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Power Company
Cook Nuclear Plant
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Bridgman, MI 49106
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February 18, 2000

C0200-04
10 CFR 50.90

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50-316

U.S. Nuclear Regulatory Commission
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Washington, DC 20555-0001

Donald C. Cook Nuclear Plant Units 1 and 2
LICENSE AMENDMENT REQUEST
MODIFICATIONS TO AUXILIARY FEEDWATER PUMP ROOM COOLING

Pursuant to 10 CFR 50.90, Indiana Michigan Power Company (I&M), the Licensee for Donald C. Cook Nuclear Plant (CNP) Units 1 and 2, proposes to amend Facility Operating Licenses DPR-58 and DPR-74. I&M proposes to modify the auxiliary feedwater (AFW) pump rooms to protect the equipment in the rooms from the environmental effects of a postulated high-energy line break (HELB). This will be accomplished by sealing the AFW pump rooms to ensure that the rooms do not communicate with the turbine buildings or each other.

Sealing these rooms results in the need to modify the ventilation systems for the AFW pump rooms. The proposed modifications to the AFW pump rooms incorporate essential service water (ESW) cooled refrigeration-cycle room coolers that will be designed to ensure that the train failure scenarios and design basis accident mitigation functions for AFW are preserved as described in the CNP Updated Final Safety Analysis Report.

The design package for the proposed modifications is nearly complete. Design considerations and programs evaluated during the development of the modifications include, but are not limited to, single failure requirements, normal and emergency diesel generator electrical loading, ESW capacities and requirements, separation criteria, flooding, seismic response, fire protection, station blackout, external events and performance monitoring. These considerations are required by the CNP design change process, and will ensure compliance with requirements and commitments in these areas as the design is finalized.

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The proposed AFW pump room modifications involve an unreviewed safety question in accordance with 10 CFR 50.59 since the probabilities of malfunction of the new cooling systems for the AFW pump rooms are higher than those for the current ventilation equipment. Therefore, NRC staff review and approval are required. These room coolers are a standard design, which has been successfully used at other nuclear power plants in safety-related applications, including safety-related pump rooms. Nuclear power plants using similar refrigeration-cycle package unit coolers in safety-related pump rooms include Duane Arnold Energy Center and Palo Verde Nuclear Generating Station.

Non-conformances with regard to the CNP HELB program were identified during the current extended outage. Subsequent efforts to reconstitute the CNP HELB program identified the need for these modifications. Specifically, the current design of the AFW pump rooms does not protect the equipment in the rooms from the effects of certain HELB events in the turbine buildings and turbine-driven auxiliary feedwater pump rooms.

These modifications are necessary to restore compliance with the CNP licensing basis and to meet the regulatory requirements of 10 CFR 50.49 since the safety-related equipment in the AFW pump rooms is not qualified for the expected environmental conditions resulting from postulated HELB events. I&M has performed a risk assessment of the current design versus the proposed modifications and concludes that the proposed modifications result in a small increase in the overall plant core damage frequency. However, the proposed modifications do not result in undue risk to public health and safety. The primary contributor to this increase is the new reliance on ESW as the heat removal medium for the AFW pump room cooling systems.

The proposed modifications ensure that the AFW pumps will perform their safety-related functions required to mitigate the effects of design basis accidents. The new cooling systems will maintain ambient and post-accident room temperatures in the AFW pump rooms within current equipment design temperature limits. The controlled environment provided by this closed cooling system should provide cleaner operating conditions and aid in prolonging the useful life of the AFW pumps.

Attachment 1 provides a detailed description of the proposed modifications and a supporting risk assessment. Attachment 2 describes the evaluation performed in accordance with 10 CFR 50.92(c), which concludes that no significant hazard is involved. Attachment 3 provides the environmental assessment. Attachment 4 summarizes the new commitments made in this letter.

I&M requests approval of this request by March 21, 2000, to support Mode 3 entry for Unit 2.

Copies of this letter and its attachments are being transmitted to the Michigan Public Service Commission and Michigan Department of Environmental Quality, in accordance with the requirements of 10 CFR 50.91.

Should you have any questions, please contact Mr. Robert C. Godley, Director of Regulatory Affairs, at (616) 466-2698.

Sincerely,

A. C. Bakken III
Site Vice President

SWORN TO AND SUBSCRIBED BEFORE ME

THIS 18th DAY OF February, 2000

Notary Public

PATRICIA A. EDDIE
NOTARY PUBLIC - BERRIEN CO. MICH
MY COMMISSION EXPIRES
NOVEMBER - 5 - 2000

My Commission Expires _____

\dms

Attachments

c: J. E. Dyer
MDEQ - DW & RPD
NRC Resident Inspector
R. Whale

bc: T. P. Beilman
FOLIO
R. W. Gaston, w/o attachments
R. J. Grumbir
S. B. Haggerty
M. L. Hoskins/R. J. Stakenborghs, w/o attachments
D. W. Jenkins/Hopkins & Sutter, w/o attachments
W. T. MacRae, w/o attachments
M. W. Marano
M. W. Rencheck/S. A. Greenlee, w/o attachments
J. F. Stang, Jr., - NRC Washington, DC

ATTACHMENT 1 TO C0200-04

DESCRIPTION AND SAFETY ANALYSIS FOR THE PROPOSED CHANGES

A. Summary of Proposed Changes

Indiana Michigan Power Company (I&M), the Licensee for Donald C. Cook Nuclear Plant (CNP) Units 1 and 2, proposes to amend Facility Operating Licenses DPR-58 and DPR-74. I&M proposes to modify the auxiliary feedwater (AFW) pump rooms to protect the equipment in the rooms from the environmental effects of a postulated high-energy line break (HELB) in the surrounding areas of the turbine buildings and in the steam supply lines to the turbine-driven auxiliary feedwater pumps (TDAFPs). This will be accomplished by sealing the AFW pump rooms to ensure that the rooms do not communicate with the turbine buildings or each other.

