Indiana Michigan
Power Company
500 Circle Drive
Buchanan, MI 49107 1395

INDIANA MICHIGAN POWER

March 27, 2003

AEP:NRC:3334
10 CFR 50.90

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

SUBJECT: Donald C. Cook Nuclear Plant Unit 2
Docket No. 50-316
License Amendment Request to Revise Low Pressurizer Pressure Safety Injection Setpoint

Dear Sir or Madam

Pursuant to 10 CFR 50.90, Indiana Michigan Power Company (I&M), the licensee for Donald C. Cook Nuclear Plant Unit 2, proposes to amend Appendix A, Technical Specifications (TS), of Facility Operating License DPR-74. I&M proposes to amend Unit 2 TS Table 3.3-4, item 1.d, and the P-11 setpoint in the Engineered Safety Features Interlock Table. The proposed amendment would:

- Revise the low pressurizer pressure safety injection (SI) trip setpoint from its current value of greater than or equal to 1900 pounds per square inch gauge (psig), to greater than or equal to 1815 psig.
- Revise the low pressurizer pressure SI allowable value from greater than or equal to 1890 psig, to greater than or equal to 1805 psig.
- Revise the P-11 setpoint from its current value of greater than or equal to 2010 psig, to greater than or equal to 1915 psig.
- Make format changes to the affected TS pages that improve appearance but do not affect any requirements.

No pending amendment requests affect the TS pages that are submitted in this request. If any future submittals affect these TS pages, I&M will coordinate the changes to the pages with the Nuclear Regulatory Commission Project Manager to ensure proper TS page control when the associated license amendment requests are approved.

I&M requests approval of these amendments by September 30, 2003. Approval of these changes will alleviate an operator concern that an SI actuation is imminent following a reactor trip. Following recent Unit 2 reactor trips, the reactor coolant system (RCS) pressure has approached the low pressurizer pressure SI trip setpoint, the RCS temperature has continued to decrease, and the operators have

A001

closed the main steam isolation valves (MSIVs) to stabilize the RCS temperature. Subsequently, the Nuclear Regulatory Commission's Senior Resident Inspector at the Donald C. Cook Nuclear Plant (CNP) questioned whether the plant's operators were being unnecessarily challenged to take actions (the closing of the MSIVs) to avoid an SI actuation

An evaluation of the recent Unit 2 reactor trips has concluded that the RCS pressure recovers after the initial decrease following a reactor trip, and no operator action is necessary to avoid a low pressurizer pressure SI actuation. However, because of the continued RCS temperature decrease, which is caused by the quantity of auxiliary feedwater flow (three pumps at maximum flow rate), the operators place priority on stabilizing the RCS temperature, and they close the MSIVs to reduce RCS cooling. Later, after auxiliary feedwater (AFW) flow has been reduced, the RCS temperature stabilizes.

Prior to 1997, the CNP Emergency Operating Procedures (EOPs) allowed the operators to immediately shut down the turbine driven auxiliary feedwater pump (TDAFP) if the motor driven auxiliary feedwater pumps (MDAFPs) were running. This provision was modified to include the additional requirement to restore SG level above the auto start setpoint as committed to in the response to Inspection Report 50-315, 316/97004. This guidance was subsequently removed as part of the EOP Upgrade Project to restore the EOPs to the Westinghouse Emergency Response Guidelines that direct waiting to remove the TDAFP until the plant is stabilized. These changes in the EOPs together with a design change that provided a 3.5-second delay to the AFW flow retention circuit are believed to have exacerbated the operator's concern about RCS cooling. The combined effect of these changes is to increase the amount of time that the maximum AFW flow rate to the steam generators exists.

The continued cooling of the RCS following a reactor trip has been addressed by incorporating a step in the "Reactor Trip or Safety Injection" procedure to reduce the total feed flow to 450,000 pounds per hour if an SI is not required. The proposed changes to the TS address the concerns associated with the pressure decrease that occurs immediately following the reactor trip.

Presently, following a reactor trip, there is a rapid decrease in pressurizer pressure that comes within 20 to 40 pounds per square inch of the present low pressurizer pressure SI trip setpoint. The operators must monitor this transient, and determine if an SI actuation is required. Historical Unit 2 reactor trips have shown that the pressure decrease is a short duration event, and that the pressure returns to its initial value. Thus, no condition exists that would require an SI actuation. Lowering the low pressurizer pressure SI trip setpoint will provide a

larger margin between the setpoint and the resultant pressure response following a unit trip. Additionally, the proposed changes will align the Unit 2 values with the Unit 1 values. I&M considers the early approval of these changes to be important as it will reduce the challenges now confronting the operators. Once approved, I&M requests a 45-day implementation period.

