



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

March 29, 2001

Mr. Robert P. Powers, Senior Vice President  
Indiana Michigan Power Company  
Nuclear Generation Group  
500 Circle Drive  
Buchanan, MI 49107

SUBJECT: DONALD C. COOK NUCLEAR PLANT, UNITS 1 AND 2 - ISSUANCE OF  
AMENDMENTS (TAC NOS. MB0699 AND MB0700)

Dear Mr. Powers:

The U.S. Nuclear Regulatory Commission has issued the enclosed Amendment No. 251 to Facility Operating License No. DPR-58 and Amendment No. 233 to Facility Operating License No. DPR-74 for the Donald C. Cook Nuclear Plant, Units 1 and 2. The amendments consist of changes to the Technical Specifications in response to your application dated November 15, 2000, as supplemented March 7, 2001.

The amendments would revise Technical Specification (TS) 3.2.6, "Allowable Power Level - APL," and TS 1.38, Allowable Power Level (APL)," definitions of APL to make them consistent throughout the TSs.

A copy of our related safety evaluation is also enclosed. A Notice of Issuance will be included in the Commission's next biweekly *Federal Register* notice.

Sincerely,

John F. Stang, Senior Project Manager, Section 1  
Project Directorate III  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket Nos. 50-315 and 50-316

Enclosures: 1. Amendment No. 251 to DPR-58  
2. Amendment No. 233 to DPR-74  
3. Safety Evaluation

cc w/encls: See next page

NRR-058

March 29, 2001

Mr. Robert P. Powers, Senior Vice President  
Indiana Michigan Power Company  
Nuclear Generation Group  
500 Circle Drive  
Buchanan, MI 49107

SUBJECT: DONALD C. COOK NUCLEAR PLANT, UNITS 1 AND 2 - ISSUANCE OF  
AMENDMENTS (TAC NOS. MB0699 AND MB0700)

Dear Mr. Powers:

The U.S. Nuclear Regulatory Commission has issued the enclosed Amendment No. 251 to Facility Operating License No. DPR-58 and Amendment No. 233 to Facility Operating License No. DPR-74 for the Donald C. Cook Nuclear Plant, Units 1 and 2. The amendments consist of changes to the Technical Specifications in response to your application dated November 15, 2000, as supplemented March 7, 2001.

The amendments would revise Technical Specification (TS) 3.2.6, "Allowable Power Level - APL," and TS 1.38, Allowable Power Level (APL)," definitions of APL to make them consistent throughout the TSs.

A copy of our related safety evaluation is also enclosed. A Notice of Issuance will be included in the Commission's next biweekly *Federal Register* notice.

Sincerely,

/RA/

John F. Stang, Senior Project Manager, Section 1  
Project Directorate III  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket Nos. 50-315 and 50-316

- Enclosures: 1. Amendment No. 251 to DPR-58
- 2. Amendment No. 233 to DPR-74
- 3. Safety Evaluation

cc w/encls: See next page

DISTRIBUTION

WBeckner  
PUBLIC GHill(2)  
PD 3-1 r/f OGC  
AVegel, RIII ACRS  
KKavanagh

\*See previous concurrence

DOCUMENT NAME: G:\PDIII-1\DCCOOK\amdbm0699.wpd

OFFICE	PM:PD3-1	LA:PD3-1	BC:SRXB	OGC	SC:PD3-1
NAME	JStang	THarris	JWermiel*	APH	CCraig
DATE	3/27/01	3/27/01	3/23/01	3/27/01	3/29/01

OFFICIAL RECORD COPY

Donald C. Cook Nuclear Plant, Units 1 and 2

cc:

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

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

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

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

David W. Jenkins, Esquire  
Indiana Michigan Power Company  
Nuclear Generation Group  
One Cook Place  
Bridgman, MI 49106

