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

February 4, 2010

Mr. Joseph N. Jensen
Senior Vice President and
Chief Nuclear Officer
Indiana Michigan Power Company
Nuclear Generation Group
One Cook Place
Bridgman, MI 49106

SUBJECT: DONALD C. COOK NUCLEAR PLANT, UNIT 2 - ISSUANCE OF EXIGENT AMENDMENT RE: THE CONTAINMENT DISTRIBUTED IGNITION SYSTEM (TAC NO. ME3129)

Dear Mr. Jensen:

The U.S. Nuclear Regulatory Commission (the Commission) has issued the enclosed Amendment No. 294 to Renewed Facility Operating License No. DPR-74 for the Donald C. Cook Nuclear Plant, Unit 2. The amendment revises Technical Specification (TS) 3.6.9, "Distributed Ignition System (DIS)," to allow Train B of the DIS to be considered operable with two inoperable ignitors. The current TS defines train operability as having only one ignitor inoperable. The proposed TS revision is applicable until the fall 2010 refueling outage, or until the unit enters a mode which allows replacement of the affected ignitors without exposing personnel to significant radiation and safety hazards.

A copy of the related Safety Evaluation (SE) is enclosed. The SE describes the exigent circumstances under which the amendment was issued and the final determination of no significant hazards. A Notice of Issuance, addressing the final no significant hazards determination and opportunity for a hearing, will be included in the Commission's next regular biweekly *Federal Register* notice.

Sincerely,

Terry A. Beltz, Senior Project Manager
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-316

Enclosures:
1. Amendment No. 294 to DPR-74
2. Safety Evaluation

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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. 294
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 January 24, 2010, 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 Renewed Facility Operating License No. DPR-74 is hereby amended to read as follows:

   (2) Technical Specifications

   The Technical Specifications contained in Appendix A and Appendix B, as revised through Amendment No. 294 are hereby incorporated in the renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. The license amendment is effective as of its date of issuance and shall be implemented within 5 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Robert J. Pascarelli, Chief
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Renewed Operating
License and Appendix A

Date of Issuance: February 4, 2010

ATTACHMENT TO LICENSE AMENDMENT NO. 294

TO RENEWED FACILITY OPERATING LICENSE NO. DPR-74

DOCKET NO. 50-316

Replace the following page of Renewed Facility Operating License No. DPR-74 with the attached revised page. The change area is identified by a marginal line.

REMOVE	INSERT
- 3 -	- 3 -

Replace the following page of Appendix A, Technical Specifications, with the attached revised page. The change area is identified by a marginal line.

REMOVE	INSERT
3.6.9-1	3.6.9-1
3.6.9-2	3.6.9-2

radiation monitoring equipment calibration, and as fission detectors in amounts as required;

(4) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, to receive, possess and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument and equipment calibration or associated with radioactive apparatus or components; and

(5) Pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

C. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I: Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

The licensee is authorized to operate the facility at steady state reactor core power levels not to exceed 3468 megawatts thermal in accordance with the conditions specified herein and in Attachment 1 to the renewed operating license The preoperational tests, startup tests and other items identified in Attachment 1 to this renewed operating license shall be completed. Attachment 1 is an integral part of this renewed operating license.

(2) Technical Specifications

The Technical Specifications contained in Appendix A and Appendix B, as revised through Amendment No. 294 are hereby incorporated in the renewed operating license. The licensee shall operate the facility in accordance with the Technical Specifications.

