August 7, 1997

Mr. E. E. Fitzpatrick, 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 RE: BORIC ACID CONCENTRATION REDUCTION (TAC NOS. M94940 AND M94941)

Dear Mr. Fitzpatrick:

The Commission has issued the enclosed Amendment No. 216 to Facility Operating License No. DPR-58 and Amendment No. 200 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 (TS) in response to your application dated February 29, 1996, and supplemented November 15, 1996, and February 4, 1997.

The amendments revise the TS to increase the minimum borated water volume in the boric acid storage system and decrease the required boron concentration. The amendments shall be implemented when the required plant modifications are completed, but not later than August 31, 1998. When you have completed the modifications, you shall submit a letter to NRC stating the modifications are complete and the date you are implementing the approved amendments. At that time, the TS pages shall become fully implemented. Any amendment requests submitted in the interim that affect these TS pages should be noted so that changes are incorporated before the pages are implemented.

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

Sincerely,

ORIGINAL SIGNED BY:
John B. Hickman, Project Manager
Project Directorate III-3
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Docket Nos. 50-315 and 50-316
Enclosures: 1. Amendment No. 216 to DPR-58
2. Amendment No. 200 to DPR-74
3. Safety Evaluation
cc w/encl: See next page

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

August 7, 1997

Mr. E. E. Fitzpatrick, 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 RE: BORIC ACID CONCENTRATION REDUCTION (TAC NOS. M94940 AND M94941)

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The amendments revise the TSs to increase the minimum borated water volume in the boric acid storage system and decrease the required boron concentration. The amendments shall be implemented when the required plant modifications are completed, but not later than August 31, 1998. When you have completed the modifications, you shall submit a letter to NRC stating the modifications are complete and the date you are implementing the approved amendments. At that time, the TS pages shall become fully implemented. Any amendment requests submitted in the interim that affect these TS pages should be noted so that changes are incorporated before the pages are implemented.

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

Docket Nos. 50-315 and 50-316

Enclosures: 1. Amendment No. 216 to DPR-58
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3. Safety Evaluation

cc w/encl: See next page

cc:

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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. 216
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 February 29, 1996, and supplemented November 15, 1996, and February 4, 1997, 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:

Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 216 , 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 when the required plant modifications are completed, but not later than August 31, 1998.

FOR THE NUCLEAR REGULATORY COMMISSION

John B. Hickman, Project Manager
Project Directorate III-3
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: August 7, 1997

ATTACHMENT TO LICENSE AMENDMENT NO. 216

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	INSERT
IV	IV
IX	IX
3/4 1-1	3/4 1-1
3/4 1-3	3/4 1-3
3/4 1-7	3/4 1-7
3/4 1-9	3/4 1-9
3/4 1-10	3/4 1-10
3/4 1-15	3/4 1-15
3/4 1-16	3/4 1-16
3/4 9-1	3/4 9-1
3/4 10-1	3/4 10-1
B 3/4 1-2	B 3/4 1-2
B 3/4 1-3	B 3/4 1-3

SECTION PAGE

3/4.1.1 BORATION CONTROL

SHUTDOWN MARGIN - TAVG GREATER THAN 200°F

LIMITING CONDITION FOR OPERATION

3.1.1.1 The SHUTDOWN MARGIN shall be greater than or equal to 1.3% Delta k/k.

APPLICABILITY: MODES 1, 2*, 3, and 4.

ACTION:

With the SHUTDOWN MARGIN less than 1.3% Delta k/k, immediately initiate and continue boration at greater than or equal to 34 gpm of a solution containing greater than or equal to 6,550 ppm boron or equivalent until the required SHUTDOWN MARGIN is restored.

SURVEILLANCE REQUIREMENTS

4.1.1.1.1 The SHUTDOWN MARGIN shall be determined to be greater than or equal to 1.3% Delta k/k:

a. Within one hour after detection of an inoperable control rod(s) and at least once per 12 hours thereafter while the rod(s) is inoperable. If the inoperable control rod is immovable or untrippable, the above required SHUTDOWN MARGIN shall be verified acceptable with an increased allowance for the withdrawn worth of the immovable or untrippable control rod(s).

b. When in MODE 1 or MODE 2 with Keff greater than or equal to 1.0, at least once per 12 hours by verifying that control bank withdrawal is within the limits of Specification 3.1.3.5.

c. When in MODE 2 with Keff less than 1.0, within 4 hours prior to achieving reactor criticality by verifying that the predicted critical control rod position is within the limits of Specification 3.1.3.5.

d. Prior to initial operation above 5% RATED THERMAL POWER after each fuel loading, by consideration of the factors of e below, with the control banks at the maximum insertion limit of Specification 3.1.3.5.

*See Special Test Exception 3.10.1.

SHUTDOWN MARGIN - TAVG LESS THAN OR EQUAL TO 200°F

LIMITING CONDITION FOR OPERATION

3.1.1.2 The SHUTDOWN MARGIN shall be greater than or equal to 1.0% Delta k/k.

APPLICABILITY: MODE 5.

ACTION:

With the SHUTDOWN MARGIN less than 1.0% Delta k/k, immediately initiate and continue boration at greater than or equal to 34 gpm of a solution containing greater than or equal to 6,550 ppm boron or equivalent until the required SHUTDOWN MARGIN is restored.