Sealing these rooms results in the need to modify the ventilation systems for the AFW pump rooms. These modifications are being made to address deficiencies in the CNP HELB program identified during the current extended outage. The proposed modifications to the AFW pump rooms incorporate refrigeration-cycle room coolers that will be designed to ensure that the train failure scenarios and design basis accident mitigation functions for AFW are preserved as described in the CNP Updated Final Safety Analysis Report (UFSAR).

The design package for the proposed modifications is nearly complete. Design considerations and programs evaluated during the development of the modifications include, but are not limited to, single failure requirements, normal and emergency diesel generator electrical loading, essential service water (ESW) capacities and requirements, separation criteria, flooding, seismic response, fire protection, station blackout, external events, and performance monitoring. These considerations are required by the CNP design change process, and will ensure compliance with requirements and commitments in these areas as the design is finalized.

The proposed modifications constitute an unreviewed safety question (USQ) in accordance with 10 CFR 50.59 since the probabilities of malfunction of the new cooling systems for the AFW pump rooms are higher than the failure probabilities associated with the current ventilation equipment. Therefore, NRC staff review and approval are required.

These modifications are necessary to restore compliance with the CNP licensing basis and to meet regulatory requirements. These modifications will also result in the AFW pump rooms being maintained within current equipment design temperature limits and in a cleaner controlled environment. This should improve the long-term reliability of the AFW pumps. I&M has performed a risk assessment of the current design versus the proposed modifications and concludes that the proposed modifications result in a small increase in overall plant core damage frequency (CDF). However, the proposed modifications do not result in undue risk to public health and safety.

The CNP HELB protection requirements are described in Section B of this attachment. The design of the existing room ventilation systems, including the current HELB protection schemes for the rooms containing the AFW equipment, are described in Section C of this attachment. Section D describes the proposed modifications. Section E discusses the impact and benefits of the modifications. Section F describes the need and bases for the determination that the proposed modifications are necessary. Section G discusses the risk assessment associated with the proposed modifications. Figure 1 and Figure 2 are provided to assist in the understanding of the current and proposed plant configuration, respectively.

B. Description of HELB Protection Requirements

The CNP HELB program is based on the Atomic Energy Commission (AEC) generic correspondence on the consequences of postulated piping failures dated December 18, 1972. This AEC letter, as amended by an errata sheet dated January 31, 1973, established various HELB criteria. These criteria include defining high-energy piping, addressing physical separation requirements and protection from pipe whip, determining design basis piping break locations, analyzing dynamic effects of fluid jets resulting from piping breaks, demonstrating environmental qualification, and postulating open critical-sized cracks at the worst-case locations. With respect to the AFW pump room equipment, the dynamic effects of HELB events, including pipe whip and jet impingement effects, are of no concern based on the relative location of the high-energy lines to AFW system components. However, the environmental qualification aspects of the current AFW pump room designs to protect the room equipment against the steam and high temperature environment created by postulated HELB events were not adequately considered.

The original CNP Final Safety Analysis Report (FSAR), Appendix O, contains the licensing and design basis information related to the implementation of the CNP HELB program. The CNP HELB program includes the requirement to consider the environmental effects of postulated breaks and cracks in high-energy piping on equipment required to safely bring the facility to cold shutdown for HELB events.

As described in the CNP UFSAR, the AFW system functions to ensure safe shutdown of the facility following specific analyzed transients and accidents by supplying water to the steam generators for heat removal from the reactor coolant system. These events include transients and accidents as the result of breaks in high-energy piping in the turbine buildings and the TDAFP rooms. The AFW pump rooms are located in the turbine buildings and the equipment in these rooms has not been environmentally qualified in accordance with 10 CFR 50.49 to withstand the environmental conditions expected for postulated breaks and cracks in high-energy piping. Therefore, the AFW equipment requires protection from HELB events that could impact the equipment.

C. Current Auxiliary Feedwater Pump Room Ventilation Design

The existing design of the motor-driven auxiliary feedwater pump (MDAFP) and TDAFP room ventilation systems is shown in Figure 1. The CNP UFSAR specifies that cooling be supplied to the AFW pump rooms in order to maintain the design room temperatures during standby conditions and with the AFW system in emergency operation. The safety-related function of the MDAFP and TDAFP room ventilation systems is to maintain the ambient temperature below the maximum design ambient temperature permitted for operation of the safety-related equipment located within the AFW pump rooms. The AFW pump rooms are expected to be maintained as a mild environment. The only external temperature applicable to the MDAFP and TDAFP room ventilation systems is the ambient temperature of the turbine buildings.

