

January 4, 1996

Mr. E. E. Fitzpatrick, Vice President
Indiana Michigan Power Company
c/o American Electric Power Service Corporation
1 Riverside Plaza
Columbus, OH 43215

SUBJECT: DONALD C. COOK NUCLEAR PLANT, UNIT NOS. 1 AND 2 - ISSUANCE OF
AMENDMENTS RE: PEAKING FACTOR PENALTY (TAC NOS. M92490 AND M92491)

Dear Mr. Fitzpatrick:

The Commission has issued the enclosed Amendment No. 206 to Facility Operating License No. DPR-58 and Amendment No. 190 to Facility Operating License No. DPR-74 for the Donald C. Cook Nuclear Plant, Unit Nos. 1 and 2. The amendments consist of changes to the Technical Specifications (TS) in response to your application dated May 25, 1995.

The amendments incorporate a cycle- and burnup-dependent peaking factor penalty in the Core Operating Limits Report (COLR) and add to the TS an appropriate reference to the COLR.

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

Sincerely,

Original Signed By:

John B. Hickman, Project Manager
Project Directorate III-1
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

Docket Nos. 50-315 and 50-316

- Enclosures: 1. Amendment No. 206 to DPR-58
- 2. Amendment No. 190 to DPR-74
- 3. Safety Evaluation

cc w/encl: See next page

DOCUMENT NAME: G:\WPDOCS\DCCOOK\C092490.AMD

To receive a copy of this document, indicate in the box: "C" = Copy without attachment/enclosure "E" = Copy with attachment/enclosure "N" = No copy

OFFICE	LA:PD31	E	PM:PD31	E	OGC <i>WJH</i>	(A)D:PD31 <i>Yd B</i>
NAME	CJamerson <i>CJ</i>		JHickman <i>JH</i>		<i>WJH</i>	BHelian J HANAWAY
DATE	12/14/95 <i>1/3/96</i>		12/15/95		12/22	1/4/96

OFFICIAL RECORD COPY

9601170064 960104
PDR ADOCK 05000315
P PDR

NRC FILE CENTER COPY



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

January 4, 1996

Mr. E. E. Fitzpatrick, Vice President
Indiana Michigan Power Company
c/o American Electric Power Service Corporation
1 Riverside Plaza
Columbus, OH 43215

SUBJECT: DONALD C. COOK NUCLEAR PLANT, UNIT NOS. 1 AND 2 - ISSUANCE OF
AMENDMENTS RE: PEAKING FACTOR PENALTY (TAC NOS. M92490 AND M92491)

Dear Mr. Fitzpatrick:

The Commission has issued the enclosed Amendment No. 206 to Facility Operating License No. DPR-58 and Amendment No. 190 to Facility Operating License No. DPR-74 for the Donald C. Cook Nuclear Plant, Unit Nos. 1 and 2. The amendments consist of changes to the Technical Specifications (TS) in response to your application dated May 25, 1995.

The amendments incorporate a cycle- and burnup-dependent peaking factor penalty in the Core Operating Limits Report (COLR) and add to the TS an appropriate reference to the COLR.

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

Sincerely,

John B. Hickman, Project Manager
Project Directorate III-1
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

Docket Nos. 50-315 and 50-316

Enclosures: 1. Amendment No. 206 to DPR-58
2. Amendment No. 190 to DPR-74
3. Safety Evaluation

cc w/encl: See next page

Mr. E. E. Fitzpatrick
Indiana Michigan Power Company

Donald C. Cook Nuclear Plant

cc:

Regional Administrator, Region III
U.S. Nuclear Regulatory Commission
801 Warrenville Road
Lisle, Illinois 60532-4351

Mr. S. Brewer
American Electric Power Service
Corporation
1 Riverside Plaza
Columbus, Ohio 43215

Attorney General
Department of Attorney General
525 West Ottawa Street
Lansing, Michigan 48913

Township Supervisor
Lake Township Hall
P.O. Box 818
Bridgman, Michigan 49106

Al Blind, Plant Manager
Donald C. Cook Nuclear Plant
1 Cook Place
Bridgman, Michigan 49106

U.S. Nuclear Regulatory Commission
Resident Inspector's Office
7700 Red Arrow Highway
Stevensville, Michigan 49127

Gerald Charnoff, Esquire
Shaw, Pittman, Potts and Trowbridge
2300 N Street, N. W.
Washington, DC 20037

Mayor, City of Bridgman
Post Office Box 366
Bridgman, Michigan 49106

Special Assistant to the Governor
Room 1 - State Capitol
Lansing, Michigan 48909

Nuclear Facilities and Environmental
Monitoring Section Office
Division of Radiological Health
Department of Public Health
3423 N. Logan Street
P. O. Box 30195
Lansing, Michigan 48909