SURVEILLANCE REQUIREMENTS

4.1.1.2 The SHUTDOWN MARGIN shall be determined to be greater than or equal to 1.0% Delta k/k:

a. Within one hour after detection of an inoperable control rod(s) and at least once per 12 hours thereafter while the rod(s) is inoperable. If the inoperable control rod is immovable or untrippable, the SHUTDOWN MARGIN shall be verified acceptable with an increased allowance for the withdrawn worth of the immovable or untrippable control rod(s).

b. At least once per 24 hours by consideration of the following factors:

1. Reactor coolant system boron concentration,

2. Control rod position,

3. Reactor coolant system average temperature,

4. Fuel burnup based on gross thermal energy generation,

5. Xenon concentration, and

6. Samarium concentration.

3/4.1.2 BORATION SYSTEMS

FLOW PATHS - SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.1.2.1 As a minimum, one of the following boron injection flow paths shall be OPERABLE:

a. A flow path from the boric acid tanks via a boric acid transfer pump and charging pump to the Reactor Coolant System if only the boric acid storage tank in Specification 3.1.2.7a is OPERABLE, or

b. The flow path from the refueling water storage tank via a charging pump to the Reactor Coolant System if only the refueling water storage tank in Specification 3.1.2.7b is OPERABLE.

APPLICABILITY: MODES 5 and 6.

ACTION:

With none of the above flow paths OPERABLE, suspend all operations involving CORE ALTERATIONS or positive reactivity changes* until at least one injection path is restored to OPERABLE status.

SURVEILLANCE REQUIREMENTS

4.1.2.1 At least one of the above required flow paths shall be demonstrated OPERABLE:

a. At least once per 7 days by verifying that the temperatures of the areas containing the flow path components from the boric acid tank to the blending tee are greater than or equal to 63°F when a flow path from the boric acid tanks is used.

b. At least once per 31 days by verifying that each valve (manual, power operated or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position.

*For purposes of this specification, addition of water from the RWST does not constitute positive reactivity addition provided the boron concentration in the RWST is greater than the minimum required by Specification 3.1.2.7.b.2.

FLOW PATHS - OPERATING

LIMITING CONDITION FOR OPERATION

3.1.2.2 Each of the following boron injection flow paths shall be OPERABLE:

a. The flow path from the boric acid tanks via a boric acid transfer pump and a charging pump to the Reactor Coolant System, and

b. The flow path from the refueling water storage tank via a charging pump to the Reactor Coolant System.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With the flow path from the boric acid tanks inoperable, restore the inoperable flow path to OPERABLE status within 72 hours or be in at least HOT STANDBY and borated to a SHUTDOWN MARGIN equivalent to at least 1% $\Delta k/k$ at 200°F within the next 6 hours; restore the flow path to OPERABLE status within the next 7 days or be in COLD SHUTDOWN within the next 30 hours.

b. With the flow path from the refueling water storage tank inoperable, restore the flow path to OPERABLE status within one hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.1.2.2 Each of the above required flow paths shall be demonstrated OPERABLE:

a. At least once per 7 days by verifying that the temperatures of the areas containing the flow path components from the boric acid tank to the blending tee are greater than or equal to 63°F.

b. At least once per 31 days by verifying that each valve (manual, power operated or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position.

c. At least once per 18 months during shutdown by verifying that each automatic valve in the flow path actuates to its correct position on an RWST sequencing signal.

d. At least once per 18 months during shutdown by verifying that the flow path required by specification 3.1.2.2.a delivers at least 34 gpm to the Reactor Coolant System.

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BORATED WATER SOURCES - SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.1.2.7 As a minimum, one of the following borated water sources shall be OPERABLE:

a. A boric acid storage system with:

1. A minimum usable borated water volume of 5000 gallons,
2. Between 6,550 and 6,990 ppm of boron, and
3. A minimum solution temperature of 63°F.

b. The refueling water storage tank with:

1. A minimum usable borated water volume of 90,000 gallons,
2. A minimum boron concentration of 2400 ppm, and
3. A minimum solution temperature of 70°F.

APPLICABILITY: MODES 5 and 6.

ACTION:

With no borated water source OPERABLE, suspend all operations involving CORE ALTERATIONS or positive reactivity changes* until at least one borated water source is restored to OPERABLE status.

SURVEILLANCE REQUIREMENTS

4.1.2.7 The above required borated water source shall be demonstrated OPERABLE:

a. At least once per 7 days by:

1. Verifying the boron concentration of the water,
2. Verifying the water level volume of the tank, and
3. Verifying the boric acid storage tank solution temperature when it is the source of borated water.

b. At least once per 24 hours by verifying the RWST temperature when it is the source of borated water.

*For purposes of this specification, addition of water from the RWST does not constitute a positive reactivity addition provided the boron concentration in the RWST is greater than the minimum required by Specification 3.1.2.7.b.2.

BORATED WATER SOURCES - OPERATING

LIMITING CONDITION FOR OPERATION

3.1.2.8 Each of the following borated water sources shall be OPERABLE:

a. A boric acid storage system with:

1. A minimum usable borated water volume of 8,500 gallons,*

2. Between 6,550 and 6,990 ppm of boron, and

3. A minimum solution temperature of 63°F.

b. The refueling water storage tank with:

1. A minimum contained volume of 350,000 gallons of water,

2. Between 2400 and 2600 ppm of boron, and

3. A minimum solution temperature of 70°F.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With the boric acid storage system inoperable, restore the storage system to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and borated to a SHUTDOWN MARGIN equivalent to at least 1% $\Delta k/k$ at 200°F; restore the boric acid storage system to OPERABLE status within the next 7 days or be in COLD SHUTDOWN within the next 30 hours.

b. With the refueling water storage tank inoperable, restore the tank to OPERABLE status within one hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.1.2.8 Each borated water source shall be demonstrated OPERABLE:

*Not required when borated water is injected into the RCS to meet SHUTDOWN MARGIN requirements of MODES 3 and 4.