In each unit, the MDAFP and TDAFP room ventilation systems are independently powered from essential safety system (ESS) busses. Each ventilation fan is connected to a separate air intake or exhaust assembly. The fans for the east MDAFP and TDAFP rooms are Seismic Class I, wall-mounted direct drive, tube axial fans with manual, adjustable pitch blades. The fans for the west MDAFP rooms are Seismic Class I, direct drive, wall-mounted propeller fans. The fire dampers are Seismic Class I, Class A, 3-hour, curtain type, thermal fusible link fire dampers with 160°F thermal fusible links. The backdraft dampers are Seismic Class I multi-leaf backdraft dampers. The protection of the MDAFP and TDAFP room ventilation systems from missiles has been accomplished by locating components within a structure that provides shielding from missiles.

East MDAFP Room Ventilation System Design

The east MDAFP room ventilation system for each unit consists of a wall-mounted exhaust fan and a wall-mounted supply fan. The exhaust fan draws 10,000 cubic feet per minute (cfm) from the room and discharges it to the turbine building. The supply fan provides the room with 10,000 cfm from the turbine building on the wall opposite from the exhaust fan. These fans are both required to operate to move the nominal flow rate through the room. Both fans are electrically powered by the Train A ESS bus consistent with the train of power for the east MDAFP.

The east MDAFP room ventilation system supply and exhaust fans are each equipped with a fire damper. The east MDAFP room ventilation system exhaust fan has an associated backdraft damper. This is provided to prevent the inleakage of air from the turbine building when both fans are not in operation. The supply and exhaust fans are interlocked to operate when the east MDAFP starts or if the room thermostat indicates a temperature above 100°F.

West MDAFP Room Ventilation System Design

The west MDAFP room ventilation system for each unit consists of two 100-percent capacity, wall-mounted exhaust fans and three air intake openings in the wall opposite the fans. Each exhaust fan is equipped with a fire damper, a backdraft damper, and intake and discharge screens. Each air intake opening is equipped with a fire damper. The operating exhaust fan draws 10,000 cfm from the room and discharges it to the turbine building. Air is induced into the room from the turbine building through the air intake openings. Both fans are electrically powered by the Train B ESS bus consistent with the train of power for the west MDAFP.

The backdraft dampers are provided to prevent the recirculation of air through the non-operating fan and to prevent the inleakage of air from the turbine building when neither fan is in operation. One of the exhaust fans is interlocked to operate when the west MDAFP starts and one exhaust fan is controlled by a thermostat to start if the room temperature is above 100°F.

TDAFP Room Ventilation System Design

The TDAFP room ventilation system for each unit consists of two redundant 100-percent capacity, wall-mounted exhaust fans and an air intake. The air intake for the Unit 1 room is located in the wall opposite from the exhaust fan. The air intake for the Unit 2 room is located in the floor. The operating exhaust fan draws 10,000 cfm from the room and discharges it to the turbine building. In both cases, air is induced into the room from the turbine building. Electrical power for one of the fans is from the Train A ESS bus and the other fan is powered from the Train B ESS bus.

Each of the TDAFP room ventilation system exhaust fans and each air intake opening is equipped with a fire damper. The Unit 1 intake is equipped with both a fire damper and a backdraft damper. The TDAFP room ventilation system exhaust fans have an associated backdraft damper. This is provided to prevent the recirculation of air through the non-operating fan and to prevent the inleakage of air from the turbine building when neither fan is in operation. Each exhaust fan is interlocked with separate room thermostats that initiate operation on high temperature. One exhaust fan is controlled by a thermostat to start if the room temperature is above 100°F. The remaining fan is controlled by a second thermostat to run if the temperature is above 105°F. However, the second exhaust fan only operates for 30 minutes after an automatic start and will not restart until the temperature drops below and then increases above the thermostat setting of 105°F.

During the four-hour station blackout (SBO) coping period with turbine building ventilation and AFW pump room ventilation not operating, the TDAFP room temperature will reach approximately 143°F (with the door closed) and 133.6°F (with the door open). The SBO analysis demonstrates that the TDAFP will operate under these conditions with the door open.

The TDAFP rooms are structurally designed to withstand an internal pressure of 2 psig. If the 4-inch steam supply line in one of the TDAFP rooms breaks, internal room pressures would quickly rise and could cause structural wall failure of the TDAFP room. Each TDAFP room shares a wall with the adjoining TDAFP and MDAFP rooms. Therefore, to prevent damage to the other rooms, the door to each TDAFP room from the turbine building is maintained open to allow for venting of steam. These doors have a thermal fusible link designed to close the door in the case of a fire. The fusible links are also credited to function in response to a HELB event. If the TDAFP 4-inch steam supply piping were to break, actuation of the fusible link would allow the door to close on spring force. However, the door would still allow venting of steam from inside the room to the turbine building until the door spring force overcomes the escaping room pressure as the steam flow is reduced following the steam supply piping break.

Current AFW Pump Room Ventilation System Design Deficiencies

The CNP licensing and design basis requires that the AFW equipment be protected from the environmental effects of HELB events. The current AFW pump room ventilation systems do not provide an adequate level of protection from the environmental effects of certain HELB events postulated to occur in the turbine buildings or in the TDAFP rooms. The dynamic effects of these HELB events, including pipe whip and jet impingement effects, are of no concern based on the relative location of the high-energy lines to AFW system components. However, the steam and high temperature environments created by the HELB events were not adequately considered.