(3) Additional Conditions

(a) Deleted by Amendment No. 76

(b) Deleted by Amendment No. 2

(c) Leak Testing of Emergency Core Cooling System Valves

Indiana Michigan Power Company shall prior to completion of the first inservice testing interval leak test each of the two valves in series in the

3.6 CONTAINMENT SYSTEMS

3.6.9 Distributed Ignition System (DIS)

LCO 3.6.9 Two DIS trains shall be OPERABLE. (See footnote)

AND

Each containment region shall have at least one OPERABLE hydrogen ignitor.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One DIS train inoperable. (See footnote)	A.1	Restore DIS train to OPERABLE status.	7 days
	OR		
	A.2	Perform SR 3.6.9.1 on the OPERABLE train.	Once per 7 days
B. One containment region with no OPERABLE hydrogen ignitor.	B.1	Restore one hydrogen ignitor in the affected containment region to OPERABLE status.	7 days
C. Required Action and associated Completion Time not met.	C.1	Be in MODE 3.	6 hours

Footnote: For the remainder of Fuel Cycle 18, or until the next entry into a MODE which allows replacement of the affected ignitors, DIS Train B may be considered OPERABLE with one lower containment Phase 2 Power Supply ignitor inoperable and with one lower containment Phase 3 Power Supply ignitor inoperable.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.9.1	Energize each DIS train power supply breaker and verify ≥ 34 ignitors (or ≥ 33 ignitors if allowed by footnote) are energized in each train.	184 days
SR 3.6.9.2	Verify at least one hydrogen ignitor is OPERABLE in each containment region.	184 days
SR 3.6.9.3	Energize each hydrogen ignitor and verify temperature is ≥ 1700°F. (See footnote)	24 months

Footnote: For the remainder of Fuel Cycle 18, or until the next entry into a MODE which allows replacement of the affected ignitors, DIS Train B may be considered OPERABLE with one lower containment Phase 2 Power Supply ignitor inoperable and with one lower containment Phase 3 Power Supply ignitor inoperable.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 294

TO RENEWED FACILITY OPERATING LICENSE NO. DPR-74

INDIANA MICHIGAN POWER COMPANY

DONALD C. COOK NUCLEAR PLANT, UNIT 2

DOCKET NO. 50-316

1.0 INTRODUCTION

By letter dated January 24, 2010 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML100330177), Indiana Michigan Power Company (I&M, the licensee) requested an exigent amendment to Renewed Facility Operating License No. DPR-74 for the Donald C. Cook Nuclear Plant, Unit 2 (CNP-2). The proposed change will modify Technical Specification (TS) 3.6.9 for the Distributed Ignition System (DIS). The existing TS requires at least 34 of 35 ignitors per train to be operable. The licensee has two ignitors in Train B that are currently inoperable. The proposed amendment will allow the DIS Train B to be considered operable with two ignitors inoperable. The proposed TS would remain applicable until the fall 2010 refueling outage or until the unit enters a mode which allows replacement of the affected ignitors without exposing personnel to significant radiation and safety hazards.

The inoperable ignitors are inaccessible due to radiation and safety hazards. The unit is currently operating in an action statement required by TS Limiting Condition for Operation (LCO) 3.6.9.A.2. The Action Statement requires substantially increased surveillance testing of the Train A ignitors which has the potential to shorten their useful life. The proposed amendment would return the surveillance testing of the Train A ignitors to the normal cycle of every 184 days in accordance with the Surveillance Requirement (SR) 3.6.9.1.

Precedents for this proposed change exist, such as Watts Bar Nuclear Plant, Unit 1, Amendment No. 10, dated June 9, 1998 (ADAMS Accession No. ML020800059), and the Catawba Nuclear Station, Unit 2, Amendment No. 178, dated May 5, 2000 (ADAMS Accession No. ML003713019). Both amendments requested a temporary change to allow a train of distributed hydrogen ignitors be classified as operable with ≥33 ignitors (instead of ≥34 ignitors) operable. These amendments were limited to the duration of the current fuel cycle or until the unit entered a Mode which allowed safe replacement of the failed ignitors.

2.0 REGULATORY EVALUATION

The U.S. Nuclear Regulatory Commission's (NRC) regulatory requirements related to the content of the TSs are set forth in Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.36, "Technical specifications." 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) LCOs; (3) SRs; (4) design features; and (5) administrative controls.