BORON CONCENTRATION

LIMITING CONDITION FOR OPERATION

3.9.1 With the reactor vessel head unbolted or removed, the boron concentration of all filled portions of the Reactor Coolant System and the refueling canal shall be maintained uniform and sufficient to ensure that the more restrictive of the following reactivity conditions is met:

a. Either a K_{eff} of 0.95 or less, which includes a 1% $\Delta k/k$ conservative allowance for uncertainties, or

b. A boron concentration of greater than or equal to 2400 ppm, which includes a 50 ppm conservative allowance for uncertainties.

APPLICABILITY: MODE 6*

ACTION:

With the requirements of the above specification not satisfied, immediately suspend all operations involving CORE ALTERATIONS or positive reactivity changes** and initiate and continue boration at greater than or equal to 34 gpm of 6,550 ppm boric acid solution or its equivalent until K_{eff} is reduced to less than or equal to 0.95 or the boron concentration is restored to greater than or equal to 2400 ppm, whichever is the more restrictive. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.1.1 The more restrictive of the above two reactivity conditions shall be determined prior to:

a. Removing or unbolting the reactor vessel head, and

b. Withdrawal of any full length control rod in excess of 3 feet from its fully inserted position.

4.9.1.2 The boron concentration of the reactor coolant system and the refueling canal shall be determined by chemical analysis at least 3 times per 7 days with a maximum time interval between samples of 72 hours.

*The reactor shall be maintained in MODE 6 when the reactor vessel head is unbolted or removed.

**For purposes of this specification, addition of water from the RWST does not constitute a positive reactivity addition provided the boron concentration in the RWST is greater than the minimum required by Specification 3.1.2.7.b.2.

SHUTDOWN MARGIN

LIMITING CONDITION FOR OPERATION

3.10.1 The SHUTDOWN MARGIN requirement of Specification 3.1.1.1 may be suspended for measurement of control rod worth and shutdown margin provided the reactivity equivalent to at least the highest estimated control rod worth is available for trip insertion from OPERABLE control rod(s).

APPLICABILITY: MODE 2.

ACTION:

a. With the reactor critical ($K_{eff} \geq 1.0$) and with less than the above reactivity equivalent available for trip insertion, immediately initiate and continue boration at $\geq$ 34 gpm of 6,550 ppm boric acid solution or its equivalent until the SHUTDOWN MARGIN required by Specification 3.1.1.1 is restored.

b. With the reactor subcritical ($K_{eff} < 1.0$) by less than the above reactivity equivalent, immediately initiate and continue boration at $\geq$ 34 gpm of 6,550 ppm boric acid solution or its equivalent until the SHUTDOWN MARGIN required by Specification 3.1.1.1 is restored.

SURVEILLANCE REQUIREMENTS

4.10.1.1 The position of each full length rod either partially or fully withdrawn shall be determined at least once per 2 hours.

4.10.1.2 Each full length rod not fully inserted shall be demonstrated OPERABLE by verifying its rod drop time to be $\leq$ 2.4 seconds within 7 days prior to reducing the SHUTDOWN MARGIN to less than the limits of Specification 3.1.1.1.

3/4.1.1.4 MODERATOR TEMPERATURE COEFFICIENT (MTC) (Continued)

concentration associated with fuel burnup. The confirmation that the measured and appropriately compensated MTC value is within the allowable tolerance of the predicted value provides additional assurances that the coefficient will be maintained within its limits during intervals between measurement.

3/4.1.1.5 MINIMUM TEMPERATURE FOR CRITICALITY

This specification ensures that the reactor will not be made critical with the Reactor Coolant System average temperature less than 541°F. This limitation is required to ensure 1) the moderator temperature coefficient is within its analyzed temperature range, 2) the protective instrumentation is within its normal operating range, and 3) the pressurizer is capable of being in an OPERABLE status with a steam bubble, and 4) the reactor pressure vessel is above its minimum RT_{NDT} temperature. Administrative procedures will be established to ensure the P-12 blocked functions are unblocked before taking the reactor critical.

3/4.1.2 BORATION SYSTEMS

The boron injection system ensures that negative reactivity control is available during each mode of facility operation. The components required to perform this function include 1) borated water sources, 2) charging pumps, 3) separate flow paths, 4) boric acid transfer pumps, and 5) an emergency power supply from OPERABLE diesel generators.

With the RCS average temperature above 200°F, a minimum of two separate and redundant boron injection systems are provided to ensure single functional capability in the event an assumed failure renders one of the systems inoperable. Allowable out-of-service periods ensure that minor component repair or corrective action may be completed without undue risk to overall facility safety from injection system failures during the repair period.

The limitation for a maximum of one centrifugal charging pump to be OPERABLE and the Surveillance Requirement to verify all charging pumps and safety injection pumps except the required OPERABLE charging pump, to be inoperable below 152°F, unless the reactor vessel head is removed, provides assurance that a mass addition pressure transient can be relieved by the operation of a single PORV.

The boration capability of either system is sufficient to provide the required SHUTDOWN MARGIN from all operating conditions after xenon decay and cooldown to 200°F. The maximum expected boration capability, usable volume requirement, is 8500 gallons of 6550 ppm borated water from the boric acid storage tanks for providing required SHUTDOWN MARGIN after xenon decay and cooldown to 547°F and additional borated water from a second boric acid tank, or batching tank, or refueling water storage tank for further cooldown to 200°F. With the refueling water storage tank as the only source, based on conservative calculations, a maximum of 99598 gallons of 2400 ppm borated water is required. The minimum contained RWST volume is based on ECCS considerations. See Section B 3/4.5.5.

3/4.1.2 BORATION SYSTEMS (Continued)

With the RCS average temperature above 200°F, one injection system is acceptable without single failure consideration on the basis of the stable reactivity condition of the reactor and the additional restrictions prohibiting CORE ALTERATIONS and positive reactivity change in the event the single injection system becomes inoperable.

