

APR 28 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. 5 - DONALD C. COOK NUCLEAR PLANT,
UNIT NO. 2

The Commission has issued the enclosed Amendment No. 5 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 3391 megawatts thermal (100% of rated core power level).

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

Sincerely,

ISI

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

Enclosures:

1. Amendment No. 5 to License No. DPR-74
2. Safety Evaluation
3. Notice of Issuance

ccs w/encls:
See page 2

DELD
R. Black
4/28/78
Const 1
BP

OFFICE →	DPM:LWR #2	DPM:LWR #2	DPM:LWR #2	DPM:LWR:AD	DPM:DD	DPM:D
SURNAME →	BScott:ab	MMVnczak	KKniel	DBVassallo	RDeYoung	RSBoyd
DATE →	4/21/78	4/18/78	4/19/78	4/17/78	4/28/78	4/24/78

Indiana and Michigan Electric Company
Indiana and Michigan Power Company

APR 28 1978

- 2 -

cc: Mr. R. W. Jurgensen
Chief Nuclear Engineer
American Electric Power
Service Corporation
2 Broadway
New York, New York 10004

Gerald Charnoff, Esq.
Shaw, Pittman, Potts & Trowbridge
1800 M Street, N. W.
Washington, D. C. 20006

Mr. David Dinsmore Comey
Executive Director
Citizens for a Better Environment
59 East Van Buren Street
Chicago, Illinois 60605

Executive Office of the Governor
Division of Intergovernmental Relations
Lewis Cass Building, 2nd Floor
Lansing, Michigan 49813

State Board of Health
ATTN: Director, Bureau of Engraving
1330 West Michigan Street
Indianapolis, Indiana 46206

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

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

Director, Technical Assessment Division
Office of Radiation Programs (AW-459)
United States Environmental Protection
Agency
Crystall Mall #2
Arlington, Virginia 20460

U. S. Environmental Protection
Agency
Federal Activities Branch
Region V Office
ATTN: EIS Coordinator
230 South Dearborn Street
Chicago, Illinois 60604

Mr. Bert Lindenfeld
Herald-Palladium
Michigan and Oak Streets
Benton Harbor, Michigan 49022

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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. 5
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. This amendment deletes condition 2.C(3)(e) of Facility Operating License No. DPR-74 and thus authorizes power operation not to exceed 3391 megawatts thermal (100% of rated core power level).

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

FOR THE NUCLEAR REGULATORY COMMISSION

ISI

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

Date of Issuance: APR 28 1978

OELD
K. BLACK
4/26/78

OFFICE	DPM:LWR #2	DPM:LWR #2	DPM:AD/LWR	DB-DPM	DPM	
SURNAME	MMTynszak:mt	KKniel	DBVassallo	RCDYoung	RSBoyd	
DATE	4/27/78	4/27/78	4/28/78	4/28/78	4/28/78	

SAFETY EVALUATION BY THE OFFICE OF
NUCLEAR REACTOR REGULATION

AMENDMENT 5 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 Amendment No. 5 to Facility Operating License No. DPR-74 for D. C. Cook Unit 2. This amendment involves resolution of the condition described in paragraph 2.C(3)(e) of Facility Operating License No. DPR-74. This condition relates to the approval by the Commission of the use of the WRB-1 correlation and the Improved Thermal Design Procedure (Westinghouse Topical Reports WCAP-8762 "New Westinghouse Correlation WRB-1 for Predicting Critical Heat Flux in Rod Bundles with Mixing Vane Grids" and WCAP-8567 "Improved Thermal Design Procedure") for use in the analysis of the Donald C. Cook Nuclear Plant, Unit No. 2. This safety evaluation discusses our review and approval of the licensees' resolution of this condition.

WRB-1 Correlation/Improved Thermal Design Procedure

The D. C. Cook Unit 2 Safety Evaluation Report, Supplement No. 7, identified two issues requiring resolution before operation above fifty percent power would be allowed. These two issues were: 1) the use of the WRB-1 Critical Heat Flux correlation (WCAP-8762); and 2) the use of the Westinghouse Improved Thermal Design Procedure (WCAP-8567). Since the time of the issuance of SER Supplement No. 7, the staff has continued to review the topical reports in both of these areas. The staff generic review of the WRB-1 Critical Heat Flux correlation has been completed; the correlation and the proposed DNBR limit of 1.17 for the correlation have been found acceptable. Our evaluation of the correlation and proposed DNBR limit is discussed below. In addition, the Advisory Committee on Reactor Safeguards has reviewed and approved the correlation and proposed DNBR limit and found them acceptable. A copy of the Committee's letter of March 14, 1978 approving the correlation has been included as Appendix A to this safety evaluation. This issue is therefore resolved.