The original HELB program credited the fire dampers installed in the MDAFP and TDAFP room ventilation systems to provide protection from a HELB event occurring in the turbine buildings outside of the rooms. However, there are several reasons why the fire dampers may not be adequate to provide this protection. These are:

- the melting temperature of some of the thermal fusible links exceeds the qualification temperatures of the equipment in the rooms;

- the melting temperature of some of the thermal fusible links exceeds the expected HELB temperatures;

- the melting temperature of the thermal fusible links from a HELB event versus a fire environment has not been determined and the heat transfer mechanisms are different for these two events;

- the specific types of fire dampers used in the current design have been historically unreliable in closing under flow conditions;

- if the thermal fusible link melts and the rooms are successfully sealed, the room temperatures may increase above the qualification temperatures of the equipment in the rooms due to heat input from the operating auxiliary feedwater pumps and other equipment.

The current AFW pump room design is also deficient with respect to compliance with the original MDAFP room ventilation design commitment made in Appendix O to the FSAR. This commitment was to run the MDAFP intake ventilation ductwork to a point that would preclude entry of a harsh environment resulting from a HELB from affecting the pumps. This ductwork was not installed.

Based on the issues presented above, it was necessary to develop a new strategy for coping with HELB events in the turbine buildings and in the TDAFP rooms to ensure compliance with the CNP HELB program requirements.

D. Proposed Auxiliary Feedwater Pump Room Cooling Design

I&M evaluated several options either to environmentally qualify the AFW pump room equipment or to protect the equipment from the environmental effects of postulated HELB events. The proposed engineering solutions that were evaluated included the installation of MDAFP intake ductwork in accordance with the ventilation design commitment from Appendix O of the FSAR as discussed above. The engineering option determined to be the most acceptable based on feasibility of design success, cost, and schedule is described below.

I&M proposes to modify the Unit 1 and Unit 2 MDAFP and TDAFP room ventilation systems in order to provide environmental protection to each MDAFP and TDAFP from the effects of postulated HELB events. The current room ventilation systems do not provide an adequate level of protection from the effects of HELBs postulated to occur in the turbine buildings or in the TDAFP rooms. These modifications are shown in Figure 2 and described herein. The new design incorporates room coolers that are safety-related, Seismic Class I, self-contained, refrigeration-cycle package unit coolers. The room coolers include a fan that passes air through a pre-cooler coil that will use ESW as a cooling medium, followed by an after-cooler refrigerant condenser coil that rejects heat to the ESW system. These room coolers use a standard design, which has been successfully used at other nuclear power plants in safety-related applications, including safety-related pump rooms. Nuclear power plants using similar refrigeration-cycle package unit coolers in safety-related pump rooms include Duane Arnold Energy Center and Palo Verde Nuclear Generating Station.

General AFW Pump Room Modification Design Considerations

The proposed modifications to the AFW pump rooms are being designed to ensure that the train failure scenarios and design basis accident mitigation functions for AFW are preserved as described in the CNP UFSAR. This has been accomplished by maintaining strict train separation for the MDAFPs and train independence for the TDAFPs. Specifically, the support services (ESW and electrical power) for the new room coolers are from the same train as the associated MDAFP electrical power supply. The room coolers for the TDAFP have complete train redundancy such that cooling continues to be provided on the loss of either train of power or ESW.

The design will also verify that critical ESW parameters support operability of the coolers. Considerations include ESW flow and temperature ranges, and verification that cooler flow passages are larger than expected debris in the ESW system.

Other design considerations and programs evaluated during the development of the modifications include, but are not limited to, normal and emergency diesel generator electrical loading, separation criteria, flooding, seismic response, fire protection, station blackout, external events and performance monitoring.

East MDAFP Room Cooling Proposed System Design

For each unit, the existing east MDAFP room ventilation system exhaust fan and supply fan, including motors, will be removed. The exhaust fan backdraft damper will be removed. One fire damper will be closed. The opening created by removal of the fan will be sealed by a steel plate from inside of the room to ensure a fire and HELB barrier is maintained. A blowout panel will be added to the other opening to allow for depressurization of the room during a tornado event. The door to the east MDAFP room will remain closed as a fire and HELB barrier.

A new room cooler and replacement room thermostat will be installed. The new cooler will be interlocked to operate when actuated by the room thermostat. This thermostat will be set to maintain the room less than the current design temperature. The new room cooler will be designed to maintain the temperature of the east MDAFP room below the current room equipment design temperatures when the east MDAFP is in operation. ESW will be provided to the new room cooler from the respective unit's east ESW train.

West MDAFP Room Cooling Proposed System Design

For each unit, the existing west MDAFP room ventilation system exhaust fans, motors, backdraft dampers, and fire dampers will be removed. The door to the west MDAFP room will remain closed as a fire and HELB barrier. Two of the three west MDAFP air intake fire dampers will be closed and the openings sealed by a steel plate from inside of the room to ensure a fire and

HELB barrier is maintained. A blowout panel will be added to the third opening to allow for depressurization of the room during a tornado event.