DATED: January 4, 1996

AMENDMENT NO. 206 TO FACILITY OPERATING LICENSE NO. DPR-58-D. C. COOK-UNIT 1
AMENDMENT NO. 190 TO FACILITY OPERATING LICENSE NO. DPR-74-D. C. COOK-UNIT 2

Docket File
PUBLIC
PDIII-1 Reading
J. Roe
C. Jamerson
J. Hickman (2)
OGC
G. Hill, IRM (4)
C. Grimes, 0-11F23
L. Kopp
ACRS
W. Kropp, RIII
SEDB

cc: Plant Service list

110008

DFC/11



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

INDIANA MICHIGAN POWER COMPANY

DOCKET NO. 50-315

DONALD C. COOK NUCLEAR PLANT, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 206
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 May 25, 1995, 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.

9601170071 960104
PDR ADOCK 05000315
P PDR

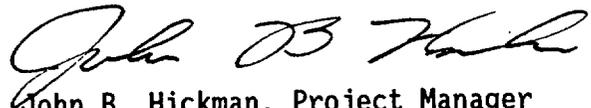
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-58 is hereby amended to read as follows:

Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 206, 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 issuance, with full implementation within 45 days.

FOR THE NUCLEAR REGULATORY COMMISSION



John B. Hickman, Project Manager
Project Directorate III-1
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical
Specifications

Date of Issuance: January 4, 1996

ATTACHMENT TO LICENSE AMENDMENT NO. 206
TO FACILITY OPERATING LICENSE NO. DPR-58
DOCKET NO. 50-315

Revise Appendix A Technical Specifications by removing the pages identified below and inserting the attached pages. The revised pages are identified by amendment number and contain vertical lines indicating the area of change.

REMOVE

3/4 2-15
6-17

INSERT

3/4 2-15
6-17

3/4.0 LIMITING CONDITION FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.2 POWER DISTRIBUTION LIMITS

ALLOWABLE POWER LEVEL - APL

LIMITING CONDITION FOR OPERATION

3.2.6 THERMAL POWER shall be less than or equal to ALLOWABLE POWER LEVEL (APL), given by the following relationships:

$$\text{APL} = \min \text{ over } Z \text{ of } \frac{CFQ \times K(Z)}{F_Q(Z) \times V(Z) \times F_P} \times 100\%, \text{ or } 100\%, \text{ whichever is less.}$$

- o CFQ is the F_Q limit at RATED THERMAL POWER specified in the COLR for Westinghouse or Exxon fuel.
- o $F_Q(Z)$ is the measured hot channel factor including a 3% manufacturing tolerance uncertainty and a 5% measurement uncertainty.
- o $V(Z)$ is the function specified in the COLR.
- o $F_P = 1.00$ except when successive steady-state power distribution maps indicate an increase in max over Z of $\frac{F_Q(Z)}{K(Z)}$ with exposure.

Then either of the penalties, F_P , shall be taken:

$F_P =$ burnup dependent penalty specified in the COLR, or

$F_P = 1.00$ provided that Surveillance Requirement 4.2.6.2 is satisfied once per 7 Effective Full Power Days until two successive maps indicate that the max over Z of $\frac{F_Q(Z)}{K(Z)}$ is not increasing.

- o The above limit is not applicable in the following core regions.
 - 1) Lower core region 0% to 10% inclusive.
 - 2) Upper core region 90% to 100% inclusive.

APPLICABILITY: MODE 1

6.0 ADMINISTRATIVE CONTROLS

MONTHLY REACTOR OPERATING REPORT

6.9.1.8 Routine reports of operating statistics and shutdown experience, including documentation of all challenges to the PORVs or safety valves, shall be submitted on a monthly basis to the U.S. Nuclear Regulatory Commission (Attn: Document Control Desk), Washington, D.C. 20555, with a copy to the Regional Office no later than the 15th of each month following the calendar month covered by the report.

CORE OPERATING LIMITS REPORT

6.9.1.9.1 Core operating limits shall be established and documented in the CORE OPERATING LIMITS REPORT before each reload cycle or any remaining part of a reload cycle for the following:

- a. Moderator Temperature Coefficient Limits for Specification 3/4.1.1.4,
- b. Rod Drop Time Limits for Specification 3/4.1.3.3,
- c. Shutdown Rod Insertion Limits for Specification 3/4.1.3.4,
- d. Control Rod Insertion Limits for Specification 3/4.1.3.5,
- e. Axial Flux Difference for Specification 3/4.2.1,
- f. Heat Flux Hot Channel Factor for Specification 3/4.2.2,
- g. Nuclear Enthalpy Rise Hot Channel Factor for Specification 3/4.2.3, and
- h. Allowable Power Level for Specification 3/4.2.6.