The staff generic review of the Westinghouse Improved Thermal Design Procedure has also been completed and the procedure has been found acceptable. However, the staff identified certain conditions which had to be met by

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the licensees in order to make the application of this procedure acceptable for D. C. Cook Unit 2. These conditions required the licensees to provide information in two general areas: first, demonstration that the statistical model used in the Improved Thermal Design Procedure was applicable when used in combination with the WRB-1 Critical Heat Flux correlation (information presented in WCAP-8567 only addressed uses of the W-3 correlation); and second, justification of the nominal value and standard deviation assigned to each of the parameters included in the statistical analysis.

Relative to the first condition, the licensees have submitted sufficient information to demonstrate that the Westinghouse Improved Thermal Design Procedure has been used in an acceptable manner when combined with the WRB-1 Critical Heat Flux correlation. This information consisted of the results of performance of the same test used in the topical report (WCAP-8567) to justify the use of the Improved Thermal Design Procedure with the W-3 Critical Heat Flux correlation.

Relative to the second condition, the licensees have provided the nominal values and the standard deviations for each of the parameters included in the statistical combination of uncertainties. The licensees' justification for the values assumed has also been submitted. The staff has reviewed the justification for the assumed uncertainties and is unable to accept all of the proposed values without further information. However, sufficient information is available from the licensees and from similar Westinghouse reactors for the staff to establish conservative upper bounds on the standard deviations of these parameters. This area will continue to be reviewed by the staff and the additional margin in the uncertainties required by the staff may be reduced or eliminated in the near future. We have compared the parameter uncertainties for the Trojan reactor used in conjunction with the old thermal design procedure with those for D. C. Cook Unit 2 as proposed by the licensees for the new procedure and with those for D. C. Cook Unit 2 as modified by the staff for the new procedure. The staff imposed uncertainties have been used to recalculate the design DNBR value, which is the minimum allowable DNBR during anticipated operational occurrences. The code uncertainties for the thermal hydraulic design code THINC-IV and the transient analysis codes as required by the staff safety evaluation of the Improved

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Thermal Design Procedure have also been included in this calculation. In addition, an uncertainty of two percent on enthalpy rise (at a two sigma level) was included statistically to bound the effects of radial xenon distribution and radial flux tilt. These calculations were performed with the approved methodology for the Improved Thermal Design Procedure from WCAP-8567. The results of the calculations using staff-imposed uncertainties show that a design DNBR value of 1.44 is acceptable for D. C. Cook Unit 2. The licensees' proposed design DNBR value for D. C. Cook Unit 2 was 1.37. In order to allow sufficient margin for the rod bow penalty for cycle 1, the licensees originally used a design DNBR value of 1.80. A reevaluation of the margin available for rod bow effects is as follows: The analysis of anticipated operational occurrences demonstrated that the D. C. Cook Unit 2 thermalhydraulic design and protection system met this design DNBR value. In fact, the lowest DNBR calculated for an anticipated operational occurrence was 1.98. The staff concludes that the licensees have provided sufficient information in the FSAR to assure that the minimum DNBR during anticipated operational occurrences will not be below 1.98. The additional thermal margin between the proposed design DNBR value and the demonstrated minimum DNBR can therefore be used to offset some of the additional conservatism required in the uncertainty analysis. The margin available for rod bow effects is therefore: $(1.98 - 1.44) / 1.98 = .273$ (27.3% DNBR margin). Since the rod bow penalty is a function of fuel burnup, this 27.3% margin is sufficient until the rod bow penalty exceeds 27.3% which occurs at 36,000 MWD/T according to the staff interim rod bow penalty model.

The staff therefore concludes that D. C. Cook Unit 2 can be operated safely at full power and without additional operating restrictions up to a burnup of 36000 MWD/T. Operation beyond 36000 MWD/T will require either a restriction on nuclear enthalpy rise factor (estimated to be less than a 3% reduction) or some other operating parameter, or staff acceptance of the uncertainty factors proposed by the licensees. The licensees will develop a proposed method of accounting for the additional thermal margin required for rod bow effects beyond 36,000 MWD/T.