The boration capability required below 200°F is sufficient to provide a SHUTDOWN MARGIN of 1% Δ k/k after xenon decay and cooldown from 200°F to 140°F. This condition requires either 900 gallons of 6,550 ppm borated water from the boric acid storage tanks or 3265 gallons of 2400 ppm borated water from the refueling water storage tank. The boric acid storage tank boration source volume of Technical Specification 3.1.2.7 has been conservatively increased to 5,000 gallons. The charging flowpath of Unit 1 required for Unit 2 shutdown support ensures that flow is available to Unit 2 and addresses the requirements of 10 CFR 50 Appendix R. The flowpath consists of a charging pump powered from an electrical bus and associated water supplies and delivery system. Fire watches posted in the affected opposite unit areas (i.e., Unit 2 areas requiring use of the Unit 1 charging system in the event of a fire) may serve as the equivalent shutdown capability specified in the action statements of Specification 3.1.2.3. In the affected areas, either establish continuous fire watches or verify the OPERABILITY of fire detectors per Specification 4.3.3.7 and establish hourly fire watch patrols. The required opposite unit equipment along with the surveillance requirements necessary to ensure that this equipment is capable of fulfilling its intended Appendix R alternate safe shutdown function have been established and are included in a plant procedure. An additional plant procedure details how the above noted fire watches will be implemented.

The limits on contained water volume and boron concentration of the RWST also ensure a pH value of between 7.6 and 9.5 for the solution recirculated within containment after a LOCA. This pH band minimizes the evolution of iodine and minimizes the effect of chloride and caustic stress corrosion on mechanical systems and components.

The OPERABILITY of boron injection system during REFUELING ensures that this system is available for reactivity control while in MODE 6.

3/4.1.3 MOVABLE CONTROL ASSEMBLIES

The specifications of this section ensure that (1) acceptable power distribution limits are maintained, (2) the minimum SHUTDOWN MARGIN is maintained, and (3) the potential effects of rod ejection accident are

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. 200
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 February 29, 1996, and supplemented November 15, 1996, and February 4, 1997, 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. 200 , 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 when the required plant modifications are completed, but not later than August 31, 1998.

FOR THE NUCLEAR REGULATORY COMMISSION

John B. Hickman, Project Manager
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Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: August 7, 1997

ATTACHMENT TO LICENSE AMENDMENT NO. 200

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	INSERT
IV	IV
IX	IX
3/4 1-1	3/4 1-1
3/4 1-3	3/4 1-3
3/4 1-8	3/4 1-8
3/4 1-9	3/4 1-9
3/4 1-10	3/4 1-10
3/4 1-15	3/4 1-15
3/4 1-16	3/4 1-16
3/4 9-1	3/4 9-1
3/4 10-1	3/4 10-1
B 3/4 1-2	B 3/4 1-2
B 3/4 1-3	B 3/4 1-3

3/4.1.1 BORATION CONTROL

SHUTDOWN MARGIN - T_{AVG} GREATER THAN 200°F

LIMITING CONDITION FOR OPERATION

3.1.1.1 The SHUTDOWN MARGIN shall be greater than or equal to 1.3% Delta k/k.

APPLICABILITY: MODES 1, 2*, 3, and 4.

ACTION:

With the SHUTDOWN MARGIN less than 1.3% Delta k/k, immediately initiate and continue boration at greater than or equal to 34 gpm of a solution containing greater than or equal to 6,550 ppm boron or equivalent until the required SHUTDOWN MARGIN is restored.

SURVEILLANCE REQUIREMENTS

4.1.1.1.1 The SHUTDOWN MARGIN shall be determined to be greater than or equal to 1.3% Delta k/k:

a. Within one hour after detection of an inoperable control rod(s) and at least once per 12 hours thereafter while the rod(s) is inoperable. If the inoperable control rod is immovable or untrippable, the above required SHUTDOWN MARGIN shall be verified acceptable with an increased allowance for the withdrawn worth of the immovable or untrippable control rod(s).

b. When in MODE 1 or MODE 2 with K_{eff} greater than or equal to 1.0, at least once per 12 hours by verifying that control bank withdrawal is within the limits of Specification 3.1.3.6.

c. When in MODE 2 with K_{eff} less than 1.0, within 4 hours prior to achieving reactor criticality by verifying that the predicted critical control rod position is within the limits of Specification 3.1.3.6.

d. Prior to initial operation above 5% RATED THERMAL POWER after each fuel loading, by consideration of the factors of e below, with the control banks at the maximum insertion limit of Specification 3.1.3.6.

*See Special Test Exception 3.10.1.

SHUTDOWN MARGIN - T_{AVG} LESS THAN OR EQUAL TO 200°F

LIMITING CONDITION FOR OPERATION

3.1.1.2 The SHUTDOWN MARGIN shall be greater than or equal to 1.0% Delta k/k.

APPLICABILITY: MODE 5.

ACTION:

With the SHUTDOWN MARGIN less than 1.0% Delta k/k, immediately initiate and continue boration at greater than or equal to 34 gpm of a solution containing greater than or equal to 6,550 ppm boron or equivalent until the required SHUTDOWN MARGIN is restored.