The regulations in 10 CFR 50.44(b)(2)(ii), require all pressurized-water reactors with ice condenser containments to have the capability for controlling combustible gas generated from a metal-water reaction involving 75 percent of the fuel cladding surrounding the active fuel region so that there is no loss of containment structural integrity.

Appendix A to 10 CFR Part 50, "General Design Criteria for Nuclear Power Plants," Criterion 41, "Containment atmosphere cleanup," provides a requirement for systems to control fission products, hydrogen, oxygen, and other substances which may be released into the reactor containment. The concentrations of hydrogen or oxygen and other substances in the containment atmosphere following postulated accidents are to be controlled to assure containment integrity is maintained.

NUREG-0800, Standard Review Plan, 6.2.5, "Combustible Gas Control in Containment," provides guidance for acceptance criteria to meet the relevant requirements of the NRC's regulations, specifically 10 CFR 50.44.

3.0 TECHNICAL EVALUATION

3.1 Background

The existing TS 3.6.9 requires ≥34 ignitors to be operable for a given train of distributed ignitors to be operable. The licensee has 7 days to restore a DIS train to an operable status or to perform SR 3.6.9.1 on the operable train once every 7 days to meet the LCO.

The proposed amendment will add a footnote to TS 3.6.9. The footnote will read:

> For the remainder of Fuel Cycle 18, or until the next entry into a Mode which allows replacement of the affected ignitors, DIS Train B may be considered OPERABLE with one lower containment phase 2 Power Supply ignitor inoperable and with one lower compartment phase 3 Power Supply ignitor inoperable.

Reference to this footnote will be added to:

- The TS 3.6.9 LCO statement that two DIS trains shall be operable.
- The description of TS 3.6.9 LCO Condition A as "One DIS train inoperable."

- The TS 3.6.9 Surveillance Requirement 3.6.9.3 requirement to energize each ignitor and verify the specific temperature is ≥1700°F.

A parenthetical statement, "(or ≥33 ignitors if allowed by footnote)," will be added to SR 3.6.9.1 to energize each DIS train and verify ≥34 ignitors are energized in each train.

Following a major loss-of-coolant accident (LOCA), hydrogen may be generated inside the containment by the following mechanisms: (1) metal-water reaction of the zirconium clad at high temperatures; (2) chemical corrosion of materials with the alkaline containment spray; and (3) radiation-induced decomposition of water in the core and sump. During a LOCA, the dissolved hydrogen within the reactor coolant and pressurizer steam space is another contributing factor to hydrogen within containment. The function of the DIS is to assure adequate hydrogen control capacity during a degraded core-cooling event. The distribution of the ignitor assemblies throughout the containment promotes combustion of lean hydrogen/air/steam mixtures.

The DIS is designed to meet 10 CFR 50.44 requirements for a system to reduce the hydrogen concentration in the primary containment following a degraded core accident. The quantity of hydrogen released from the reaction of the fuel cladding with water during the beyond-design basis accident is greater than the hydrogen release calculated for a design-basis accident (DBA). The DIS is required to handle the amount of hydrogen equivalent to that generated from a metal water reaction involving 75 percent of the fuel cladding. The DIS is designed to minimize the potential accumulation of hydrogen and preclude detonations of the hydrogen. The DIS is based on the concept of controlled ignition using thermal ignitors, designed to be capable of functioning in a post-accident environment. The DIS depends in the dispersed location of the ignitors so that local pockets of hydrogen at increased concentrations would burn before reaching a hydrogen concentration significantly higher than the lower flammability limit.

CNP has a Containment Air Recirculation/Hydrogen Skimmer System. It consists of two redundant independent systems, which include fans, back draft dampers, valves, piping, and ductwork. The system includes provisions for providing both 1) general recirculation of containment atmosphere between the upper and lower compartments following a LOCA, and 2) preventing the accumulation of hydrogen in restricted areas within the containment following a LOCA.