The Advisory Committee on Reactor Safeguards has also reviewed and approved the use of the Improved Thermal Design Procedure. The Committee's approval is reflected in their letter of March 14, 1978, which has been included as Appendix A to this Safety Evaluation.

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

ISI

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

ISI

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

Dated: APR 28 1978

OFFICE →	DPM: LWR #2	OELE	DPM: LWR #2		
SURNAME →	M. Mlynczak: ab	R. BLACK	KKniel		
DATE →	4/18/78	4/18/78	4/27/78		

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. 5 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 3391 megawatts thermal (100% of the rated core power level) 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."

Facility Operating License No. DPR-74 contained condition 2.C(3)(e) requiring staff approval prior to power operation in excess of fifty percent of rated power. This condition relates to the approval by the Commission of the WRB-1 correlation and the Improved Thermal Design Procedure (Westinghouse Topical Reports WCAP-8762 "New Westinghouse Correlation WRB-1 for Predicting Critical Heat Flux in Rod Bundles with Mixing Vane Grids" and WCAP-8567 "Improved Thermal Design Procedure") for use in the analysis of the Donald C. Cook Nuclear Plant, Unit No. 2. License condition 2.C(3)(e) has been

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resolved to the satisfaction of the Commission and the appropriate restriction has been removed in Amendment No. 5.

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. 5 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 28th day of April, 1978.

FOR THE NUCLEAR REGULATORY COMMISSION

ISI

Karl Kniel, Chief
Light Water Reactors Branch No. 2

OFFICE >	DPM:LWR #2	OEL	DPM:LWR #2	Division of Project Management	
SURNAME >	M. Winczak	ab	KKniel		
DATE >	4/18/78	4/28/78	4/19/78		



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

INDIANA AND MICHIGAN ELECTRIC COMPANY
INDIANA AND MICHIGAN POWER COMPANY

DOCKET NO. 50-316

DONALD C. COOK NUCLEAR PLANT, UNIT NO. 2

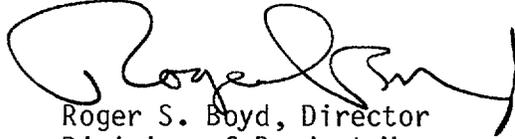
AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 5
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. This amendment deletes condition 2.C(3)(e) of Facility Operating License No. DPR-74 and thus authorizes power operation not to exceed 3391 megawatts thermal (100% of rated core power level).

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

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in black ink, appearing to read "Roger S. Boyd", written over the typed name.

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

Date of Issuance: **APR 28 1978**



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

SAFETY EVALUATION BY THE OFFICE OF
NUCLEAR REACTOR REGULATION

AMENDMENT 5 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 Amendment No. 5 to Facility Operating License No. DPR-74 for D. C. Cook Unit 2. This amendment involves resolution of the condition described in paragraph 2.C(3)(e) of Facility Operating License No. DPR-74. This condition relates to the approval by the Commission of the use of the WRB-1 correlation and the Improved Thermal Design Procedure (Westinghouse Topical Reports WCAP-8762 "New Westinghouse Correlation WRB-1 for Predicting Critical Heat Flux in Rod Bundles with Mixing Vane Grids" and WCAP-8567 "Improved Thermal Design Procedure") for use in the analysis of the Donald C. Cook Nuclear Plant, Unit No. 2. This safety evaluation discusses our review and approval of the licensees' resolution of this condition.

WRB-1 Correlation/Improved Thermal Design Procedure

The D. C. Cook Unit 2 Safety Evaluation Report, Supplement No. 7, identified two issues requiring resolution before operation above fifty percent power would be allowed. These two issues were: 1) the use of the WRB-1 Critical Heat Flux correlation (WCAP-8762); and 2) the use of the Westinghouse Improved Thermal Design Procedure (WCAP-8567). Since the time of the issuance of SER Supplement No. 7, the staff has continued to review the topical reports in both of these areas. The staff generic review of the WRB-1 Critical Heat Flux correlation has been completed; the correlation and the proposed DNBR limit of 1.17 for the correlation have been found acceptable. Our evaluation of the correlation and proposed DNBR limit is discussed below. In addition, the Advisory Committee on Reactor Safeguards has reviewed and approved the correlation and proposed DNBR limit and found them acceptable. A copy of the Committee's letter of March 14, 1978 approving the correlation has been included as Appendix A to this safety evaluation. This issue is therefore resolved.

