January 19, 2001

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

SUBJECT: DONALD C. COOK (DC COOK) UNITS 1 AND 2 - REACTOR COOLANT PUMP OIL COLLECTION TANK SYSTEM (TAC NOS. MA8956 AND MA8957)

Dear Mr. Powers:

By letter dated February 29, 2000, Indiana Michigan Power Company (I&M) provided corrected information related to a previously approved exemption from 10 CFR Part 50, Appendix R, Section III.O dealing with the reactor coolant pump (RCP) motor lube oil collection system. The letter stated that information concerning the RCP lubrication oil flash point provided by the licensee in the requested exemption was incorrect. By letters dated May 4, 1982, as supplemented December 30, 1982, the licensee requested an exemption from Section III.O of Appendix R to 10 CFR Part 50, to allow the use of an oil collection system collection tank smaller than that required by Appendix R. In the exemption request, the licensee stated that the flash point of RCP lubrication oil was 480 °F. The RCP lubrication oil flash point of 480 °F was one of many factors used by the Nuclear Regulatory Commission (NRC) staff to conclude the exemption from Section III.O of Appendix R to 10 CFR Part 50, was justified. The NRC staff approved the requested exemption by letter dated December 23, 1983.

In the February 29, 2000, letter, the licensee stated the correct flash point of the oil was 425 °F instead of 480 °F. The reduction in the flash point of the RCP lubrication oil would mean that the oil would ignite at a lower temperature. The February 29, 2000, letter, provided justification that with the lower flash point RCP lubrication oil, the exemption granted by the NRC remains valid.

A telephone conversation was held on July 26, 2000, between members of I&M and the NRC staff related to February 29, 2000, letter, to discuss the information provided by the licensee. At the close of the phone call, the NRC staff indicated that additional information would be required to complete the evaluation of I&M February 29, 2000, letter. By letter dated August 11, 2000, the NRC issued a summary of the telephone conversation which included the request for additional information (RAI). I&M responded to the NRC RAI by letter dated October 6, 2000.

Enclosed is the staff safety evaluation concerning the reduction in the flash point of the RCP lubrication oil. Based on the enclosed evaluation, the NRC staff finds that the change in the RCP lubrication oil flash point does not alter the conclusions reached by the staff in granting the

original exemption from Section III.O of Appendix R to 10 CFR Part 50. Therefore, the exemption granted by the NRC remains valid.

If you have any questions concerning this issue please contact me at (301) 415-1345.

Sincerely,

/RA/

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

Docket Nos. 50-315 and 50-316

Enclosure: As stated

cc w/encl: See next page

cc:

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

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

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

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

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

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

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

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

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

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

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

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

original exemption from Section III.O of Appendix R to 10 CFR Part 50. Therefore, the exemption granted by the NRC remains valid.

If you have any questions concerning this issue please contact me at (301) 415-1345.

Sincerely,

/RA/

John F. Stang, Project Manager, Section 1
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cc w/encl: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO THE EVALUATION OF THE REACTOR COOLANT PUMP OIL COLLECTION TANK SYSTEM

INDIANA MICHIGAN POWER COMPANY

DONALD C. COOK NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NOS. 50-315 AND 50-316

1.0 INTRODUCTION

By letter dated February 29, 2000, Indiana Michigan Power Company (I&M) provided corrected information related to a previous exemption from a 10 CFR Part 50, Appendix R, Section III.0 requirement dealing with the reactor coolant pumps (RCPs) motor lube oil collection system. Incorrect data regarding flash point for the RCPs oil was provided by the licensee in the exemption request dated May 4, 1982, as supplemented December 30, 1982. The RCP oil flash point was used in the exemption request to help justify the smaller tank size by showing that oil spill on the piping insulation or overflow on the containment floor would not present a fire hazard. In addition, no ignition sources were reported in proximity to the RCP lube oil tanks and no potential oil leakage sites were detected in the RCP oil collection system. The staff approved the requested exemption with the incorrect flash point (480 °F) for the RCP oil by letter dated December 23, 1983.

A telephone conversation was held on July 26, 2000, between members of I&M and the Nuclear Regulatory Commission (NRC) staff related to February 29, 2000, submittal to discuss the information provided by the licensee. At the close of the phone call, the NRC staff indicated that additional information would be required to complete the evaluation of the I&M February 29, 2000, submittal. Additional information was requested by the staff regarding the description of electrical ignition sources present, and where the oil collection tank overflows in the containment. I&M responded to the NRC request for additional information (RAI) by letter dated October 6, 2000, which provided the information requested by the staff.

