the worst case break would not exceed the Commission's ECCS performance criteria.

The staff expects that, when revised calculations for the facility are submitted using an approved evaluation model with correct input for upper head water temperature, or assuming that the upper head water temperature equals reactor vessel outlet water temperature, such calculations will demonstrate that operation with this total nuclear peaking factor would conform to the criteria of 10 CFR §50.46(b). Such revised calculations fully conforming to the requirements of 10 CFR §50.46 are to be provided for the facility as soon as possible. The limitations presently incorporated in the Technical Specifications for the facility continue to provide reasonable assurance that the public health and safety will not be endangered.

Copies of the following documents are available for public inspection in 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 49085: (1) Licensee's ECCS submittals dated September 6, 1974, October 31 and December 12, 1975, January 9 and 26, 1976 and letter NS-CE-832 dated November 4, 1975 from C. Eicheldinger (Westinghouse) to B. C. Rusche (NRC), (2) Amendment No. 12 to Operating License DPR-58 dated March 30, 1976, (3) Licensee's letter dated August 18, 1976, and (4) This Order for Modification of License, In the Matter of Indiana & Michigan Electric Company and Indiana & Michigan Electric Company, Donald C. Cook Nuclear Plant Unit No. 1, Docket No. 50-315.

III.

Accordingly, pursuant to the Atomic Energy Act of 1954, as amended, and the Commission's Rules and Regulations in 10 CFR Parts 2 and 50, IT IS ORDERED THAT Facility Operating License No. DPR-58 is hereby amended by adding the following new provision:

As soon as possible, the Licensee shall submit a reevaluation of ECCS cooling performance calculated in accordance with an approved Westinghouse Evaluation Model, with appropriate correction for upper head water temperature.

FOR THE NUCLEAR REGULATORY COMMISSION

Original signed by

*Ben C Rusche*

Ben C. Rusche, Director

Office of Nuclear Reactor Regulation

Dated in Bethesda, Maryland  
this AUG 27 1976