Mayor, City of Bridgman  
P.O. Box 366  
Bridgman, MI 49106

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

Drinking Water and Radiological  
Protection Division  
Michigan Department of  
Environmental Quality  
3423 N. Martin Luther King Jr Blvd  
P.O. Box 30630, CPH Mailroom  
Lansing, MI 48909-8130

Ronald Gaston  
Director, Regulatory Affairs  
Indiana Michigan Power Company  
Nuclear Generation Group  
One Cook Place  
Bridgman, MI 49106

David A. Lochbaum  
Union of Concerned Scientists  
1616 P Street NW, Suite 310  
Washington, DC 20036-1495

A. Christopher Bakken, Site Vice President  
Indiana Michigan Power Company  
Nuclear Generation Group  
One Cook Place  
Bridgman, MI 49106

Michael W. Rencheck  
Vice President, Nuclear Engineering  
Indiana Michigan Power Company  
Nuclear Generation Group  
500 Circle Drive  
Buchanan, MI 49107



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

INDIANA MICHIGAN POWER COMPANY

DOCKET NO. 50-315

DONALD C. COOK NUCLEAR PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 251  
License No. DPR-58

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Indiana Michigan Power Company (the licensee) dated November 15, 2000, as supplemented March 7, 2001, 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.

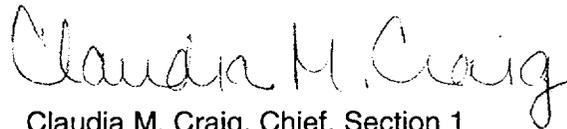
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-58 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 251, 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 its date of issuance and shall be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION



Claudia M. Craig, Chief, Section 1  
Project Directorate III  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: March 29, 2001

ATTACHMENT TO LICENSE AMENDMENT NO. 251

TO FACILITY OPERATING LICENSE NO. DPR-58

DOCKET NO. 50-315

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE

INSERT

1-7

1-7

3/4 2-15

3/4 2-15

3/4 2-16

3/4 2-16

B 3/4 2-6

B 3/4 2-6

## **1.0 DEFINITIONS**

---

### **MEMBER(S) OF THE PUBLIC**

- 1.35 MEMBER(S) OF THE PUBLIC shall include all persons who are not occupationally associated with the plant. This category does not include employees of the utility, its contractors or its vendors. Also excluded from this category are persons who enter the site to service equipment or to make deliveries. This category does include persons who use portions of the site for recreational, occupational or other purposes not associated with the plant.

### **SITE BOUNDARY**

- 1.36 The SITE BOUNDARY shall be that line beyond which the land is not owned, leased or otherwise controlled by the licensee.

### **UNRESTRICTED AREA**

- 1.37 An UNRESTRICTED AREA shall be any area at or beyond the SITE BOUNDARY to which access is not controlled by the licensee for purposes of protection of individuals from exposure to radiation and radioactive materials or any area within the site boundary used for residential quarters or industrial, commercial, institutional and/or recreational purposes.

### **ALLOWABLE POWER LEVEL (APL)**

- 1.38 ALLOWABLE POWER LEVEL (APL) is that maximum calculated power level at which power distribution limits are satisfied.

### **CORE OPERATING LIMITS REPORT (COLR)**

- 1.39 The COLR is the unit-specific document that provides core operating limits for the current operating reload cycle. These cycle-specific core operating limits shall be determined for each reload cycle in accordance with Specification 6.9.1.11. Unit operation within these operating limits is addressed in individual specifications.

### **TRIP ACTUATING DEVICE OPERATIONAL TEST**

- 1.40 A TRIP ACTUATING DEVICE OPERATIONAL TEST shall consist of operating the Trip Actuating Device and verifying OPERABILITY of alarm, interlock, and/or trip functions. The TRIP ACTUATING DEVICE OPERATIONAL TEST shall include adjustment, as necessary, of the Trip Actuating Device such that it actuates at the required setpoint within the required accuracy.