A new room cooler will be installed in one of the openings created by removal of an exhaust fan. The new room cooler will protrude through the opening and include an enclosure to protect the room cooler from internally and externally generated missiles, the maximum HELB environment, and to serve as a three-hour fire barrier. The openings in the wall around the enclosure will be sealed to provide a three-hour fire barrier and HELB barrier. A replacement room thermostat will be installed. The new cooler will be interlocked to operate when actuated by the room thermostat. This thermostat will be set to maintain the room less than the current design temperature. The new room cooler is designed to maintain the temperature of the west MDAFP room below the current room equipment design temperatures when the west MDAFP is in operation. ESW will be provided to the new room cooler from the respective unit's west ESW train.

TDAFP Room Cooling Proposed System Design

For each unit, the existing TDAFP room ventilation system exhaust fans and backdraft dampers will be removed. The fire damper in the air intake for the Unit 1 room located in the wall and the fire damper in the air intake for the Unit 2 room located in the floor will be closed and the openings sealed by a steel plate from inside of the room to ensure a fire and HELB barrier is maintained. The existing door to the TDAFP room will be closed as a fire and HELB barrier with the thermal fusible link mechanism disabled. The fire dampers for the exhaust fans will remain operable and functional as a fire barrier with the thermal fusible links replaced to increase the temperature settings from 160°F to 325°F. This will not cause the damper to actuate in a HELB environment but will ensure protection in the case of a fire. Blowout panels will be installed on the outside of the two existing exhaust openings. These blowout panels will prevent structural failure of the TDAFP rooms if the 4-inch steam supply piping were to break while providing a HELB barrier for HELB events occurring in the turbine buildings.

Two new room coolers and associated replacement room thermostats will be installed in the room. The new coolers will be controlled by dedicated thermostats. These thermostats will be set to maintain the room within current design temperature. The new room coolers are designed to maintain the temperature of the TDAFP room below current equipment design temperature limits independently when the TDAFP is in operation. ESW will be provided to the new room coolers from the respective unit's east and west ESW trains.

The new design will ensure that the maximum TDAFP room temperature following an SBO will not exceed 133.6°F. This is consistent with the current SBO analysis and will ensure that the TDAFP is available for the 4-hour SBO coping period.

E. Impact and Benefits for the Proposed Modifications

The proposed AFW pump room modifications involve a USQ in accordance with 10 CFR 50.59 since the probabilities of malfunction of the new cooling systems for the AFW pump rooms are higher than those for the current ventilation equipment. The modifications restore compliance with the CNP licensing basis and the requirements of 10 CFR 50.49. Though the new coolers units are highly reliable, the new refrigeration-cycle room cooler equipment is more complex than the fan and damper arrangements that are part of the existing room ventilation system. The new room coolers also rely on ESW availability, whereas the current design of the room ventilation systems do not. The increased complexity and reliance on ESW caused an increase in the probability of malfunction of safety-related equipment and the resulting USQ determination.

A failure analysis was performed to assess the adequacy of the modification. This analysis shows that when postulated design basis accident scenarios and single failures are applied to the proposed AFW pump room modification configurations, the AFW system remains bounded by the accident analysis presented in the UFSAR. Therefore, the modification does not impact how the AFW system will actuate and perform in response to those design basis accidents that require AFW to mitigate the events.

The proposed modifications will also result in the AFW pump rooms being maintained within current equipment design temperature limits and in a cleaner controlled environment that should improve the long-term reliability of the AFW pumps. This should prolong the useful life of this equipment during both standby and emergency operating conditions.

F. Need and Bases for the Proposed Modifications

During the current extended outage, a number of licensing and design basis deficiencies were determined to exist in the CNP HELB program. A HELB program reconstitution effort was begun to address these deficiencies. The HELB program reconstitution effort identified a number of areas in the facility that require modification, in addition to the AFW pump rooms, to bring the facility into compliance. Deficiencies with the existing AFW pump room ventilation design are discussed further in Section C above.

The modifications are also needed to address the noncompliance with the original MDAFP room ventilation design commitment made in Appendix O to the FSAR. This commitment was to run the MDAFP intake ventilation ductwork to a point that would preclude entry of a harsh environment resulting from a HELB from affecting the pumps. This ductwork was not installed.

The CNP licensing and design basis requires that the AFW pump room equipment be protected from the environmental effects of HELB events. The proposed modifications ensure that the AFW system will operate to perform its design basis mitigation functions coincident with of the

environmental effects resulting from a HELB event in the turbine buildings or in the TDAFP rooms. The controlled environment provided by this closed cooling system should provide cleaner operating conditions and aid in prolonging the useful life of AFW equipment. In this regard, the proposed modifications have a positive effect on reliability of AFW equipment that may partially offset the increased probability of malfunction introduced by the addition of the room coolers.

G. Risk Assessment of the Proposed Modifications

An analysis of the impact of the proposed modifications was performed using an approach similar to the significance determination process methodology under development by the NRC to assess the safety significance of inspection finding identified in the revised reactor oversight process. This approach was used to develop a simplified event tree for CNP to evaluate the proposed modification. Based on this specific event tree, the estimated increase in CDF as the result of the proposed modifications is approximately 2.0 x 10-6 per year. This analysis demonstrates that the proposed modifications represent a small increase in risk as compared to the CNP overall CDF.

H. Impact on Previous Submittals

No previous submittals affect the technical basis for this submittal or require approval to support this submittal.