The potential areas of hydrogen pocketing are the top of the containment dome, and the lower compartment enclosures, which include the three rooms in the annular space between the crane wall and the liner, the steam generator enclosures, and the pressurizer enclosure. Hydrogen pocketing is prevented by continuously drawing air out of the top of each of the above areas at such a rate as to limit the potential local hydrogen concentration to less than 4 percent by volume.

The DIS consists of two trains with 35 ignitors per train. Each train consists of two groups. One group of 17 ignitors serves the general lower volume area of containment while the other group of 18 ignitors serves the upper volume area of containment. The ignitors are supplied power in "strings." Each string consists of four to seven ignitors and is powered by one phase of a three-phase power supply. The ignitors are located such that each containment region has at least

two ignitors, and at least one ignitor from each train. When energized, the ignitor element heats up to a surface temperature ≥1700°F.

Technical Specification SR 3.6.9.1 energizes each DIS train power supply breaker to verify that ≥34 ignitors are energized in each train. The surveillance is performed once every 184 days. Due to accessibility concerns in Mode 1, current readings in lieu of direct observation are used to verify the ignitors are energized. When TS SR 3.6.9.1 was performed on January 14, 2010, low electrical current readings were identified on the Train B lower ignitor string powered from phase 2 and the Train B lower ignitor string powered from phase 3. This indicated the failure of one ignitor on each of the two strings. Since the acceptance criterion for train operability is ≥34 ignitors, the results of the surveillance test rendered Train B inoperable. The resulting action statement requires either restoration of the inoperable DIS train to operable status within 7 days or to perform SR 3.6.9.1 on the operable train once every 7 days.

The licensee stated that the failed ignitors could not be replaced without exposing personnel to significant radiation and safety hazards. The licensee also expressed concern that the weekly thermal cycling of the operable train (Train A) will shorten the operating life of the ignitors. The licensee estimates the weekly performance of TS SR 3.6.9.1 on the DIS Train A between now and the end of the current operating cycle will cycle the ignitors 36 times versus a normal frequency of four times during an entire fuel operating cycle.

Failure of two or more ignitors on Train A or inoperability of the Train A emergency electrical system with the Train B DIS inoperable will require entry into an LCO 3.0.3 shutdown. Thus, the inoperability of DIS Train B provides an increased risk of a CNP-2 shutdown in accordance with LCO 3.0.3. The licensee has determined that DIS Train B can continue to perform its safety function even if one ignitor in the lower containment string powered by phase 2 is inoperable and one ignitor in the lower containment string powered by phase 3 is inoperable. The proposed change would preclude DIS Train B from being declared inoperable with the above two ignitors unavailable, thus alleviating the increased risk LCO 3.0.3 shutdown of CNP-2 during the current fuel cycle.

Also, Technical Specification 3.8.1, "AC Sources – Operating," states that when an emergency diesel generator (DG) is declared inoperable the required systems supported by that diesel are inoperable. The performance of the DG surveillance testing necessitates declaring the DG inoperable. Completion of the required surveillance, realignment to normal emergency standby configuration, and subsequent declaration as operable is to be completed within 4 hours or the emergency systems supported by that DG are considered inoperable. The licensee stated that the requirement to test the Train A DG would therefore challenge an LCO 3.0.3 shutdown since it would render both Train A and B DIS inoperable.

3.2 Evaluation

The licensee stated that the function of the DIS is to assure adequate hydrogen control capacity during a degraded core cooling event. The distribution of the ignitor assemblies throughout the containment promotes combustion on lean hydrogen/air/steam mixtures. The existence and operation of the Containment Air Recirculation/Hydrogen Skimmer (CEQ) System provides assurance that the air in containment is well mixed. Direct ignition of hydrogen within an area is

not required to burn the hydrogen at low concentrations. Hydrogen burns ignited in one compartment can readily propagate into adjacent compartments when the hydrogen concentration in the adjacent compartment exceeds the propagation limit. Propagation limits are lower than the ignition limits (Reference NUREG/CR-4993, "A Standard Problem for HECTR-MAAP Comparison: Incomplete Burning.").