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 ALLOWABLE POWER LEVEL (APL), given by the following relationship, shall be greater than or equal to THERMAL POWER:

$$APL = \min \text{ over } Z \text{ of } \frac{CFQ \times K(Z)}{F_Q(Z) \times V(Z) \times F_p} \times 100\%.$$

- o CFQ is the  $F_Q$  limit at RATED THERMAL POWER specified in the COLR.
- o  $K(Z)$  is the normalized  $F_Q(Z)$  as a function of core height specified in the COLR.
- 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  $\max \text{ over } Z \text{ of } \frac{F_Q(Z)}{K(Z)}$  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  $\max \text{ over } Z \text{ of } \frac{F_Q(Z)}{K(Z)}$  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

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

---

LIMITING CONDITION FOR OPERATION (Continued)

ACTION:

With APL less than THERMAL POWER, reduce THERMAL POWER to APL or less of RATED THERMAL POWER within 15 minutes. Then reduce the Power Range Neutron Flux-High Trip Setpoints by the same percentage which APL is below RATED THERMAL POWER within the next 4 hours; POWER OPERATION may proceed for up to a total of 72 hours; subsequent POWER OPERATION may proceed provided the Overpower  $\Delta T$  Trip Setpoints have been reduced the same percentage which APL is below RATED THERMAL POWER.

SURVEILLANCE REQUIREMENTS

4.2.6.1 The provisions of Specification 4.0.4 are not applicable.

4.2.6.2 APL shall be determined by measurement in conjunction with the target flux difference and target band determination\* above 15% of RATED THERMAL POWER, according to the following schedule:

- a. Upon achieving equilibrium conditions after exceeding by 10% or more of RATED THERMAL POWER, the THERMAL POWER at which APL was last determined\*\*, or
- b. At least once per 31 effective full power days, whichever occurs first.

---

\* APL can be redefined by remeasuring the target axial flux difference.

\*\* During power escalation at the beginning of each cycle, the design target may be used until a power level for extended operation has been achieved.

3/4 BASES  
3/4.2 POWER DISTRIBUTION LIMITS

---

3/4.2.5 DNB PARAMETERS

The limits on the DNB related parameters assure that each of the parameters are maintained within the normal steady state envelope of operation assumed in the transient and accident analyses. The limits are consistent with the initial FSAR assumptions and have been analytically demonstrated to be adequate to maintain the applicable design limit DNBR values for each fuel type (which are listed in the bases for Section 2.1.1) throughout each analyzed transient. The indicated values of  $T_{avg}$  and flow include allowances for instrument errors. Measurement uncertainties have been accounted for in determining the DNB parameters' limit values.

The 12 hour periodic surveillance of these parameters through instrument readout is sufficient to ensure that the parameters are restored within their limits following load changes and other expected transient operation. The 12-hour surveillance of the RCS flow measurement is adequate to detect flow degradation. The CHANNEL CALIBRATION performed after refueling ensures the accuracy of the 12-hour surveillance of the RCS flow measurement. The total flow is measured after each refueling based on a secondary side calorimetric and measurements of primary loop temperature.

3/4.2.6 ALLOWABLE POWER LEVEL - APL

The nuclear design process includes calculations performed to determine that the core can be operated within the  $F_Q(Z)$  limits. Because flux maps are taken in steady state conditions, the variations in power distribution resulting from normal operational maneuvers are not present in the flux map data. These variations are, however, conservatively calculated by considering a wide range of unit maneuvers in normal operation allowed by constant axial offset control (CAOC). The maximum peaking factor increase over steady state values, calculated as a function of core elevation,  $Z$ , is called  $V(Z)$ .  $V(Z)$  is contained in the COLR.

Multiplying the measured  $F_Q(Z)$  by  $V(Z)$  gives the maximum  $F_Q(Z)$  calculated to occur in normal operation. For further protection, if the steady state  $F_Q(Z)$  as determined from a flux map, has increased since it was last taken, a penalty,  $F_p$ , must be applied or more frequent flux maps must be taken. This is to ensure that  $F_Q(Z)$  will not exceed its limit for any significant period of time without detection.