SURVEILLANCE REQUIREMENTS

4.1.1.2 The SHUTDOWN MARGIN shall be determined to be greater than or equal to 1.0% Delta k/k:

a. Within one hour after detection of an inoperable control rod(s) and at least once per 12 hours thereafter while the rod(s) is inoperable. If the inoperable control rod is immovable or untrippable, the SHUTDOWN MARGIN shall be verified acceptable with an increased allowance for the withdrawn worth of the immovable or untrippable control rod(s).

b. At least once per 24 hours by consideration of the following factors:

1. Reactor coolant system boron concentration,

2. Control rod position,

3. Reactor coolant system average temperature,

4. Fuel burnup based on gross thermal energy generation,

5. Xenon concentration, and

6. Samarium concentration.

3/4.1.2 BORATION SYSTEMS

FLOW PATHS - SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.1.2.1 As a minimum, one of the following boron injection flow paths shall be OPERABLE:

a. A flow path from the boric acid tanks via a boric acid transfer pump and charging pump to the Reactor Coolant System if only the boric acid storage tank in Specification 3.1.2.7.a is OPERABLE, or

b. The flow path from the refueling water storage tank via a charging pump to the Reactor Coolant System if only the refueling water storage tank in Specification 3.1.2.7.b is OPERABLE.

APPLICABILITY: MODES 5 and 6.

ACTION:

With none of the above flow paths OPERABLE, suspend all operations involving CORE ALTERATIONS or positive reactivity changes* until at least one injection path is restored to OPERABLE status.

SURVEILLANCE REQUIREMENTS

4.1.2.1 At least one of the above required flow paths shall be demonstrated OPERABLE:

a. At least once per 7 days by verifying that the temperatures of the areas containing the flow path components from the boric acid tank to the blending tee are greater than or equal to 63°F when a flow path from the boric acid tanks is used.

b. At least once per 31 days by verifying that each valve (manual, power operated or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position.

*For purposes of this specification, addition of water from the RWST does not constitute positive reactivity addition provided the boron concentration in the RWST is greater than the minimum required by Specification 3.1.2.7.b.2.

FLOW PATHS - OPERATING

LIMITING CONDITION FOR OPERATION

3.1.2.2 Each of the following boron injection flow paths shall be OPERABLE:

a. The flow path from the boric acid tanks via a boric acid transfer pump and a charging pump to the Reactor Coolant System, and

b. The flow path from the refueling water storage tank via a charging pump to the Reactor Coolant System.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With the flow path from the boric acid tanks inoperable, restore the inoperable flow path to OPERABLE status within 72 hours or be in at least HOT STANDBY and borated to a SHUTDOWN MARGIN equivalent to at least 1% $\Delta k/k$ at 200°F within the next 6 hours; restore the flow path to OPERABLE status within the next 7 days or be in COLD SHUTDOWN within the next 30 hours.

b. With the flow path from the refueling water storage tank inoperable, restore the flow path to OPERABLE status within one hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.1.2.2 Each of the above required flow paths shall be demonstrated OPERABLE:

a. At least once per 7 days by verifying that the temperatures of the areas containing the flow path components from the boric acid tank to the blending tee are greater than or equal to 63°F.

b. At least once per 31 days by verifying that each valve (manual, power operated or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position.

c. At least once per 18 months during shutdown by verifying that each automatic valve in the flow path actuates to its correct position on a RWST sequencing signal.

d. At least once per 18 months during shutdown by verifying that the flow path required by specification 3.1.2.2.a delivers at least 34 gpm to the Reactor Coolant System.

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BORATED WATER SOURCES - SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.1.2.7 As a minimum, one of the following borated water sources shall be OPERABLE:

a. A boric acid storage system with:

1. A minimum usable borated water volume of 5,000 gallons,

2. Between 6,550 and 6,990 ppm of boron, and

3. A minimum solution temperature of 63°F.

b. The refueling water storage tank with:

1. A minimum usable borated water volume of 90,000 gallons,

2. A minimum boron concentration of 2400 ppm, and

3. A minimum solution temperature of 70°F.

APPLICABILITY: MODES 5 and 6.

ACTION:

With no borated water source OPERABLE, suspend all operations involving CORE ALTERATIONS or positive reactivity changes* until at least one borated water source is restored to OPERABLE status.

SURVEILLANCE REQUIREMENTS

4.1.2.7 The above required borated water source shall be demonstrated OPERABLE:

a. At least once per 7 days by:

1. Verifying the boron concentration of the water,

2. Verifying the contained borated water volume, and

3. Verifying the boric acid storage tank solution temperature when it is the source of borated water.

b. At least once per 24 hours by verifying the RWST temperature when it is the source of borated water.

*For purposes of this specification, addition of water from the RWST does not constitute a dilution activity provided the boron concentration in the RWST is greater than or equal to the minimum required by Specification 3.1.2.7.b.2.

BORATED WATER SOURCES - OPERATING

LIMITING CONDITION FOR OPERATION

3.1.2.8 Each of the following borated water sources shall be OPERABLE:

a. A boric acid storage system with:

1. A minimum contained borated water volume of 8500 gallons,*

2. Between 6,550 and 6,990 ppm of boron, and

3. A minimum solution temperature of 63°F.

b. The refueling water storage tank with:

1. A minimum contained borated water volume of 350,000 gallons of water,

2. Between 2400 and 2600 ppm of boron, and

3. A minimum solution temperature of 70°F.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With the boric acid storage system inoperable, restore the storage system to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and borated to a SHUTDOWN MARGIN equivalent to at least 1% Delta k/k at 200°F; restore the boric acid storage system to OPERABLE status within the next 7 days or be in COLD SHUTDOWN within the next 30 hours.

b. With the refueling water storage tank inoperable, restore the tank to OPERABLE status within one hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.1.2.8 Each borated water source shall be demonstrated OPERABLE:

*Not required when borated water is injected into the RCS to meet SHUTDOWN MARGIN requirements of MODES 3 and 4.