This letter contains no new commitments. Should you have any questions, please contact Mr. Brian A. McIntyre, Manager of Regulatory Affairs at (269) 697-5806.

Sincerely,

J. E. Pollock
Site Vice President

RV/rdw

Enclosures:

1. Affirmation
2. Application for Amendment, License Amendment Request to Revise Low Pressurizer Pressure Safety Injection Setpoint

Attachments:

1. Technical Specification Pages Marked to Show Proposed Changes
2. Proposed Technical Specification Pages

c: H. K. Chernoff, NRC Washington, DC
K. D. Curry, Ft Wayne AEP, w/o enclosures/attachments
J. E. Dyer, NRC Region III
J. T. King, MPSC, w/o enclosures/attachments
MDEQ – DW & RPD, w/o enclosures/attachments
NRC Resident Inspector
J F. Stang, Jr., NRC Washington, DC

bc: D. C. Baker
A. C. Bakken III, w/o enclosures/attachments
G. E. Carlson
M. J. Finissi
J. B. Giessner
D. W. Jenkins, w/o enclosures/attachments
J. A. Kobyra, w/o enclosures/attachments
R. J. Kohrt
J. G. Kovarik
B. A. McIntyre, w/o enclosures/attachments
J. E. Newmiller
K. J. O'Connor
J. E. Pollock, w/o enclosures/attachments
D. J. Poupard
M. K. Scarpello, w/o enclosures/attachments
W. A. Wagner
T. K. Woods, w/o enclosures/attachments

Enclosure 1 to AEP:NRC:3334

AFFIRMATION

I, J. E. Pollock, being duly sworn, state that I am Site Vice President of Indiana Michigan Power Company (I&M), that I am authorized to sign and file this request with the Nuclear Regulatory Commission on behalf of I&M, and that the statements made and the matters set forth herein pertaining to I&M are true and correct to the best of my knowledge, information, and belief.

Indiana Michigan Power Company

J. E. Pollock
Site Vice President

SWORN TO AND SUBSCRIBED BEFORE ME

THIS 27th DAY OF March, 2003

Julie Newmiller
Notary Public

My Commission Expires 8-22-2004

JULIE E. NEWMILLER
Notary Public, Berrien County, MI
My Commission Expires Aug 22, 2004

Enclosure 2 to AEP:NRC:3334

Application for Amendment
License Amendment Request to Revise Low Pressurizer Pressure Safety Injection Setpoint

DESCRIPTION

Pursuant to 10 CFR 50.90, Indiana Michigan Power Company (I&M), the licensee for Donald C. Cook Nuclear Plant (CNP) Unit 2, proposes to amend Appendix A, Technical Specifications (TS), of Facility Operating License DPR-74. I&M proposes to amend Unit 2 TS Table 3.3-4, item 1.d, and the P-11 setpoint in the Engineered Safety Features Interlock Table.

PROPOSED CHANGE

I&M proposes to amend Unit 2 Table 3.3-4 and the P-11 setpoint in the Engineered Safety Features Interlock Table as follows:

- Revise the low pressurizer pressure safety injection (SI) trip setpoint from its current value of greater than or equal to 1900 pounds per square inch gauge (psig), to greater than or equal to 1815 psig.
- Revise the low pressurizer pressure SI allowable value from greater than or equal to 1890 psig, to greater than or equal to 1805 psig.
- Revise the P-11 setpoint from its current value of greater than or equal to 2010 psig, to greater than or equal to 1915 psig.
- Make format changes to the affected TS pages that improve appearance but do not affect any requirements.

BACKGROUND

The low pressurizer pressure instrumentation provides one of several signals that are used to initiate an SI, turbine trip, feedwater isolation, and auxiliary feedwater flow. A low-pressure condition in the reactor coolant system from a loss-of-coolant accident (LOCA), a main steam system depressurization event, or a feedwater line break, will initiate an SI signal when two out of three pressurizer pressure sensors register a low-pressure condition. Following the initiation of the SI signal, cooling water will be delivered to the reactor coolant system (RCS) and the steam generators to maintain the reactor core in a safe condition. The P-11 interlock prevents the manual blocking of the SI function on a low pressurizer pressure SI trip signal when the Unit 2 pressurizer pressure is above 2010 psig.