The difference between APL and THERMAL POWER represents the margin between  $F_Q(Z)$  during normal operational maneuvers as discussed above and the  $F_Q(Z)$  limit assumed in the accident analyses. Thus, if APL is calculated to be greater than the power level at which the flux map was taken, margin exists. If APL is calculated to be lower than the power at which the flux map was taken, margin does not exist, and action must be taken to reduce THERMAL POWER. THERMAL POWER may then be increased by either redefining the target axial flux difference which affects  $V(Z)$  or by correcting the cause of the high  $F_Q(Z)$  condition.



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

INDIANA MICHIGAN POWER COMPANY

DOCKET NO. 50-316

DONALD C. COOK NUCLEAR PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 233  
License No. DPR-74

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Indiana Michigan Power Company (the licensee) dated November 15, 2000, as supplemented March 7, 2001, 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.

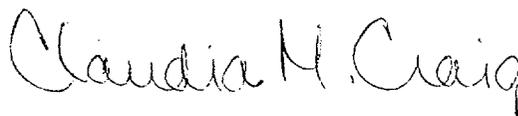
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-74 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 233 , 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 its date of issuance and shall be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION



Claudia M. Craig, Chief, Section 1  
Project Directorate III  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: March 29, 2001

ATTACHMENT TO LICENSE AMENDMENT NO. 233

FACILITY OPERATING LICENSE NO. DPR-74

DOCKET NO. 50-316

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE

INSERT

1-8

1-8

3/4 2-19

3/4 2-19

3/4 2-20

3/4 2-20

B 3/4 2-6

B 3/4 2-6

## 1.0 DEFINITIONS

---

### MEMBER(S) OF THE PUBLIC

- 1.35 MEMBER(S) OF THE PUBLIC shall include all persons who are not occupationally associated with the Plant. This category does not include employees of the utility, its contractors or its vendors. Also excluded from this category are persons who enter the site to service equipment or to make deliveries. This category does include persons who use portions of the site for recreational, occupational or other purposes not associated with the Plant.

### SITE BOUNDARY

- 1.36 The SITE BOUNDARY shall be that line beyond which the land is not owned, leased or otherwise controlled by the licensee.

### UNRESTRICTED AREA

- 1.37 An UNRESTRICTED AREA shall be any area at or beyond the SITE BOUNDARY to which access is not controlled by the licensee for purposes of protection of individuals from exposure to radiation and radioactive materials or any area within the site boundary used for residential quarters or industrial, commercial, institutional and/or recreational purposes.

### ALLOWABLE POWER LEVEL (APL)

- 1.38 ALLOWABLE POWER LEVEL (APL) is that maximum calculated power level at which power distribution limits are satisfied.

### CORE OPERATING LIMITS REPORT (COLR)

- 1.39 The COLR is the unit-specific document that provides core operating limits for the current operating reload cycle. These cycle-specific core operating limits shall be determined for each reload cycle in accordance with Specification 6.9.1.11. Unit operation within these operating limits is addressed in individual specifications.

### TRIP ACTUATING DEVICE OPERATIONAL TEST

- 1.40 A TRIP ACTUATING DEVICE OPERATIONAL TEST shall consist of operating the Trip Actuating Device and verifying OPERABILITY of alarm, interlock, and/or trip functions. The TRIP ACTUATING DEVICE OPERATIONAL TEST shall include adjustment, as necessary, of the Trip Actuating Device such that it actuates at the required setpoint within the required accuracy.