The effects of flame propagation were not discussed in the hydrogen combustion analyses performed for CNP using the MAAP3.0B computer code to demonstrate the ability of the hydrogen control system to mitigate the consequences of the release of hydrogen into containment during postulated degraded core accidents. However, the licensee relied upon a report, "An Analysis of Hydrogen Control Measures at McGuire Nuclear Station," submitted by Duke Energy Company (DEC) to the NRC staff in August 1993 to determine the effects of burn propagation at CNP. The report was referenced in a DEC submittal dated May 3, 2000, in support of a Catawba Nuclear Station, Unit 2 proposed TS amendment, which was approved by the NRC staff on May 5, 2000. The DEC submittal states that the analysis clearly shows that propagation of burns between compartments is effective for initiating burns within compartments that have not yet reached the hydrogen concentration ignition limit. Based on the level of detail used in containment modeling, the licensee stated that the CNP and Catawba containment arrangements are similar and the conclusions in the report regarding flame propagation are applicable to CNP.

The CEQ System will provide a well-mixed environment preventing the accumulation of pockets of hydrogen. Ignition in any compartment is likely to result in combustion in every compartment that has accumulated hydrogen mixture at the propagation limit. With the lower containment as the region most likely to see the hydrogen source term, ignition occurs frequently in this compartment and would spread readily to the dead-end compartments (such as steam generator or pressurizer enclosures).

DIS lower containment ignitor string powered by phase 2 is located in the general area of the lower containment volume on the shield wall. The existence of multiple ignitors in this area provides assurance that hydrogen ignition will occur and will propagate as a deflagration burn.

DIS lower containment string of ignitors powered by phase 3 is located in the steam generator cubicles and the pressurizer cubical. Train A DIS are not available as a single-failure assumption for this evaluation. The operation of the CEQ will maintain the hydrogen concentration in these areas at a low level precluding the formation of detonable pockets. Hydrogen ignition in the general area of the lower containment volume or in an adjacent steam generator or pressurizer cubical will provide propagation of a flame front to the cubical with the inoperable ignitor.

Regulatory guidance documents such as the Standard Review Plan and associated Regulatory Guides do not provide specific criteria regarding the locations of hydrogen ignitors in those containments using ignitor systems to comply with 10 CFR 50.44 requirements. The ignitor locations in ice condenser facilities have been selected with a view toward providing coverage near hydrogen sources and in compartments where hydrogen could accumulate in both high locations and low locations. High locations have been included to account for the possibility of hydrogen pocketing at high points due to buoyancy. Low locations have been included to take

advantage of upward burning in leaner mixtures. Ignitor coverage is also provided in areas where low-concentration hydrogen mixtures could be rapidly concentrated into combustible mixtures due to ice or spray cooling effects (e.g., upper plenum of ice condenser). Both expert judgment and analysis were used in the ignitor location selection process. Therefore, the NRC staff concludes that compliance with 10 CFR 50.44(b)(2)(ii) and 10 CFR 50, Appendix A, Criterion 41, will be maintained.

Following a degraded core accident, any hydrogen that is produced would be released into the lower compartment. Numerous ignitors are provided to cover this region. Any hydrogen not burned in the lower compartment would be carried up through the ice condenser and into the upper plenum. Mixtures that were nonflammable or not consumed in the lower compartment would tend to become flammable in the ice condenser upper plenum, where more ignitors are located. There are also ignitors in the containment dome.

Adequate mixing in conjunction with ignition of lean mixtures effectively precludes the formation of detonable concentrations. The operation of the CEQ System will keep the air well mixed. This, along with flame propagation into the region from other regions, will preclude the formation of detonable pockets of hydrogen.