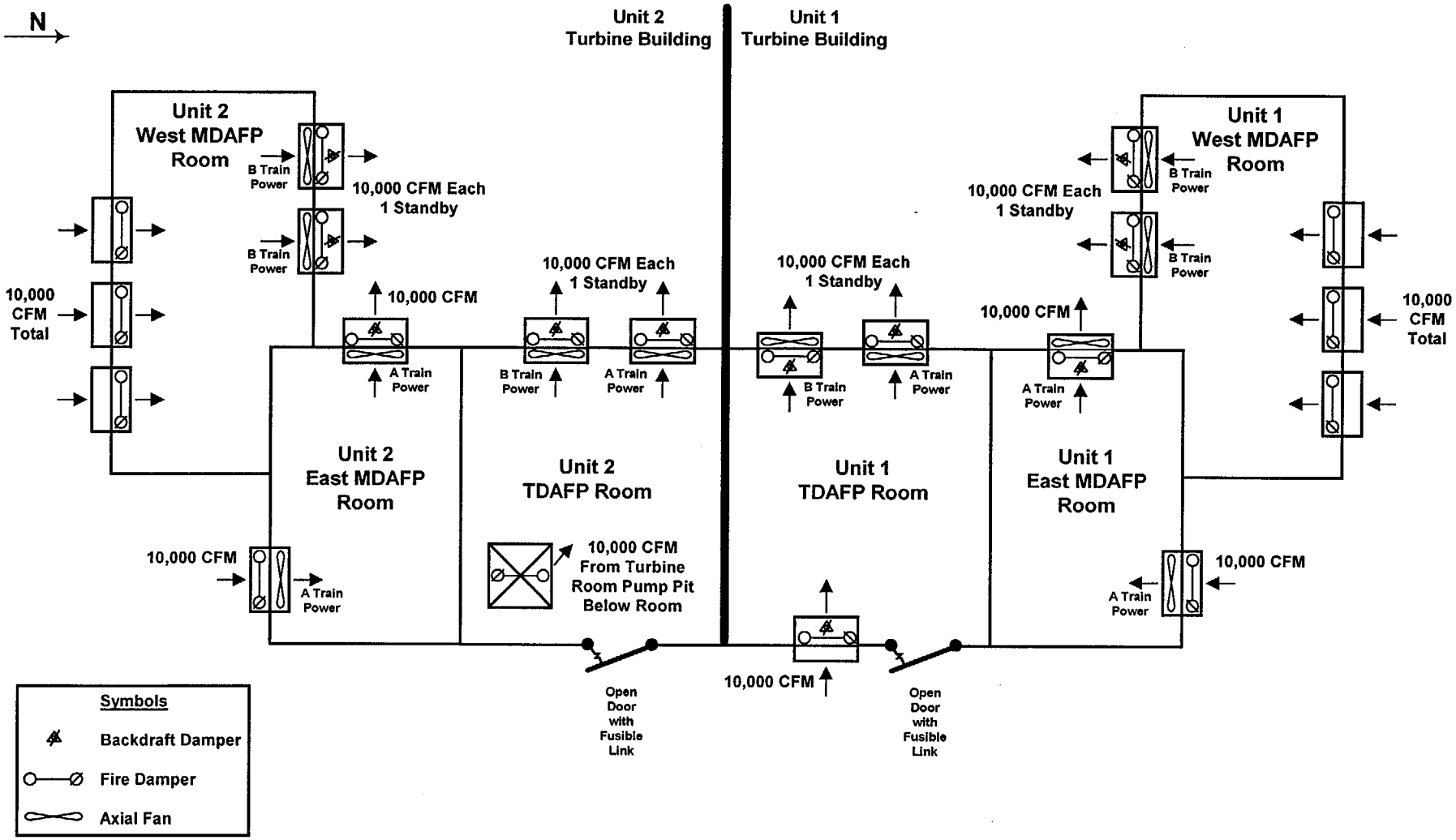

Figure 1: Existing Auxiliary Feedwater Pump Room Ventilation Configuration

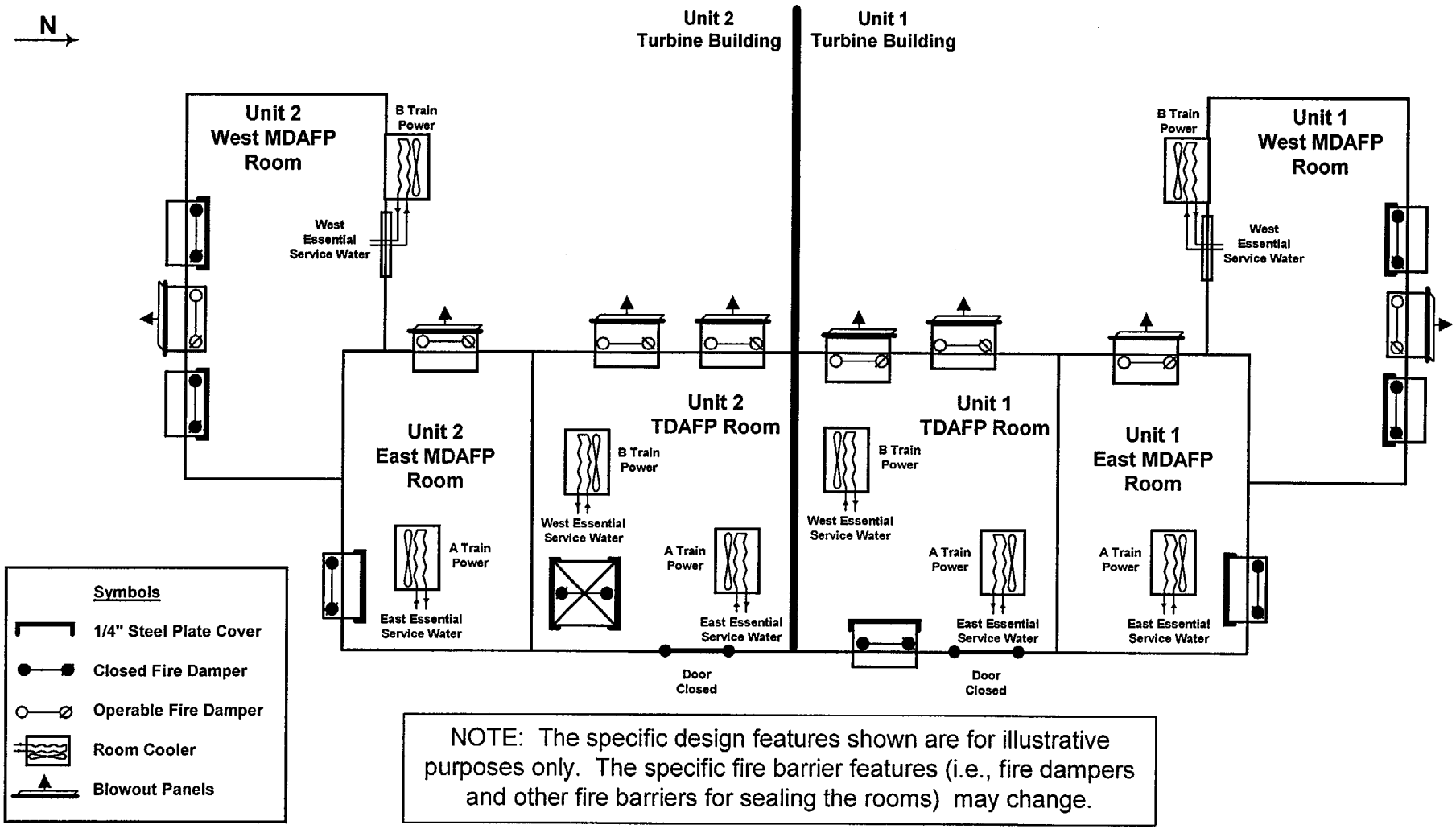

Figure 2: Proposed Auxiliary Feedwater Pump Room Cooling Configuration

ATTACHMENT 2 TO C0200-04

NO SIGNIFICANT HAZARDS CONSIDERATION EVALUATION

Indiana Michigan Power Company (I&M) has evaluated this proposed amendment and determined that it does not involve a significant hazard. According to 10 CFR 50.92(c), a proposed amendment to an operating license does not involve a significant hazard if operation of the facility in accordance with the proposed amendment would not:

1. involve a significant increase in the probability of occurrence or consequences of an accident previously evaluated;

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.

I&M proposes to modify the auxiliary feedwater (AFW) pump rooms to protect the equipment in the rooms from the environmental effects of a postulated high-energy line break (HELB) in the surrounding areas and the steam supply lines to the turbine-driven auxiliary feedwater pumps (TDAFPs). This will be accomplished by sealing the AFW pump rooms to ensure that the rooms do not communicate with the turbine buildings or each other.

Sealing these rooms results in the need to modify the ventilation systems for the AFW pump rooms in each unit. The proposed modifications to the AFW pump rooms incorporate refrigeration-cycle room coolers that will be designed to ensure that the train failure scenarios and design basis accident mitigation functions for AFW are preserved as described in the Donald C. Cook Nuclear Plant (CNP) Updated Final Safety Analysis Report (UFSAR).