ALLOWABLE POWER LEVEL - APL

LIMITING CONDITION FOR OPERATION

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

$$APL = \min \text{ over } Z \text{ of } \frac{CFQ \times K(Z)}{F_Q(Z) \times V(Z) \times F_P} \times 100\%$$

- o CFQ is the  $F_Q$  limit at RATED THERMAL POWER specified in the COLR.
- o  $K(Z)$  is the normalized  $F_Q(Z)$  as a function of core height specified in the COLR.
- 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  $\max \text{ over } Z \text{ of } \frac{F_Q(Z)}{K(Z)}$  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  $\max \text{ over } Z \text{ of } \frac{F_Q(Z)}{K(Z)}$  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

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

---

LIMITING CONDITION FOR OPERATION (Continued)

ACTION:

With APL less than THERMAL POWER, reduce THERMAL POWER to APL or less of RATED THERMAL POWER within 15 minutes. Then reduce the Power Range Neutron Flux-High Trip Setpoints by the same percentage which APL is below RATED THERMAL POWER within the next 4 hours; POWER OPERATION may proceed for up to a total of 72 hours; subsequent POWER OPERATION may proceed provided the Overpower  $\Delta T$  Trip Setpoints have been reduced the same percentage which APL is below RATED THERMAL POWER.

SURVEILLANCE REQUIREMENTS

- 4.2.6.1 The provisions of Specification 4.0.4 are not applicable.
- 4.2.6.2 APL shall be determined by measurement in conjunction with the target flux difference and target band determination\* above 15% of RATED THERMAL POWER, according to the following schedule:
- a. Upon achieving equilibrium conditions after exceeding by 10% or more of RATED THERMAL POWER, the THERMAL POWER at which APL was last determined\*\*, or
  - b. At least once per 31 effective full power days, whichever occurs first.

---

\* APL can be redefined by remeasuring the target axial flux difference.

\*\* During power escalation at the beginning of each cycle, the design target may be used until a power level for extended operation has been achieved.

3/4.2.6 ALLOWABLE POWER LEVEL - APL

The nuclear design process includes calculations performed to determine that the core can be operated within the  $F_Q(Z)$  limits. Because flux maps are taken in steady state conditions, the variations in power distribution resulting from normal operational maneuvers are not present in the flux map data. These variations are, however, conservatively calculated by considering a wide range of unit maneuvers in normal operation allowed by constant axial offset control (CAOC). The maximum peaking factor increase over steady state values, calculated as a function of core elevation,  $Z$ , is called  $V(Z)$ .  $V(Z)$  is contained in the COLR.

Multiplying the measured  $F_Q(Z)$  by  $V(Z)$  gives the maximum  $F_Q(Z)$  calculated to occur in normal operation. For further protection, if the steady state  $F_Q(Z)$  as determined from a flux map, has increased since it was last taken, a penalty,  $F_p$ , must be applied or more frequent flux maps must be taken. This is to ensure that  $F_Q(Z)$  will not exceed its limit for any significant period of time without detection.

The difference between APL and THERMAL POWER represents the margin between  $F_Q(Z)$  during normal operational maneuvers as discussed above and the  $F_Q(Z)$  limit assumed in the accident analyses. Thus, if APL is calculated to be greater than the power level at which the flux map was taken, margin exists. If APL is calculated to be lower than the power at which the flux map was taken, margin does not exist, and action must be taken to reduce THERMAL POWER. THERMAL POWER may then be increased by either redefining the target axial flux difference which affects  $V(Z)$  or by correcting the cause of the high  $F_Q(Z)$  condition.



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 251 TO FACILITY OPERATING LICENSE NO. DPR-58  
AND AMENDMENT NO. 233 TO FACILITY OPERATING LICENSE NO. DPR-74

INDIANA MICHIGAN POWER COMPANY

DONALD C. COOK NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NOS. 50-315 AND 50-316

1.0 INTRODUCTION

By application dated November 15, 2000, as supplemented March 7, 2001, the Indiana Michigan Power Company (the licensee) requested amendments to the Technical Specifications (TSs) for the Donald C. Cook Nuclear Plant, Units 1 and 2. The proposed amendments would revise TSs 3.2.6, "Allowable Power Level - APL," and 1.38, "Allowable Power Level (APL)," definitions of APL to make them consistent throughout the TSs. The supplement contained clarifying information and did not change the initial no significant hazards consideration determination and did not expand the scope of the original *Federal Register* notice.