2.0 DISCUSSION

Cook Nuclear Plant (CNP), Units 1 and 2, are each 4-loop Westinghouse Nuclear Steam Supply Systems (NSSS). Each reactor is equipped with four RCPs with an oil collection system which drains to a vented closed collection tank. The quantity of lubricating oil in each pump is approximately 265 gallons and the capacity of the oil collection tank is approximately 257 gallons. The collection tank is arranged such that if a failure of more than one RCP motor lubricating oil system occurred, the oil collection tank would overflow onto the lower containment floor in the containment building. The normal operating temperature of RCP lube

oil is 140 °F, and a bearing temperature alarm is set at 185 °F to indicate when the oil exceeds the normal operating temperature.

I&M has determined that the flash point for the RCP lube oil is approximately 425 °F. This value is 55 °F lower than the previously stated value (480 °F). The licensee stated that should the lube oil come in contact with the surface of the hottest insulation in the proximity of the RCP motors it will not result in the ignition of the lube oil. The maximum design outside surface temperature for the mirror insulation is approximately 140 °F. Only noncombustible, non-oil absorbent, metal-jacketed mirror insulation is used in the potential oil spill area.

Additionally, potential electrical ignition sources were identified by the licensee in the area of the oil collection tank system which were not described in the original exemption. Potential electrical ignition sources include: energized 480 volts ac (vac) welding transformer and associated welding outlets, open power take-off box, energized temporary extension cords, and improperly sealed junction boxes at the RCP lube oil collection tank level. The licensee has implemented plant administrative procedures and inspections under corrective maintenance program to control these ignition sources. The operating and surveillance procedures that administratively control these electrical circuits have been revised to ensure that these potential electrical ignition sources are de-energized whenever an RCP is running.

3.0 EVALUATION

The RCP oil collection system is required to prevent a major lube oil fire from occurring inside of the reactor containment building, as a result of a lube oil leak from the RCPs. CNP Unit 1 and 2 collects lube oil leakage from each of the four RCP motors into a single collection tank for each unit. The oil collection tank is sized to collect approximately 265 gallons of lube oil the amount contained in one RCP motor, without overflowing. In the event of a single RCP lube oil leak occurring under normal operating conditions, the oil collection system will function to contain the oil and drain it to the oil retention tank. The oil collection system will prevent the lube oil from making contact with hot RCP piping and other external ignition sources. The combined loss of lube oil from all four RCPs motors failing simultaneously would be an overflow of approximately 785 gallons. Any overflow oil would be discharged out of the RCP lube oil collecting tank vent piping tee, located approximately 6.5 feet above the lower containment floor. This oil would flow onto the tank exterior, then onto the lower containment flooring around the tank. There are no floor drains in the RCP lube oil collecting tank area. The lower containment floor does not have a significant slope in any direction, and there is no berm surrounding the RCP lube oil collection tank. There are no physical barriers to prevent overflowing oil from migrating toward the lower containment sump and containment recirculation sump. These two sumps are located in the lower containment, approximately 180 ° from the RCP oil collection tank. Oil reaching the sump area would flow directly from the lower containment floor evaluation into the lower containment sump.

The identified combustible materials in the area around RCP lube oil collection tank include cable insulation and lube oil. Both the migrating and pooling of oil from an overflow of the RCP lube oil collecting tank should not represent a fire hazard in the area. Also, the oil collecting sumps in the lower containment present no fire hazard to safe shutdown equipment. The temperature in the area is expected to remain below the autoignition temperature of the lube oil. In addition, the licensee has implemented operating and surveillance procedures in order to control potential electrical ignition sources such that these ignition sources are de-energized

whenever a RCP is running. The CNP has administrative controls to ensure that there are no ignition sources in the lower containment when RCPs are required to be operable.

An automatic fire detection system and manual fire suppression system are available in the vicinity of the lube oil collecting system to control a postulated fire. In the event of a fire, it is expected that the detector will alarm in the main control room (MCR). The alarm will alert the MCR operators of a fire condition, allowing fire brigade personnel to be dispatched to the fire zone to extinguish the fire. This provides further assurance that a worst-case postulated fire would not damage safe shutdown equipment.

4.0 CONCLUSION

Based on the above evaluation, the staff finds that the change in the flash point of the RCP lubrication oil flash point does not alter the conclusions reached by the staff in granting the original exemption from Section III.O of Appendix R to 10 CFR Part 50. Therefore, the exemption granted by the NRC remains valid.

Principal Contributors: N. Iqbal
P. Qualls

Date: January 19, 2001