The design package for the proposed modifications is nearly complete. Design considerations and programs evaluated during the development of the modifications include, but are not limited to, single failure requirements, normal and emergency diesel generator electrical loading, essential service water capacities and requirements, separation criteria, flooding, seismic response, fire protection, station blackout, external events, and performance monitoring. These considerations are required by the CNP design change process, and will ensure compliance with requirements and commitments in these areas as the design is finalized.

These modifications are proposed in order to provide environmental protection to each motor-driven auxiliary feedwater pump (MDAFP) and each TDAFP from the effects of postulated HELB events. The current room ventilation systems do not provide an adequate level of protection from the effects of a HELB postulated to occur in the turbine buildings or in the TDAFP rooms. Specific HELB events are postulated to occur in high-energy piping located in the turbine buildings outside of the AFW pump rooms and in the steam piping located in the TDAFP rooms.

The probabilities of malfunction of the new cooling systems for the AFW pump rooms are higher than the probabilities associated with the current ventilation equipment. However, these modifications are necessary to restore compliance with the CNP licensing basis and meet regulatory requirements. The controlled environment provided by this closed cooling system should provide cleaner operating conditions and aid in prolonging the useful life of AFW equipment.

The determination that the criteria set forth in 10 CFR 50.92 are met for this amendment request is indicated below.