2.0 BACKGROUND

The Commission's regulatory requirements related to the content of TSs are set forth in 10 CFR 50.36. This regulation requires that the TSs include items in five specific categories. These categories include 1) safety limits, limiting safety system settings and limiting control settings, 2) limiting conditions for operation, 3) surveillance requirements, 4) design features, and 5) administrative controls. However, the regulation does not specify the particular TSs to be included in a plant's license. The plant specific TSs are derived from the plant safety analysis. At issue in the proposed amendment is whether a current limiting condition for operation accurately mirrors the safety analysis.

Allowable Power Level is a calculated value which represents the margin between the measured heat flux hot channel factor ( $F_o(Z)$ ) and the  $F_o$  limit discussed in the DC Cook Units 1 and 2 Final Safety Analysis Report. Allowable Power Level first entered the DC Cook Units 1 and 2 TSs in the applicability section of the axial power distribution (APD) TS as part of a vendor's nuclear fuel methodology. In 1986 for Unit 2, and 1989 for Unit 1, the APD TSs were changed to an APL TS (TS 3.2.6) with thermal power as the subject of the limiting condition for operation (LCO). The APL TS is unique to DC Cook and is not present in the Standard Technical Specifications, NUREG-1431 Revision 1.

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

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

For technical reasons, the APL should be greater than or equal to the thermal power, as the first part of the specification implies. There are no technical or regulatory reasons to limit APL to less than or equal to 100 percent as required by the language "... or 100 percent whichever is less." The configuration of the specification with thermal power (which is limited to 100 percent of the licensed value) as the subject places an artificial cap of 100 percent on APL.

In 1995, the staff issued a safety evaluation report for Amendments 193/179 to the DC Cook Units 1 and 2 TSs. The amendment established the current rod misalignment requirements in TS 3.1.3.1, which allows an additional rod misalignment of 6 steps (18 steps total) if 6 percent margin in  $F_Q(Z)$  exists at 100 percent rated thermal power. Six percent margin is equivalent to an APL of 106 percent. However, the current APL TS was not revised for consistency with TS 3.1.3.1 at that time, and does not allow APL to exceed 100 percent. Thus, the margin justified by the amendment cannot be used.

The current TS create a burden for the reactor operators. The reactor operators are required to meet the DC Cook licensing condition 2.C.1, which states that "the licensees are authorized to operate the Donald C. Cook Nuclear Plant, Unit No. 1, at steady state reactor core power levels not to exceed 3250 megawatts (thermal)," 3411 megawatts thermal for Unit 2. However, in order to have margin on the distribution limits, APL must be greater than thermal power. As such, the reactor operators have been operating DC Cook Units 1 and 2 at 98 percent thermal power in order not to enter TS 3.2.6 on unintended variations of thermal power.

The effect of the proposed change would make APL the subject of LCO 3.2.6 and would make TS 3.2.6 and TS 3.1.3.1 consistent with respect to APL values above 100 percent. Additionally, the reactor operators will be able to operate the reactor up to the licensed thermal power level without entering LCO 3.2.6. The proposed change does not change the licensed rated thermal power levels of 3250 megawatts for Unit 1 and 3411 megawatts for Unit 2.

### 3.0 EVALUATION

Allowable Power Level is a calculated value that establishes power distribution limits and reflects the available margin in the heat flux hot channel factor. Currently, APL is defined in TS 1.38 to be the power level, less than or equal to 100 percent rated thermal power, at which the plant may be operated to ensure that power distribution limits are satisfied. The licensee proposed to revise the definition of APL in TS 1.38 to remove the 100 percent limit and clarify the use of APL as a calculated value related to power distribution limits. Specifically, TS 1.38 will be revised to state:

"ALLOWABLE POWER LEVEL (APL) is that maximum calculated power level at which power distribution limits are satisfied."