The staff generic review of the Westinghouse Improved Thermal Design Procedure has also been completed and the procedure has been found acceptable. However, the staff identified certain conditions which had to be met by

the licensees in order to make the application of this procedure acceptable for D. C. Cook Unit 2. These conditions required the licensees to provide information in two general areas: first, demonstration that the statistical model used in the Improved Thermal Design Procedure was applicable when used in combination with the WRB-1 Critical Heat Flux correlation (information presented in WCAP-8567 only addressed uses of the W-3 correlation); and second, justification of the nominal value and standard deviation assigned to each of the parameters included in the statistical analysis.

Relative to the first condition, the licensees have submitted sufficient information to demonstrate that the Westinghouse Improved Thermal Design Procedure has been used in an acceptable manner when combined with the WRB-1 Critical Heat Flux correlation. This information consisted of the results of performance of the same test used in the topical report (WCAP-8567) to justify the use of the Improved Thermal Design Procedure with the W-3 Critical Heat Flux correlation.

Relative to the second condition, the licensees have provided the nominal values and the standard deviations for each of the parameters included in the statistical combination of uncertainties. The licensees' justification for the values assumed has also been submitted. The staff has reviewed the justification for the assumed uncertainties and is unable to accept all of the proposed values without further information. However, sufficient information is available from the licensees and from similar Westinghouse reactors for the staff to establish conservative upper bounds on the standard deviations of these parameters. This area will continue to be reviewed by the staff and the additional margin in the uncertainties required by the staff may be reduced or eliminated in the near future. We have compared the parameter uncertainties for the Trojan reactor used in conjunction with the old thermal design procedure with those for D. C. Cook Unit 2 as proposed by the licensees for the new procedure and with those for D. C. Cook Unit 2 as modified by the staff for the new procedure. The staff imposed uncertainties have been used to recalculate the design DNBR value, which is the minimum allowable DNBR during anticipated operational occurrences. The code uncertainties for the thermal hydraulic design code THINC-IV and the transient analysis codes as required by the staff safety evaluation of the Improved

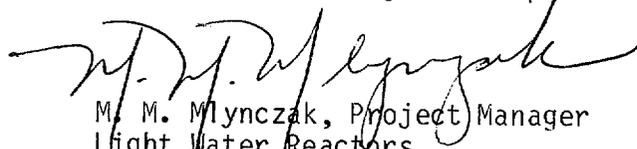
Thermal Design Procedure have also been included in this calculation. In addition, an uncertainty of two percent on enthalpy rise (at a two sigma level) was included statistically to bound the effects of radial xenon distribution and radial flux tilt. These calculations were performed with the approved methodology for the Improved Thermal Design Procedure from WCAP-8567. The results of the calculations using staff-imposed uncertainties show that a design DNBR value of 1.44 is acceptable for D. C. Cook Unit 2. The licensees' proposed design DNBR value for D. C. Cook Unit 2 was 1.37. In order to allow sufficient margin for the rod bow penalty for cycle 1, the licensees originally used a design DNBR value of 1.80. A reevaluation of the margin available for rod bow effects is as follows: The analysis of anticipated operational occurrences demonstrated that the D. C. Cook Unit 2 thermalhydraulic design and protection system met this design DNBR value. In fact, the lowest DNBR calculated for an anticipated operational occurrence was 1.98. The staff concludes that the licensees have provided sufficient information in the FSAR to assure that the minimum DNBR during anticipated operational occurrences will not be below 1.98. The additional thermal margin between the proposed design DNBR value and the demonstrated minimum DNBR can therefore be used to offset some of the additional conservatism required in the uncertainty analysis. The margin available for rod bow effects is therefore: $(1.98 - 1.44) / 1.98 = .273$ (27.3% DNBR margin). Since the rod bow penalty is a function of fuel burnup, this 27.3% margin is sufficient until the rod bow penalty exceeds 27.3% which occurs at 36,000 MWD/T according to the staff interim rod bow penalty model.

The staff therefore concludes that D. C. Cook Unit 2 can be operated safely at full power and without additional operating restrictions up to a burnup of 36000 MWD/T. Operation beyond 36000 MWD/T will require either a restriction on nuclear enthalpy rise factor (estimated to be less than a 3% reduction) or some other operating parameter, or staff acceptance of the uncertainty factors proposed by the licensees. The licensees will develop a proposed method of accounting for the additional thermal margin required for rod bow effects beyond 36,000 MWD/T.

The Advisory Committee on Reactor Safeguards has also reviewed and approved the use of the Improved Thermal Design Procedure. The Committee's approval is reflected in their letter of March 14, 1978, which has been included as Appendix A to this Safety Evaluation.