6.9.1.9.2 The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by the NRC in:

- a. WCAP-9272-P-A, "Westinghouse Reload Safety Evaluation Methodology," July 1985 (Westinghouse Proprietary),
- b. WCAP-8385, "Power Distribution Control and Load Following Procedures - Topical Report," September 1974 (Westinghouse Proprietary),
- c. WCAP-10216-P-A, Revision 1A, "Relaxation of Constant Axial Offset Control / F_Q Surveillance Technical Specification," February 1994 (Westinghouse Proprietary),
- d. WCAP-10266-P-A Rev. 2, "The 1981 Version of Westinghouse Evaluation Mode Using BASH Code," March 1987 (Westinghouse Proprietary).



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

INDIANA MICHIGAN POWER COMPANY

DOCKET NO. 50-316

DONALD C. COOK NUCLEAR PLANT, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 190
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 May 25, 1995, 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.

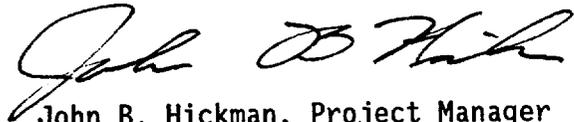
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-74 is hereby amended to read as follows:

Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 190, 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 issuance, with full implementation within 45 days.

FOR THE NUCLEAR REGULATORY COMMISSION



John B. Hickman, Project Manager
Project Directorate III-1
Division of Reactor Projects - III/IV
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: January 4, 1996

ATTACHMENT TO LICENSE AMENDMENT NO. 190

FACILITY OPERATING LICENSE NO. DPR-74

DOCKET NO. 50-316

Revise Appendix A Technical Specifications by removing the pages identified below and inserting the attached pages. The revised pages are identified by amendment number and contain vertical lines indicating the area of change.

REMOVE

3/4 2-19
6-17

INSERT

3/4 2-19
6-17

3/4 LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS
3/4.2 POWER DISTRIBUTION LIMITS

ALLOWABLE POWER LEVEL - APL

LIMITING CONDITION FOR OPERATION

3.2.6 THERMAL POWER shall be less than or equal to ALLOWABLE POWER LEVEL (APL), given by the following relationships:

$$\text{APL} = \min \text{ over } Z \text{ of } \frac{CFQ \times K(Z)}{F_Q(Z) \times V(Z) \times F_P} \times 100\%, \text{ or } 100\%, \text{ whichever is less.}$$

- o CFQ is the F_Q limit at RATED THERMAL POWER specified in the COLR for Westinghouse or Exxon fuel.
- o $F_Q(Z)$ is the measured hot channel factor including a 3% manufacturing tolerance uncertainty and a 5% measurement uncertainty.
- o $V(Z)$ is the function specified in the COLR.
- o $F_P = 1.00$ except when successive steady-state power distribution maps indicate an increase in max over Z of $\frac{F_Q(Z)}{K(Z)}$ with exposure.

Then either of the penalties, F_P , shall be taken:

$F_P =$ burnup dependent penalty specified in the COLR, or

$F_P = 1.00$ provided that Surveillance Requirement 4.2.6.2 is satisfied once per 7 Effective Full Power Days until two successive maps indicate that the max over Z of $\frac{F_Q(Z)}{K(Z)}$ is not increasing.

- o The above limit is not applicable in the following core regions.
 - 1) Lower core region 0% to 10% inclusive.
 - 2) Upper core region 90% to 100% inclusive.

APPLICABILITY: MODE 1

6.0 ADMINISTRATIVE CONTROLS

MONTHLY REACTOR OPERATING REPORT

6.9.1.8 Routine reports of operating statistics and shutdown experience, including documentation of all challenges to the PORVs or safety valves, shall be submitted on a monthly basis to the U.S. Nuclear Regulatory Commission (Attn: Document Control Desk), Washington, D.C. 20555, with a copy to the Regional Office no later than the 15th of each month following the calendar month covered by the report.

CORE OPERATING LIMITS REPORT

6.9.1.9.1 Core operating limits shall be established and documented in the CORE OPERATING LIMITS REPORT before each reload cycle or any remaining part of a reload cycle for the following:

- a. Moderator Temperature Coefficient Limits for Specification 3/4.1.1.4,
- b. Rod Drop Time Limits for Specification 3/4.1.3.4,
- c. Shutdown Rod Insertion Limits for Specification 3/4.1.3.5,
- d. Control Rod Insertion Limits for Specification 3/4.1.3.6,
- e. Axial Flux Difference for Specification 3/4.2.1,
- f. Heat Flux Hot Channel Factor for Specification 3/4.2.2,
- g. Nuclear Enthalpy Rise Hot Channel Factor for Specification 3/4.2.3, and
- h. Allowable Power Level for Specification 3/4.2.6.