BORON CONCENTRATION

LIMITING CONDITION FOR OPERATION

3.9.1 With the reactor vessel head unbolted or removed, the boron concentration of all filled portions of the Reactor Coolant System and the refueling canal shall be maintained uniform and sufficient to ensure that the more restrictive of the following reactivity conditions is met:

a. Either a K_{eff} of 0.95 or less, which includes a 1% $\Delta k/k$ conservative allowance for uncertainties, or

b. A boron concentration of greater than or equal to 2400 ppm, which includes a 50 ppm conservative allowance for uncertainties.

APPLICABILITY: MODE 6*.

ACTION:

With the requirements of the above specification not satisfied, immediately suspend all operations involving CORE ALTERATIONS or positive reactivity changes** and initiate and continue boration at greater than or equal to 34 gpm of 6,550 ppm boric acid solution or its equivalent until K_{eff} is reduced to less than or equal to 0.95 or the boron concentration is restored to greater than or equal to 2400 ppm, whichever is the more restrictive. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.1.1 The more restrictive of the above two reactivity conditions shall be determined prior to:

a. Removing or unbolting the reactor vessel head, and

b. Withdrawal of any full length control rod in excess of 3 feet from its fully inserted position within the reactor pressure vessel.

4.9.1.2 The boron concentration of the reactor coolant system and the refueling canal shall be determined by chemical analysis at least once per 72 hours.

*The reactor shall be maintained in MODE 6 when the reactor vessel head is unbolted or removed.

**For purposes of this specification, addition of water from the RWST does not constitute a positive reactivity addition provided the boron concentration in the RWST is greater than the minimum required by Specification 3.1.2.7.b.2.

SHUTDOWN MARGIN

LIMITING CONDITION FOR OPERATION

3.10.1 The SHUTDOWN MARGIN requirement of Specification 3.1.1.1 may be suspended for measurement of control rod worth and shutdown margin provided the reactivity equivalent to at least the highest estimated control rod worth is available for trip insertion for OPERABLE control rod(s).

APPLICABILITY: MODE 2.

ACTION:

a. With any full length control rod not fully inserted and with less than the above reactivity equivalent available for trip insertion, immediately initiate and continue boration at ≥ 34 gpm of 6,550 ppm boric acid solution or its equivalent until the SHUTDOWN MARGIN required by Specification 3.1.1.1 is restored.

b. With all full length control rods inserted and the reactor subcritical by less than the above reactivity equivalent, immediately initiate and continue boration at ≥ 34 gpm of 6,550 ppm boric acid solution or its equivalent until the SHUTDOWN MARGIN required by Specification 3.1.1.1 is restored.

SURVEILLANCE REQUIREMENTS

4.10.1.1 The position of each full length rod either partially or fully withdrawn shall be determined at least once per 2 hours.

4.10.1.2 Each full length rod not fully inserted shall be demonstrated capable of full insertion when tripped from at least the 50% withdrawn position within 7 days prior to reducing the SHUTDOWN MARGIN to less than the limits of Specification 3.1.1.1.

3/4.1.1.4 MODERATOR TEMPERATURE COEFFICIENT (MTC)

The limitations on MTC are provided to ensure that the value of this coefficient remains within the limiting conditions assumed for this parameter in the FSAR accident and transient analyses.

The MTC values of this specification are applicable to a specific set of plant conditions; accordingly, verification of MTC values at conditions other than those explicitly stated will require extrapolation to those conditions in order to permit an accurate comparison.

It is confirmed by cycle specific neutronic analyses that the value of the MTC at EOC, HZP (All rods in) is greater than the value at EOC, HFP (All rods out), thus assuring that the surveillance at the latter condition is adequate to maintain MTC within safety analysis assumptions.

The surveillance requirements for measurement of the MTC at the beginning and near the end of each fuel cycle are adequate to confirm that the MTC remains within its limits since this coefficient changes slowly due principally to the reduction in RCS boron concentration associated with fuel burnup.

3/4.1.1.5 MINIMUM TEMPERATURE FOR CRITICALITY

This specification ensures that the reactor will not be made critical with the Reactor Coolant System average temperature less than 541°F. This limitation is required to ensure 1) the moderator temperature coefficient is within its analyzed temperature range, 2) the protective instrumentation is within its normal operating range, 3) the pressurizer is capable of being in an OPERABLE status with a steam bubble, and 4) the reactor pressure vessel is above its minimum RT_{NDT} temperature. Administrative procedures will be established to ensure the P-12 blocked functions are unblocked before taking the reactor critical.

3/4.1.2 BORATION SYSTEMS

The boron injection system ensures that negative reactivity control is available during each mode of facility operation. The components required to perform this function include 1) borated water sources, 2) charging pumps, 3) separate flow paths, 4) boric acid transfer pumps, and 5) an emergency power supply from OPERABLE diesel generators.

3/4.1.2 BORATION SYSTEMS (Continued)

With the RCS average temperature above 200°F, a minimum of two separate and redundant boron injection systems are provided to ensure single functional capability in the event an assumed failure renders one of the systems inoperable. Allowable out-of-service periods ensure that minor component repair or corrective action may be completed without undue risk to overall facility safety from injection system failures during the repair period.

The limitation for maximum of one centrifugal charging pump to be OPERABLE and the Surveillance Requirement to verify all charging pumps and safety injection pumps, except the required OPERABLE charging pump, to be inoperable below 152°F, unless the reactor vessel head is removed, provides assurance that a mass addition pressure transient can be relieved by the operation of a single PORV.

The boration capability of either system is sufficient to provide the required SHUTDOWN MARGIN from expected operating conditions after xenon decay and cooldown to 200°F. The maximum expected boration capability, usable volume requirement, is 8500 gallons of 6550 ppm borated water from the boric acid storage tanks for providing required SHUTDOWN MARGIN after xenon decay and cooldown to 547°F and additional borated water from a second boric acid tank, or batching tank, or refueling water storage tank for further cooldown to 200°F. With the refueling water storage tank as the only source, based on conservative calculations, a maximum of 69215 gallons of 2400 ppm borated water is required. The minimum RWST boron concentration required by the post-LOCA long-term cooling analysis is 2400 ppm. The minimum contained RWST volume is based on ECCS considerations. See Section B 3/4.5.5.