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

Failures of the proposed MDAFP and TDAFP room cooling systems during either normal operations or emergency operations cannot initiate any of the accidents previously evaluated in the UFSAR. The proposed MDAFP and TDAFP room cooling systems do not interface with the reactor coolant system, containment, or engineered safeguards features in such a way as to be a precursor or initiator for an accident previously evaluated. Therefore, the proposed modifications do not increase the probability of occurrence of an accident previously evaluated.

The proposed MDAFP and TDAFP room cooling systems ensure protection of AFW equipment from the environmental effects of a HELB event. This ensures the AFW system is capable of performing the safety-related functions required to mitigate the effects of design basis accidents. The AFW system is required to mitigate design basis accidents that result in the loss of cooling for the reactor coolant system. These include loss of normal feedwater control, loss of all (non-emergency) alternating-current power (i.e., offsite power) to the plant auxiliaries, steam generator tube rupture, large break loss-of-coolant accidents, and small break loss-of-coolant accidents. In addition, the AFW system is required to safely shutdown the reactor following certain HELB events in the turbine buildings resulting from feedwater and main steam piping breaks and critical cracks. Since the AFW system is assured of performing its intended design function in mitigating the effects of design basis accidents by the proposed modifications, the consequences of accidents previously evaluated in the UFSAR will not be increased.

Therefore, the probability of occurrence or the consequences of accidents previously evaluated are not increased.

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

Failures of the proposed MDAFP and TDAFP room cooling systems during either normal operations or emergency operations cannot initiate an accident. The proposed MDAFP and TDAFP room cooling systems do not interface with the reactor coolant system, containment, or engineered safeguards features in such a way as to be a precursor or initiator for an accident.

The proposed modifications to the AFW pump rooms have been designed to ensure that the train failure scenarios and design basis accident mitigation functions for AFW are preserved as described in the CNP UFSAR. The electrical power supplies and AFW pump room cooler water sources maintain the design basis train alignments. Thus, when postulated design basis accident scenarios and single failures are applied to the proposed AFW pump room modification configurations, the AFW system remains bounded by the accident analysis presented in the UFSAR. The modifications do not impact how the AFW system will actuate and perform in response to those design basis accident scenarios that require AFW to mitigate the events.

Therefore, the change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

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

The proposed modifications to the MDAFP and TDAFP room ventilation systems do not create a reduction in the margin of safety for those systems, structures, and components required for safe shutdown or accident mitigation as previously analyzed in the UFSAR. The proposed modifications provide a different method for cooling the AFW pump rooms while ensuring environmental protection to each MDAFP and each TDAFP from the effects of postulated HELB events.

As discussed above, the proposed modifications to the AFW pump rooms have been designed to ensure that the train failure scenarios and design basis accident mitigation functions for AFW are preserved as described in the CNP UFSAR. Since the intended safety function of the AFW pump room cooling systems remains the same, margin of safety is preserved. The proposed modifications ensure the availability and reliability of the AFW pumps is maintained commensurate with the assumptions made in the UFSAR accident analyses.

Therefore, the proposed changes do not involve a reduction in a margin of safety.

In summary, based upon the above evaluation, I&M has concluded that the proposed amendment involves no significant hazards consideration.

ATTACHMENT 3 TO C0200-04

ENVIRONMENTAL ASSESSMENT

Indiana Michigan Power Company (I&M) has evaluated this license amendment request against the criteria for identification of licensing and regulatory actions requiring environmental assessment in accordance with 10 CFR 51.21. I&M has determined that this license amendment request meets the criteria for a categorical exclusion set forth in 10 CFR 51.22(c)(9). This determination is based on the fact that this change is being proposed as an amendment to a license issued pursuant to 10 CFR 50 that changes a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or that changes an inspection or a surveillance requirement, and the amendment meets the following specific criteria.

(i) The amendment involves no significant hazards consideration.

As demonstrated in Attachment 2, this proposed amendment does not involve significant hazards consideration.

(ii) There is no significant change in the types or significant increase in the amounts of any effluent that may be released offsite.

The proposed amendment involves modifications to the auxiliary feedwater pump room ventilation systems. The proposed room cooling systems do not directly interface with any of the radioactive and nonradioactive effluent processing and control systems. These proposed modifications do not result in the significant generation of any additional radioactive or nonradioactive effluents. In addition, the proposed modifications have no impact on any of the radioactive and nonradioactive effluent processing and control systems. Therefore, there is no significant change in the types or significant increase in the amounts of any effluents released offsite.

(iii) There is no significant increase in individual or cumulative occupational radiation exposure.

The proposed modifications do not result in significant changes in the operation or configuration of the areas of the facility containing radioactive materials. There is no change in the level of controls or methodology used for processing of radioactive effluents or handling of solid radioactive waste, nor does the proposal result in any change in the normal radiation levels within the plant. Therefore, there is no significant increase in individual or cumulative occupational radiation exposure resulting from this change.

ATTACHMENT 4 TO C0200-04

COMMITMENTS

The following table identifies those actions committed to by Indiana Michigan Power Company (I&M) in this submittal. Other actions discussed in the submittal represent intended or planned actions by I&M. They are described to the Nuclear Regulatory Commission (NRC) for the NRC's information and are not regulatory commitments.

Commitment	Date
The proposed auxiliary feedwater (AFW) pump room modifications necessary to provide high-energy line break protection to the AFW pump rooms will be implemented prior to Mode 3 entry from the current outage for the applicable unit.	Prior to Mode 3 entry from the current for the applicable unit