The staff has reviewed the proposed definition change and concludes that the revised definition accurately reflects the purpose of APL. Therefore, the staff concludes that the revised definition of APL is acceptable.

The licensee also proposed to revise the LCO of TS 3.2.6. The current LCO has thermal power as the subject of the LCO. The revised LCO rearranges the words of LCO 3.2.6 such that APL, and not thermal power, is the subject of the TS. The statement "or 100%, whichever is less," which follows the APL relationship, is also removed. The rated thermal power of Unit 1 and Unit 2 is not being revised and continues to be governed by operating license condition 2.C.1. Therefore, the revised LCO would state:

"ALLOWABLE POWER LEVEL (APL), given by the following relationship, shall be greater than or equal to THERMAL POWER:"

The proposed changes will allow the TSs to accurately reflect that the calculated APL normally exceeds 100 percent. Technical specification 3.1.3.1, control rod misalignment, refers to APL values greater than or equal to 106 percent. As stated above, APL represents the margin between the measured  $F_o(Z)$  and the  $F_o$  limit assumed in the accident analyses. As such, APL values larger than 100 percent are desired because values of APL greater than thermal power indicate a flatter power distribution and more available margin for  $F_o(Z)$ . The staff finds that the revised LCO clarifies the TS by making APL the subject of the LCO and eliminating any implications that the thermal power value is protecting the  $F_o(Z)$  limit in the TS. The proposed changes make the TS more consistent with NUREG-1431 Revision 1, where thermal power is not the subject of an LCO, but limited by a condition in the operating license.

The staff has reviewed the proposed revision to LCO 3.6.2 and has concluded that this revision adequately reflects the purpose of APL, which is to protect the peaking factor limit,  $F_o(Z)$ , assumed in the accident analyses. Additionally, the licensee proposed to eliminate TS 3.2.6 Action b. Action b allows thermal power to be increased to a new APL calculated at the reduced power by redefining the target axial flux difference (AFD) or by correcting the cause of the high  $F_o(Z)$ . Action b is not required in the TS since adjusting target AFD and reflecting it in new  $V(Z)$  values is allowable because both AFD and  $V(Z)$  are both in the core operating limits report (COLR). Therefore, the licensee has proposed to remove Action b in order to ensure that it is not misinterpreted as permission to allow thermal power to be increased beyond that specified in the operating license. Based on the discussion above, the staff finds the removal of TS 3.6.2 Action b acceptable.

The licensee proposed two changes to clarify TS 3.6.2. These include the addition of the definition of  $K(Z)$ , which is the normalized  $F_o(Z)$  as a function of core height, and the deletion of references to the fuel vendors. The term  $K(Z)$  is already defined in TS 3.2.2 and is added to TS 3.2.6 for completeness. The staff finds the proposed changes acceptable.

The staff notes that the licensee has revised the TS 3.6.2 Bases wording to adequately reflect the changes discussed above. The staff has no objection to the changes to the TS Bases.

#### 4.0 SUMMARY

The staff has reviewed the licensee's submittals and supporting documentation. Based on our review, the staff finds the proposed revised definition of APL in TS 1.38 to be acceptable. The

staff also concludes that the proposed revisions to TS 3.2.6 are acceptable. Additionally, the staff concludes that there is reasonable assurance that plant operation in this manner poses no undue risk to the health and safety of the public.

#### 5.0 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.

#### 6.0 ENVIRONMENTAL CONSIDERATION

These amendments change the requirements with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 or change the surveillance requirements. 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 (65 FR 81924). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). 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.

#### 7.0 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: Kerri Kavanagh

Date: March 29, 2001