With the RCS average temperature below 200°F, one injection system is acceptable without single failure consideration on the basis of the stable reactivity condition of the reactor and the additional restrictions prohibiting CORE ALTERATIONS and positive reactivity change in the event the single injection system becomes inoperable.

The boron capability required below 200°F is sufficient to provide the required MODE 5 SHUTDOWN MARGIN after xenon decay and cooldown from 200°F to 140°F. This condition requires usable volumes of either 900 gallons of 6,550 ppm borated water from the boric acid storage tanks or 3265 gallons of borated water from the refueling water storage tank. The boration source volumes of Technical Specification 3.1.2.7 have been conservatively increased to 5,000 gallons from the boric acid storage tanks and 90,000 gallons from the refueling water storage tank.

The limits on contained water volume and boron concentration of the RWST also ensure a pH value of between 7.6 and 9.5 for the solution recirculated within containment after a LOCA. This pH band minimizes the evolution of iodine and minimizes the effect of chloride and caustic stress corrosion on mechanical systems and components.

The OPERABILITY of boron injection system during REFUELING ensures that this system is available for reactivity control while in MODE 6.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 216 TO FACILITY OPERATING LICENSE NO. DPR-58

AND AMENDMENT NO. 200 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 letter dated February 29, 1996, 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, Units 1 and 2. The proposed amendments would change TS 3.1.2.7 and 3.1.2.8 for both units. These changes will increase the minimum borated water volume in the boric acid storage system and decrease the maximum boron concentration.

The licensee is also requesting amendments to increase the minimum required flow rate in action statements for TS 3.1.1.1, 3.1.1.2, 3.9.1, and 3.10.1 and an additional surveillance requirement for this flow rate in TS 4.1.2.2.d. In addition, the licensee is proposing to decrease the minimum temperature requirement in TS 4.1.2.1.a, 4.1.2.2.a, 3.1.2.7.a.3, and 3.1.2.8.a.3 to 63^{0}F. The bases Section 3/4.1.2 would be updated to reflect these changes.

The November 15, 1996, and February 4, 1997, supplements only provided the anticipated schedule for the plant modifications and procedure changes associated with this request and did not change the staff's proposed determination of no significant hazards consideration.

2.0 BACKGROUND

These revisions will support the licensee's plans to reduce the boron concentration requirements in the boric acid storage tank (BAST) for Units 1 and 2. The present boric acid concentration requirement is between 20,000 ppm and 22,500 ppm (parts per million) of boron (approximately 12 percent by weight). The BAST borated volume for Unit 1 is 5,641 gallons and the borated volume for Unit 2 is 4,905 gallons. This is based on the ability to borate the reactor coolant system (RCS) to a concentration required to bring the reactor to a cold shutdown mode through the feed and bleed process. Prior to the commencement of the cooldown, the RCS is borated to a concentration required to provide a shutdown margin of 1,000 pcm [percent mille] (1 pcm = 10^{-5} $\Delta k/k$) at 68^{0}F. The RCS boron is maintained at a constant (uniform) concentration during the cooldown process.

Reducing the concentration in the BAST to between 6,550 ppm and 6,990 ppm (between 3.4 and 4.0 weight percent) will eliminate the need to heat trace the BASTs, valves, and piping. The normally anticipated ambient temperature in the auxiliary building where this equipment is located would be sufficiently high to prevent boric acid precipitation and deposits.

The reduction in the BAST boron concentration is achieved by relying on both the BAST and the refueling water storage tank (RWST) for cooldown. Specifically, at Donald C. Cook, Units 1 and 2, the BAST is borated water used for increasing the RCS boron concentration at hot conditions and the RWST borated water is for overcoming coolant contraction. Using the RWST to supplement the BAST for makeup, the minimum required boric acid concentration in the BAST is reduced from approximately 12 percent to 3.5 and 4.0 percent by weight. Following reactor shutdown, boration feed and bleed operation is carried out to satisfy the hot zero power shutdown margin requirement. This operation will introduce negative reactivity into the system to compensate for the decrease in power and xenon decay.

To compensate for the reduction in the boron concentration, the licensee performed calculations to determine the maximum volume of borated water required in the BAST and to determine the minimum delivery volume flow rate from the BAST. The licensee also performed calculations to determine the amount of RWST borated water to compensate for the above-mentioned reactivity effects. The results of the calculations are discussed below.

3.0 TECHNICAL EVALUATION

3.1 Transient and Accident Analysis

Accident and transients addressed in Chapter 15 of the Updated Final Safety Analysis Report (UFSAR) do not take credit for borated water delivery to the RCS and BAST. The charging pumps are typically aligned to the RWST during safety injection, so reduction of the boric acid concentration in the BASTs has no effect on the accident analysis covered in the UFSAR.

3.2 Reactivity Calculations

The licensee analyzed several cooldown scenarios for both units. First of all, the purpose of these investigations was to determine the amount of boric acid required in the BAST to counteract the positive reactivity addition due to reactor shutdown (moderator temperature changes) and xenon decay during the cooldown process. Secondly, the licensee performed a set of calculations to determine the boron addition required to counteract xenon decay after shutdown, as well as the boron requirements to compensate for cooldown below $200^{0}F$.