6.9.1.9.2 The analytical methods used to determine the core operating limits shall be those previously reviewed and approved by the NRC in:

- a. WCAP-9272-P-A, "Westinghouse Reload Safety Evaluation Methodology," July 1985 (Westinghouse Proprietary),
- b. WCAP-8385, "Power Distribution Control and Load Following Procedures - Topical Report," September 1974 (Westinghouse Proprietary),
- c. WCAP-10216-P-A, Revision 1A, "Relaxation of Constant Axial Offset Control / F_Q Surveillance Technical Specification," February 1994 (Westinghouse Proprietary),
- d. WCAP-10266-P-A Rev. 2, "The 1981 Version of Westinghouse Evaluation Mode Using BASH Code," March 1987 (Westinghouse Proprietary).



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 206 TO FACILITY OPERATING LICENSE NO. DPR-58
AND AMENDMENT NO. 190 TO FACILITY OPERATING LICENSE NO. DPR-74

INDIANA MICHIGAN POWER COMPANY

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

DOCKET NOS. 50-315 AND 50-316

1.0 INTRODUCTION

By letter dated May 25, 1995, the Indiana Michigan Power Company (the licensee) requested amendments to the Technical Specifications (TS) appended 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 incorporate a cycle- and burnup-dependent F_q penalty (F_p) in the Core Operating Limits Report (COLR).

2.0 EVALUATION

The heat flux hot channel factor, $F_q(z)$, is the maximum local heat flux on the surface of a fuel rod at core elevation z , divided by the average fuel rod heat flux. For D.C. Cook, $F_q(z)$ is shown to be within its limits by performing periodic measurements every 31 effective full power days (EFPD). The TS take into account the possibility that $F_q(z)$ may increase between surveillances and require comparison of the resulting maximum $F_q(z)$ value to the maximum $F_q(z)$ determined from the previous measurement. If the maximum $F_q(z)$ has increased since the previous determination of $F_q(z)$, the TS allow two options: either the current $F_q(z)$ must be increased by an additional 2 percent to account for further increases in $F_q(z)$ before the next surveillance, or the surveillance period must be reduced to every seven EFPD.

The $F_q(z)$ penalty of 2 percent was based on the Westinghouse assumption that F_q would change by no more than 2 percent between monthly flux maps. More recently, some Westinghouse-designed cores have experienced increases in the measured $F_q(z)$ as high as 5 to 6 percent between monthly flux maps over certain burnup ranges. Therefore, for those cores which are predicted to have larger increases in $F_q(z)$ over certain burnup ranges, a larger F_p penalty should be provided on a cycle-specific basis.

The NRC approved Revision 1 to WCAP-10216-P-A, "Relaxation of Constant Axial Offset Control - F_q Surveillance Technical Specification," (proprietary), on November 26, 1993, which specified two options for incorporating changes in the TS to accommodate penalty factors greater than 2 percent. The larger penalty could be included in the plant COLR as a replacement for the current 2

9601170074 960104
PDR ADOCK 05000315
P PDR

percent standard value, thereby allowing it to be both cycle-dependent and burnup-dependent. Alternatively, the additional penalty in excess of 2 percent may be factored into the $V(z)$ function, which is a cycle-dependent function that accounts for power distribution transients encountered during normal operation. The $V(z)$ function is also provided in the COLR. The licensee has chosen to incorporate a burnup-dependent F_p in the D.C. Cook COLR. In addition, in accordance with an NRC request, WCAP-10216-P-A, Revision 1A, February 1994 (proprietary) will be incorporated in TS Section 6.9.1.9.2 as the approved reference for the F_0 surveillance and the acceptance of placing F_p in the COLR.

The proposed revisions to the F_0 surveillance TS in the D.C. Cook units for power distribution control are acceptable. These revisions would allow the incorporation of a larger penalty (F_p) to account for $F_0(z)$ increases greater than 2 percent between measurements. This penalty may be incorporated in the plant COLR, as a burnup-dependent value, and will be calculated with NRC-approved methods which will ensure that valves for cycle-specific parameters are established consistent with plant design bases and safety limits. The approved version of WCAP-10216-P, Rev. 1 will be included in Section 6.9.1.9.2 of the Administrative Controls Section of the TS to allow for incorporating the penalty factor in the COLR.

3.0 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.

4.0 ENVIRONMENTAL CONSIDERATION

The amendments change requirements with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration and there has been no public comment on such finding (60 FR 35080). The amendments also change record-keeping or reporting requirements. Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9) and (c)(10). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

5.0 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: L. Kopp

Date: January 4, 1996