The proposed footnote to TS pages 3.6.9-1 and 3.6.9-2, and the reference to the footnote in the TS 3.6.9 LCO statement, TS LCO Condition A, and TS SR 3.6.9.3, will provide clarity and establish the limitations of the allowance provided by the proposed request, namely, the specific ignitor strings that may contain an inoperable ignitor in DIS Train B and the period during which the allowance is in effect. The requirement that the ignitors be replaced if CNP-2 enters an operational mode that allows for ignitor access during the remainder of the current Fuel Cycle 18 provides assurance that the condition necessitating the proposed amendment will be addressed at the earliest opportunity. The addition of the parenthetical statement, "(or ≥33 ignitors if allowed by footnote)," will establish that ≥33 ignitors rather than ≥34 ignitors are required to be operable to consider DIS Train B is operable while maintaining the limitations of the footnote.

Based on the foregoing evaluation, the NRC staff concludes that the DIS will continue to provide adequate protection against the adverse effects of hydrogen combustion following a degraded core-cooling event despite the inoperability of two ignitors in the DIS Train B. The operation of the CEQ System will mitigate the collection of hydrogen in pockets that could lead to detonation. The remaining hydrogen ignitors will permit the controlled ignition of hydrogen at low concentrations. Therefore, the staff finds the proposed TS changes to be acceptable.

4.0 EXIGENT CIRCUMSTANCES

4.1 Background

The Commission's regulations in 10 CFR 50.91 contain provisions for issuance of amendments when the usual 30-day public comment period cannot be met. One of these provisions is exigency. An exigency is a case where the licensee and the NRC staff must act quickly and there is insufficient time to process the license amendment request within the normal time frame. Pursuant to the provisions in 10 CFR 50.91(a)(6), the licensee requested the proposed amendment on an exigent basis.

Under the provisions in 10 CFR 50.91(a)(6), the Commission notifies the public in one of two ways: (1) by issuing a *Federal Register* notice providing an opportunity for hearing and allowing at least 2 weeks from the date of the notice for prior public comments; or (2) by using the local media to provide reasonable notice to the public in the area surrounding the licensee's facility. In this case, the Commission used the second approach and published a public notice in the local newspaper, *The Herald-Palladium*, on January 29 and January 30, 2010.

As discussed in the licensee's application dated January 24, 2010, I&M requested that the proposed amendment be processed by the NRC on an exigent basis in accordance with the provisions in 10 CFR 50.91(a)(6). The licensee stated that the exigent circumstances could not be avoided since the discovery of two inoperable ignitors in DIS Train B on January 14, 2010, could not have been foreseen. The electrical circuit design and physical location of the affected ignitors precludes repairing the inoperable ignitors. The licensee provided several probable occurrences which could result in a unit shutdown due to the current inoperability of the DIS Train B.

In Enclosure 2 to the letter dated January 24, 2010, the licensee provided the basis for requesting exigent approval of the proposed TS change. The licensee stated that when TS SR 3.6.9.1 was performed on January 14, 2010, acceptable current readings were obtained for all DIS Train A upper and lower containment ignitors, all Train B upper ignitors, and the Train B lower ignitor string powered by phase 1. However, lower current readings were obtained for the DIS Train B lower ignitor strings powered by phase 2 and phase 3. The readings indicated that one ignitor in the string powered by phase 2 and one ignitor in the string powered by phase 3 had failed. Radiation and high temperature hazards precluded access that would allow visual observation or repair of all Train B lower ignitor strings powered by phase 2 or phase 3, except for phase 2 ignitor B24. The glow plug for ignitor B24 was observed to be glowing when energized, indicating it was operable. Subsequent re-performance of TS SR 3.6.9.1 by the licensee on January 19, 2010, for these strings supported this conclusion. Therefore, TS LCO 3.6.9, Condition A, was entered. As stipulated by the Required Action A.2, the licensee is currently performing TS SR 3.6.9.1 on DIS Train A each week. The licensee stated that the likelihood of the initiation and possible completion of a unit shutdown increases the longer that DIS Train A must be considered inoperable. The licensee determined the need for developing an expedited amendment request, which was submitted to the NRC on January 24, 2010. In Enclosure 2 to the letter dated January 24, 2010, the licensee further stated the following:

> *Additionally, the Train-A DG and DIS Train A are being classified as "guarded" equipment while the DIS Train B remains inoperable. Equipment that is classified as guarded is protected from activities that may have an adverse affect on the system or component. The current guarded classification limits the performance of preventive or elective maintenance on the Train A DG and DIS Train A to only non-intrusive activities. Therefore, I&M is requesting exigent approval rather than incur the delay that would result from the 30-day public comment period specified by 10 CFR 50.91(a)(2).*
>
> *I&M could not avoid exigent circumstance because the discovery of two inoperable ignitors in DIS Train B on January 14, 2010, could not have been foreseen.*

As described in paragraph 3.4.1 ["Potential Effect on DIS Train A Ignitor and Unit Shutdown Due to Train A Inoperability,"] above, continued weekly performance of TS Surveillance Requirement 3.6.9.1 on DIS Train A can be detrimental to the ignitors and may lead to a unit shutdown. I&M is requesting approval of the proposed change by February 4, 2010, which could eliminate the requirement to perform surveillance testing of DIS Train A, that week and weekly thereafter.

4.2 NRC Staff Conclusion

The NRC staff has reviewed the circumstance leading to the need for requesting this amendment on an exigent basis and concludes that an exigent condition exists in that failure to act in a timely manner could result in a shutdown of CNP-2. The NRC staff has considered the licensee's reasoning for failing to file an application sufficiently in advance to preclude an emergency amendment, and concludes that the licensee notified the staff of the deficiency in a reasonable time and proposed this amendment to remedy the situation. Therefore, the staff concludes that the licensee has not abused the exigent provisions by failing to make a timely application for the amendment. Thus, the conditions needed to satisfy 10 CFR 50.91(a)(6) exist, and the amendment is being processed on an exigent basis.

5.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

The Commission's regulations in 10 CFR 50.92(c) state that the Commission may make a final determination that a proposed license amendment involves no significant hazards considerations if operation of the facility would not: (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any previously analyzed; or (3) involve a significant reduction in a margin of safety.

As required by 10 CFR 50.91 (a), the licensee provided its analysis of the issue of no significant hazards consideration in its letter dated January 24, 2010, as presented below:

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

   Response: No.

   The postulated event involving operability of the DIS is a beyond-design basis accident that generates a quantity of hydrogen from the reaction of the fuel cladding with water that is far in excess of the hydrogen release calculated for the limiting design basis accident (DBA). The proposed change will not increase the probability of such an accident because the DIS performs an entirely mitigative function. Except for brief periods of surveillance testing, the DIS is not in use during normal operation. The proposed change will not result in any physical changes to the plant which would affect accident initiators. Those structures, systems, and components (SSCs) involved in the initiation of postulated accidents will not be operated in any different manner. Therefore, the probability of

occurrence of a previously evaluated accident will not be significantly increased.

I&M's evaluation has determined that Train B of the DIS will remain capable of performing its intended safety function of initiating controlled ignition of hydrogen resulting from a postulated beyond-design basis accident. I&M's evaluation has demonstrated that propagation of hydrogen burning initiated by ignitors that remain operable will ensure adequate combustion in the regions potentially affected by the two inoperable ignitors. Therefore, continued assurance of containment integrity would be provided following a postulated beyond-design basis accident even if significant quantities of hydrogen were generated. With containment integrity maintained, there would be no increase in radiation releases from such an accident. Additionally, the hydrogen concentration resulting from a DBA can be maintained less than the flammability limit using the hydrogen recombiners. Therefore, the consequences of a previously evaluated accident will not be significantly increased.

Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

Response: No.

The proposed change does not alter the design function or operation of any SSC that may be involved in the initiation of an accident. The DIS will not become the source of a new type of accident. No new accident causal mechanisms will be created. The proposed change does not create new failure mechanisms, malfunctions, or accident initiators. Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

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

Response: No.