Following recent Unit 2 reactor trips, the reactor coolant system (RCS) pressure has approached the low pressurizer pressure SI trip setpoint, the RCS temperature has continued to decrease, and the operators have closed the main steam isolation valves (MSIVs) to stabilize the RCS temperature. Subsequently, the Nuclear Regulatory Commission's Senior Resident Inspector at the Donald C. Cook Nuclear Plant (CNP) questioned whether the plant's operators were being unnecessarily challenged to take actions (the closing of the MSIVs) to avoid an SI actuation.

An evaluation of the recent Unit 2 reactor trips has concluded that the RCS pressure recovers after the initial decrease following a reactor trip, and no operator action is necessary to avoid a low pressurizer pressure SI actuation. However, because of the continued RCS temperature decrease, which is caused by the quantity of auxiliary feedwater flow (three pumps at maximum flow rate), the operators place priority on stabilizing the RCS temperature, and they close the MSIVs to reduce RCS cooling. Later, after auxiliary feedwater (AFW) flow has been reduced, the RCS temperature stabilizes.

Prior to 1997, the CNP Emergency Operating Procedures (EOPs) allowed the operators to immediately shut down the turbine driven auxiliary feedwater pump (TDAFP) if the motor driven auxiliary feedwater pumps (MDAFPs) were running. This provision was modified to include the additional requirement to restore SG level above the auto start setpoint as committed to in the response to Inspection Report 50-315, 316/97004. This guidance was subsequently removed as part of the EOP Upgrade Project to restore EOPs to the Westinghouse Emergency Response Guidelines that direct waiting to remove the TDAFP until the plant is stabilized. Additionally, this guidance requires that the steam generator levels be restored to a level that is above the AFW actuation setpoint. These changes in the EOPs together with a design change that provided a 3.5-second delay to the AFW flow retention circuit are believed to have exacerbated the operator's concern about RCS cooling. The combined effect of these changes is to increase the amount of time that the maximum AFW flow rate to the steam generators exists.

The continued cooling of the RCS following a reactor trip has been addressed by incorporating a step in the "Reactor Trip or Safety Injection" procedure to reduce the total feed flow to 450,000 pounds per hour if an SI is not required. The proposed changes to the TS address the concerns associated with the pressure decrease that occurs immediately following the reactor trip.

The Unit 2 low pressurizer pressure SI trip setpoint has been set at 1900 psig since Unit 2 was initially licensed. During reactor trips, the RCS hot leg cools, the RCS volume contracts, the pressurizer experiences a coolant outflow, and the RCS pressure rapidly decreases. Historical data demonstrate that this pressure reduction is approximately 300 to 320 pounds per square inch (psi). A pressure decrease of this magnitude results in the pressurizer pressure reaching a value of approximately 1920 to 1940 psig, which is only 20 to 40 psi above the current low pressurizer pressure SI trip setpoint. This situation unnecessarily challenges the operators in that they must determine whether an SI actuation is imminent or required.

The present P-11 interlock setpoint value of greater than or equal to 2010 psig was implemented June 21, 1979 to provide operating margin relative to the low pressurizer pressure SI trip setpoint of greater than or equal to 1900 psig.

TECHNICAL ANALYSIS

There are three licensing basis accident analyses that take credit for SI actuation on low pressurizer pressure: LOCA, feedwater line break, and accidental depressurization of the main steam system (caused by steam dump, relief valve, or safety valve failure). Steamline break mass and energy releases outside of containment, which are used for equipment environmental qualification evaluations, have also been evaluated taking credit for low pressurizer pressure SI actuation. These events have been analyzed using a low pressurizer pressure SI trip setpoint of 1700 psig (Reference 1), and uncertainties have been included in the setpoint value determinations. The uncertainties and the methodology for setpoint determination were previously accepted by the Nuclear Regulatory Commission (NRC) in Reference 2 and have not changed. Thus, revising the low pressurizer pressure trip setpoint from 1900 psig to 1815 psig and the allowable value from 1890 psig to 1805 psig does not adversely impact any analytical results The proposed change makes the Unit 2 low pressurizer pressure SI trip setpoint consistent with the Unit 1 low pressurizer pressure SI trip setpoint.