To demonstrate the acceptability of the proposed reduction in BAST boron concentration, the licensee performed calculations for specific cooldown scenarios. These calculations determine the minimum RCS boron concentration necessary to maintain the required shutdown margin during cooldown, and the

expected boron delivery from the BAST and RWST to the RCS at any time during cooldown. Maintaining the required shutdown margin throughout the cooldown process is ensured by providing sufficient boron (above minimum value required) to the RCS. The core physics analysis used conservative assumptions to bound the reactivity effects of any cooldown scenario that may occur at any point in the fuel cycle and to maximize boron demand. The bounding scenario assumed the reactor is shut down from full power and at equilibrium xenon. The control and the shutdown rods, except the most reactive rod, are assumed to be inserted. The shutdown boron values for no xenon conditions were obtained from the PC-NDR computer program. The licensee pointed out that the results of the calculation showed that all the Tss corresponding to the shutdown margin requirements were met. Other calculations were performed to show that requirements for hot zero power critical boron concentration (6,550 ppm) conditions were met. To show that enough RWST water was available for further cooldown, calculations were performed using the RWST water at a lower boron concentration (2,400 ppm) to compensate for shrinkage. Results of analyses for both Units 1 and 2 showed that, for equilibrium and peak xenon conditions, there is sufficient RWST water available in the event that cooldown is required. Additional analyses showed that for all expected normal shutdown scenarios, there is enough BAST borated water volume available to increase the RCS boron concentration by feed and bleed operation to cold shutdown boron concentration.

Flow rate verification analyses were conducted for both xenon decay and xenon burnout. In the case of xenon decay, it was found that to counteract xenon decay, the core had to be borated at approximately 24 ppm/hr. The flow rate necessary to increase RCS boron at this rate is approximately 6 gpm of BAST boric acid at 6,550 ppm. For xenon burnout, the maximum boration rate is approximately 137 ppm/hr. This translates to approximately 33 gpm of boric acid addition from the BAST. A conservative value of 34 gpm flow requirement was chosen.

Analyses for shutdown boration requirements (Modes 5 and 6), showed that BAST and RWST water requirements to compensate for temperature reduction (cooldown from 200°F to 68°F) were met. In Mode 6, a boron concentration requirement sufficient to ensure the more restrictive of the following reactivity conditions must be maintained: a K_{eff} of 0.95 or less, or 2,400 ppm. With the higher boric acid concentration in the RCS, the reactivity addition due to any postulated dilution accident is slow enough to allow the operator to determine the cause of the dilution and take corrective actions before shutdown margin is lost.

3.3 Operational Analysis

The licensee analyzed the impact on plant operations from a reduction in the boron concentration in the BAST. Following a small line break accident (SLBA) or steam generator tube rupture (SGTR), the operators are directed (through plant procedures and instructions) to borate the RCS to maintain shutdown margin. Emergency procedures directing the blending operations via control settings will be modified to reflect the reduction in the BAST boron

concentration. Normal operating procedures will also be changed to reflect the reduction in the BAST boron concentration.

To support the planned reduction in the BAST boron concentration, changes to the current TS have been proposed by the licensee. TS 3.1.2.8 on borated water sources is changed to require 8,500 gallons of boric acid at a boron concentration between 6,550 ppm and 6,990 ppm. The amount of 8,500 gallons of BAST water is required for Modes 1 and 2 in anticipation of a reactor shutdown and subsequent increase in reactivity due to xenon decay and cooldown. TS for Modes 1, 2, 3, and 4 were changed to include a note for the BAST volume requirement stating in effect that the volume of borated water is not required once the reactor is stripped and the borated water is injected into the RCS for boron concentration increase. For Modes 5 and 6, a lower amount (900 gallons) was found to be sufficient to counteract volume shrinkage. However, this value was conservatively increased to 5,000 gallons. Consequently, TS 3.1.2.7 was changed to reflect the change in volume and concentration. For consistency, portions of TS 3.1.1.1, 3.1.1.2, 3.9.1, and 3.10.1 were also changed to reflect the revised boron concentration of 6,550 ppm. These changes are consistent with the licensee's analysis supporting the reduced boron concentration and are acceptable.

TS 3.1.1.1, 3.1.1.2, 3.9.1, and 3.10.1 are changed to increase the rate at which borated water is injected into the RCS from 10 gpm to 34 gpm. The licensee provided supporting technical justification which showed that this rate was sufficient to counteract xenon burnout. The 34 gpm flow rate is conservative and acceptable. The change in flow rate necessitated a new flow rate surveillance requirement in TS 3.1.2.2. Once per 18 months, the flow rate is to be verified to be greater than 34 gpm. Relevant control valves were modified to accommodate the increased flow rate.

Associated with the elimination of the heat tracing networks for the BAST flowpaths is a change in the requirement to monitor the heat traced portion of the flowpath to monitor the ambient air temperature of the rooms containing the flowpath components from the boric acid tank to the blending tee. TS surveillance 4.1.2.1.a. is changed from verifying the temperature of the heat tracing to be greater than or equal to 145°, to verifying the area temperature to be greater than 63°F. This change is consistent with the licensee's analysis of the minimum required temperature at the reduced boron concentration and is acceptable.

The licensee also proposed changes to the bases which are consistent with, and support, the TS changes.

The licensee has assessed the impact of the proposed changes and found that these changes do not affect the plant's ability to reach hot standby and cold shutdown.

4.0 SUMMARY

The NRC staff has reviewed the reports submitted by the licensee for the operation of Donald C. Cook Units 1 and 2 and finds the proposed reduction in BAST boron concentration, the associated elimination of boric acid flowpath heat tracing, the resulting revisions to the relevant TS, associated bases and surveillance, as described in the licensee's submittal of February 29, 1996, as supplemented November 15, 1996, and February 4, 1997, to be acceptable.

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

The amendments change the requirements with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and change 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 (61 FR 18172). 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.

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Date: **August 7, 1997**