The margin of safety involved with the DIS is that associated with protecting containment integrity from the potentially deleterious effects of a significant hydrogen accumulation following a beyond-design basis accident. I&M's evaluation has determined that Train B of the DIS will remain capable of performing its intended safety function of initiating controlled ignition of hydrogen resulting from such an accident, thereby assuring that the associated margin of safety for the containment will be

maintained. Therefore, there is no significant reduction in a margin of safety as a result of the proposed amendment.

Therefore, the proposed change does not involve a significant reduction in the margin of safety.

The NRC staff has reviewed the licensee's analysis and, based on that review, the staff concludes that the amendment meets the three criteria of 10 CFR 50.92. Therefore, the NRC staff has made a final determination that the amendment does not involve a significant hazards consideration.

6.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Michigan State official was notified of the proposed issuance of the amendment. The State official had no comments.

7.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to the use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts 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 made a final determination that the amendment involves no significant hazards consideration as discussed above in Section 5.0. Accordingly, the amendment meets 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 amendment.

8.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) the amendment does not (a) involve a significant increase in the probability or consequences of an accident previously evaluated, or (b) create the possibility of a new or different kind of accident from any previously evaluated, or (c) involve a significant reduction in a margin of safety and therefore, the amendment does not involve a significant hazards consideration; (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner; (3) such activities will be conducted in compliance with the Commission's regulations; and (4) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributors: Bruce R. Heida, NRR/DSS/SCVB
Terry A. Beltz, NRR/DORL

Date: February 4, 2010

February 4, 2010

Mr. Joseph N. Jensen
Senior Vice President and
Chief Nuclear Officer
Indiana Michigan Power Company
Nuclear Generation Group
One Cook Place
Bridgman, MI 49106

SUBJECT: DONALD C. COOK NUCLEAR PLANT, UNIT 2 - ISSUANCE OF EXIGENT AMENDMENT RE: THE CONTAINMENT DISTRIBUTED IGNITION SYSTEM (TAC NO. ME3129)

Dear Mr. Jensen:

The U.S. Nuclear Regulatory Commission (the Commission) has issued the enclosed Amendment No. 294 to Renewed Facility Operating License No. DPR-74 for the Donald C. Cook Nuclear Plant, Unit 2. The amendment revises Technical Specification (TS) 3.6.9, "Distributed Ignition System (DIS)," to allow Train B of the DIS to be considered operable with two inoperable ignitors. The current TS defines train operability as having only one ignitor inoperable. The proposed TS revision is applicable until the fall 2010 refueling outage, or until the unit enters a mode which allows replacement of the affected ignitors without exposing personnel to significant radiation and safety hazards.

A copy of the related Safety Evaluation (SE) is enclosed. The SE describes the exigent circumstances under which the amendment was issued and the final determination of no significant hazards. A Notice of Issuance, addressing the final no significant hazards determination and opportunity for a hearing, will be included in the Commission's next regular biweekly *Federal Register* notice.

Sincerely,

/RA/
Terry A. Beltz, Senior Project Manager
Plant Licensing Branch III-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-316
Enclosures:
1. Amendment No. 294 to DPR-74
2. Safety Evaluation
cc w/encls: Distribution via ListServ

DISTRIBUTION

PUBLIC	RidsNrrPMDCCook Resource	RidsNrrDssScvb Resource
LPL3-1 R/F	RidsNrrDorlDpr Resource	RidsNrrDirsltsb Resource
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RidsNrrLABTully Resource	RidsAcrsAcnw_MailCTR Resource	BHeida, NRR

ADAMS Accession No: ML100310038 *by memo dated February 2, 2010 **concurrence via e-mail

OFFICE	LPL3-1/PM	LPL3-1/LA	DSS/SCVB/BC	DIRS/ITSB/BC	OGC (NLO w/comments)	LPL3-1/BC	LPL3-1/PM
NAME	TBeltz	BTully JBurkhardt for**	RDennig *	RElliott	LSubin	RPascarelli	TBeltz
DATE	02/04/10	02/03/10	02/02/10	02/04/10	02/04/10	02/04/10	02/04/10

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