The P-11 interlock allows the low pressurizer pressure SI trip function to be blocked when the pressurizer pressure is below the P-11 value. The SI trip function would typically be blocked during a normal cooldown, thereby preventing an inadvertent SI initiation while the RCS is being depressurized as part of the cooldown procedure. The change in the P-11 setpoint value from 2010 psig to 1915 psig has no impact on any safety analysis. The proposed value maintains a margin between the low pressurizer pressure SI trip setpoint and the P-11 setpoint, and makes the P-11 setpoint consistent with the Unit 1 value.

REGULATORY SAFETY ANALYSIS

No Significant Hazards Consideration

I&M has evaluated whether or not a significant hazards consideration is involved with the proposed amendments by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1. Does the proposed change involve a significant increase in the probability or the consequences of an accident previously evaluated?

Response: No.

I&M proposes changing the low pressurizer pressure SI trip setpoint, the low pressurizer pressure SI allowable value, the P-11 setpoint, and the format of the associated pages. Neither the change to the low pressurizer pressure SI trip setpoint value and the SI allowable value nor the change to the P-11 setpoint value alter any safety-related components or the means of accomplishing a safety-related function. The change in the values is supported by analyses that demonstrate that applicable acceptance criteria are met when SI is initiated at

1700 psig for a LOCA, a main steam system depressurization event, and a feedwater line break. Because the acceptance criteria are met, there is no significant increase in the consequences of an accident. The format changes are intended to improve readability and appearance, and do not alter any requirements. Thus, neither the probability of an accident nor the consequences of an accident are significantly increased.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

   Response: No.

   I&M proposes changing the low pressurizer pressure SI trip setpoint, the low pressurizer pressure SI allowable value, the P-11 setpoint, and the format of the associated pages. Neither the change to the low pressurizer pressure SI trip setpoint value and the SI allowable value nor the change to the P-11 setpoint value involve changing the design function of any component, and a change in any of the values cannot initiate an accident. The format changes are intended to improve readability and appearance, and do not alter any requirements. Thus, no new accident initiators are introduced, and the possibility of a new or different kind of accident is not created.

3. Does the proposed change involve a significant reduction in a margin of safety?

   Response: No.

   I&M proposes changing the low pressurizer pressure SI trip setpoint, the low pressurizer pressure SI allowable value, the P-11 setpoint, and the format of the associate pages. The low pressurizer pressure instrument is credited for activating the engineered safety features in the event of a LOCA, a main steam system depressurization event, or a feedwater line break. The low pressurizer pressure SI trip setpoint value and the low pressurizer pressure SI allowable value have been selected to insure that the engineered safety features will be activated as assumed in the safety analysis. Present margins continue to be maintained because the applicable accident analyses criteria continue to be met. No margins of safety are associated with the P-11 setpoint value. The format changes are intended to improve readability and appearance, and do not alter any requirements. Thus, there is no significant reduction in a margin of safety.

Applicable Regulatory Requirements/Criteria

The CNP Updated Final Safety Analysis Report (UFSAR), Chapter 1 provides design criteria for CNP Unit 2. Design Criterion 15, "Engineered Safety Features Protection Systems" requires that "protection systems shall be provided for sensing accident situations and initiating the operation of necessary engineered safety features."

UFSAR Chapter 7.5.2 describes the engineered safety features actuation system, and UFSAR Tables 7.2-1 and 7.2-2 describe the P-11 setpoint

Unit 2 UFSAR Chapter 14.2.5 discusses the steamline break analyses.

Unit 2 UFSAR Chapter 14.2.8 discusses the main feedwater line break.

Unit 2 UFSAR Chapter 14.3.1 and 14.3.2 discuss LOCA analyses.

Unit 2 UFSAR Chapter 14.4.11.3 discusses high energy line breaks outside of containment.

Unit 1 UFSAR Chapter 14.3.4.4 discusses secondary system pipe rupture mass and energy releases inside containment for Unit 1 and Unit 2.

The proposed changes do not adversely impact these evaluations.

ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

REFERENCE

1. Letter from E. E. Fitzpatrick, I&M, to the Nuclear Regulatory Commission Document Control Desk, "Donald C. Cook Nuclear Plant Units 1 and 2, License Nos. DPR-58 and DPR-74, Proposed License and Technical Specification Changes Supported by Analyses to Increase Unit 2 Rated Thermal Power and Certain Proposed Changes for Unit 1 Supported by Related Analyses," submittal AEP:NRC:1223, dated July 11, 1996

2. Letter from J. B. Hickman, NRC, to E. E. Fitzpatrick, I&M, Donald C. Cook Nuclear Plant, Unit Nos. 1 and 2 – Revised Safety Evaluation for Amendment Nos. 175 and 160 RE: Reactor Protection System Upgrade Project (TAC Nos. M84839 and M84840)," dated May 13, 1994

Attachment 1 to AEP:NRC:3334

TECHNICAL SPECIFICATIONS PAGES
MARKED TO SHOW PROPOSED CHANGES

REVISED PAGES
UNIT 2

3/4 3-22a
3/4 3-23

ENGINEERED SAFETY FEATURES INTERLOCKS

DESIGNATION	CONDITION AND SETPOINT	FUNCTION
P-11	With 2 of 3 pressurizer pressure channels greater than or equal to ~~2010~~ 1915 psig.	P-11 prevents or defeats manual block of safety injection actuation on low pressurizer pressure.
P-12	With 2 of 4 T_{avg} channels less than or equal to Setpoint. Setpoint greater than or equal to 541°F	P-12 allows the manual block of safety injection actuation on low steam line pressure. Causes steam line isolation on high steam flow. Affects steam dump blocks. With 3 of 4 T_{avg} channels above the reset point, prevents or defeats the manual block of safety injection actuation on low steam line pressure.

TABLE 3.3-4

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TRIP SETPOINTS	ALLOWABLE VALUES
1. SAFETY INJECTION, TURBINE TRIP, FEEDWATER ISOLATION, AND MOTOR DRIVEN AUXILIARY FEEDWATER PUMPS		
a. Manual Initiation	---------- See Functional Unit 9 ----------	
b. Automatic Actuation Logic	Not Applicable	Not Applicable
c. Containment Pressure -- High	Less than or equal to 1.1 psig	Less than or equal to 1.2 psig
d. Pressurizer Pressure -- Low	Greater than or equal to ~~1900~~1815 psig	Greater than or equal to ~~1890~~1805 psig
e. Differential Pressure Between Steam Lines -- High	Less than or equal to 100 psi	Less than or equal to 112 psi
f. Steam Line Pressure -- Low	Greater than or equal to 600 psig steam line pressure	Greater than or equal to 585 psig steam line pressure

Attachment 2 to AEP:NRC:3334

PROPOSED TECHNICAL SPECIFICATIONS PAGES

REVISED PAGES
UNIT 2

3/4 3-22a
3/4 3-23

ENGINEERED SAFETY FEATURES INTERLOCKS

DESIGNATION	CONDITION AND SETPOINT	FUNCTION
P-11	With 2 of 3 pressurizer pressure channels greater than or equal to 1915 psig.	P-11 prevents or defeats manual block of safety injection actuation on low pressurizer pressure.
P-12	With 2 of 4 T_{avg} channels less than or equal to Setpoint. Setpoint greater than or equal to 541°F	P-12 allows the manual block of safety injection actuation on low steam line pressure. Causes steam line isolation on high steam flow. Affects steam dump blocks. With 3 of 4 T_{avg} channels above the reset point, prevents or defeats the manual block of safety injection actuation on low steam line pressure.

TABLE 3.3-4

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT		TRIP SETPOINTS	ALLOWABLE VALUES
1. SAFETY INJECTION, TURBINE TRIP, FEEDWATER ISOLATION, AND MOTOR DRIVEN AUXILIARY FEEDWATER PUMPS			
a.	Manual Initiation	---------- See Functional Unit 9 ----------	
b.	Automatic Actuation Logic	Not Applicable	Not Applicable
c.	Containment Pressure -- High	Less than or equal to 1.1 psig	Less than or equal to 1.2 psig
d.	Pressurizer Pressure -- Low	Greater than or equal to 1815 psig	Greater than or equal to 1805 psig
e.	Differential Pressure Between Steam Lines -- High	Less than or equal to 100 psi	Less than or equal to 112 psi
f.	Steam Line Pressure -- Low	Greater than or equal to 600 psig steam line pressure	Greater than or equal to 585 psig steam line pressure