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



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



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

Dated: APR 28 1978



UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, D. C. 20555

APPENDIX A

March 14, 1978

Honorable Joseph M. Hendrie
Chairman
U.S. Nuclear Regulatory Commission
Washington, DC 20555

SUBJECT: WESTINGHOUSE CRITICAL HEAT FLUX CORRELATION AND THERMAL
DESIGN PROCEDURE

Dear Dr. Hendrie:

During its 215th meeting, March 9-10, 1978, the Advisory Committee on Reactor Safeguards reviewed the changes being proposed for the Westinghouse critical heat flux correlation and the accompanying thermal design procedure. These matters were first introduced in the review of the Donald C. Cook Nuclear Plant Unit No. 2, and the Committee recommended in its December 21, 1977 report that a generic review be completed prior to implementation of this new thermal design analysis. The ECCS Subcommittee met with the NRC Staff and with representatives of the Westinghouse Electric Corporation, in Washington, DC, on February 16, 1978 to discuss the bases for the changes being proposed. The Committee also had the benefit of the documents listed below.

The Committee recognizes that the regulatory process must be responsive to new data and new analyses and that a strengthened technical base may justify some relaxation in previously acknowledged conservative positions. The Westinghouse proposals for a new critical heat flux correlation and for a new thermal design procedure are examples of such an approach. The application of these proposals, which the Committee considers a generic matter, could lead to greater flexibility of plant operations and to higher power densities.

The Committee concurs with the NRC Staff position, noting that a conservative safety margin is still being retained.

March 14, 1978

The Advisory Committee on Reactor Safeguards believes that, if due consideration is given to the conservatisms recommended by the NRC Staff, there is reasonable assurance that the Westinghouse critical heat flux correlation and the accompanying thermal design procedure can be used as a regulatory basis for evaluating nuclear power reactor operations without undue risk to the health and safety of the public.

Sincerely yours,

Stephen Lawroski

Stephen Lawroski
Chairman

REFERENCES:

1. Westinghouse Electric Corporation, "Improved Thermal Design Procedure," WCAP-8567, July 1975.
2. Westinghouse Electric Corporation, "New Westinghouse Correlation WRB-1 for Predicting Critical Heat Flux in Rod Bundles with Mixing Vane Grids," WCAP-8762, July 1976.
3. U.S. Nuclear Regulatory Commission, "Draft of Safety Evaluation of the Westinghouse WRB-1 Critical Heat Flux Correlation," January 1978.
4. U.S. Nuclear Regulatory Commission, "Draft of Safety Evaluation of the Westinghouse Improved Thermal Design Procedure," January 1978.

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. 5 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 3391 megawatts thermal (100% of the rated core power level) 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."

Facility Operating License No. DPR-74 contained condition 2.C(3)(e) requiring staff approval prior to power operation in excess of fifty percent of rated power. This condition relates to the approval by the Commission of the WRB-1 correlation and the Improved Thermal Design Procedure (Westinghouse Topical Reports WCAP-8762 "New Westinghouse Correlation WRB-1 for Predicting Critical Heat Flux in Rod Bundles with Mixing Vane Grids" and WCAP-8567 "Improved Thermal Design Procedure") for use in the analysis of the Donald C. Cook Nuclear Plant, Unit No. 2. License condition 2.C(3)(e) has been

resolved to the satisfaction of the Commission and the appropriate restriction has been removed in Amendment No. 5.

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. 5 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 28th day of April, 1978.

FOR THE NUCLEAR REGULATORY COMMISSION



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

Distribution - Amendment No. 5 to DPR-74 (D. C. Cook, Unit 2), DTD. 4/28/78

✓ Docket File
NRC PDR
Local PDR - D. C. Cook Unit 2
LWR #2 File
RBlack
RCDeYoung
DBVassallo
JStolz
KKniel
OParr
SAVarga
MMMylniczak
JLee
FJWilliams
LDreher
BScott
IE (4)
MJinks (4)
NDube
WMiller
HDenton
VAMoore
RHVollmer
MLErnst
WPGammill
RJMattson
JKnight
DFRoss
RLTedesco
BScharf (15)
DSkovholt
LCobb
BGrimes
DEisenhut
WHaass
JMcGough
K. Baker
B. Warnick (IE), Region III
D. W. Hayes (IE), Region III

bcc: JRBuchanan, NSIC
TBAbernathy, TIC
ARosenthal
JYore
ACRS (16)