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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 165 TO FACILITY OPERATING LICENSE NO. DPR-58

AND AMENDMENT NO. 150 TO FACILITY OPERATING LICENSE NO. DPR-74

INDIANA MICHIGAN POWER COMPANY

DONALD C. COOK NUCLEAR PLANT, UNIT NOS. 1 AND 2

DOCKET NOS. 50-315 AND 50-316

1.0 INTRODUCTION

By letter dated May 15, 1992, the Indiana Michigan Power Company (the licensee) requested amendments to the Technical Specifications (TS) appended to Facility Operating License Nos. DPR-58 and DPR-74 for the Donald C. Cook Nuclear Plant, Unit Nos. 1 and 2. The proposed amendments would suspend the fire protection water flow testing requirements of TS 3/4.7.9.1, 3/4.7.9.2, and 3/4.7.9.5 until October 1993. These sections cover the fire pumps, water suppression systems, and hose stations. All other surveillance testing of fire protection systems will continue in accordance with the TS.

The next flow test requested by the TS is due on May 25, 1992. Due to insufficient time to allow for 30-day notice in the Federal Register, the licensee has submitted this change as an emergency TS change request.

2.0 EVALUATION

The fire protection water supply is provided from Lake Michigan via intake structure (i.e., forebay) where the fire pumps take direct suction. Since July 1990, the zebra mussel population at the D. C. Cook Nuclear Plant has continued to follow the explosive population trends already established within the eastern Great Lakes. Specifically, the densities within forebay structure where the fire pumps take suction have increased as follows despite periodic chemical treatments:

DATE	NO. OF MUSSELS/SQUARE METER
07/90	1
11/90	100
09/91	63,000

Future design changes and chemical treatments will reduce but not eliminate the number of live mussels within the intake structure.

The fire protection water system uses four high demand pumps, two electric motor driven and two diesel engine driven. The fire pumps discharge into underground ring headers around the outside of the plant and into the interior ring header in the turbine building which supplies various automatic sprinkler systems and hose stations throughout the entire plant.

The licensee is currently in the process of replacing the existing fire protection system in order to remove the fire protection systems from the zebra mussel risk associated with Lake Michigan. This will be accomplished by installing new fire protection water storage tanks, fire pumps, and water supply piping.

Until completion of the above modification, the licensee proposes to immediately suspend all fire protection water flow testing listed in TS 4.7.9.1, 4.7.9.2, and 4.7.9.5 in both units. These sections cover the fire pumps, water suppression systems, and fire hose stations. The period of relief needed would begin May 25, 1992 and remain in effect until the new fire pumps and dedicated water tanks are declared operable. The surveillance testing will be initiated at its normal frequency within four months of the modification being declared operable, with the exception of unit outage required testing which would be completed before the end of the next scheduled unit outage.

The proposed suspended surveillance testing involves testing the fire pumps to ensure they are operable, testing automatic valves to verify they actuate to the correct position, and performing flow tests to verify no flow blockage. All of this surveillance testing would introduce lake water into the fire protection system, thus introducing zebra mussels into the fire protection water supply piping.

Studies have shown that zebra mussels reproduce at an alarming rate (30,000 mussels per vent). Female zebra mussels begin development in the fall of the year in which they settle. Egg development is completed rapidly the following spring when water temperatures are 12 to 14°C (54 to 57°F). Fertilized eggs usually hatch into veligers in two to three days. Zebra mussel veligers could be drawn into the fire protection system during the testing of the fire protection water suppression systems. Veligers in the underground or above ground distribution piping can be controlled through chemical treatments with a biocide. However, if the veligers enter the suppression system piping, it would be very difficult to eliminate them from the system due to the design of the suppression systems.

The fire suppression systems use a series of dead end piping with progressively smaller sized pipes. This design feature inherently increases susceptibility to fouling and/or plugging. Flushing of the suppression systems through existing points (drains and inspector's test connections) is limited and cannot provide an effective flow throughout the entire system without considerable manpower and expense in obtaining flow through each dead end branch line. Thus, treatment of the system with a biocide is limited by this design feature. In addition, the biocide only kills the mussels, it does

not remove the mussel shells from the system. The flushing treatments will raise the fear of introducing new veligers into the fire protection system. Hence, the stagnant conditions of the fire suppression systems cannot be reasonably treated with the water treatment technologies that have been successful with free flowing or once through systems.

Delay in testing the fire protection system until October 1993 would not create a safety hazard. The fire protection system has not shown signs of system degradation that requires TS surveillance testing during this period of relief. The four high demand fire pumps have been performance tested on an eighteen-month frequency and the pump performance data from the past six years has been reviewed and the test results have remained consistent. The other components of the fire protection water system have also not shown signs of system degradation. The required system flushes have not indicated blockages within the system. The automatic valves have actuated to their correct position.

The licensee has taken measures to ensure that the zebra mussels have not infested the fire protection water system. To date, no evidence of live zebra mussels has been found within the fire protection system piping. This is based on inspections of the fire protection piping and valves.

Based on the above and the performance surveillance data of the fire protection pumps and valves, over the last five years at D. C. Cook, the staff finds the delay in testing of the fire pumps, sprinkler valves, and hose stations until October 1993, is acceptable.

3.0 EMERGENCY CIRCUMSTANCES

In the May 15, 1992 application, the licensee requested temporary emergency relief from performing the water testing requirements in TS Sections 4.7.9.1, 4.7.9.2, and 4.7.9.5 for both units. The next required surveillance is May 25. 1992. Performing the surveillance would result in the possible infestation of zebra mussels into the fire protection suppression systems. If the zebra mussels enter the fire protection systems, the licensee stated that the systems could not be counted on as reliable and would have to declare them inoperable. The majority of these systems have been installed to meet the requirements of 10 CFR Part 50, Appendix R. If the systems are declared inoperable, then the units would be required to shut down.

In accordance with 10 CFR 50.91(a)(5), the licensee has also provided information that the need for the emergency arose as a result of information obtained over the past few weeks and having become aware of the fact that other utility fire protection systems have already become zebra mussel infested. Accordingly, the Commission has determined that there are emergency circumstances warranting prompt approval by the Commission.

4.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

The Commission's regulations in 10 CFR 50.92 state that the Commission may make a final determination that a license amendment involves no significant hazards consideration if operation of the facility, in accordance with the amendment, 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 accident previously evaluated; or

(3) Involve a significant reduction in a margin of safety.

The proposed changes do not involve a significant hazards consideration because the operation of Donald C. Cook, Units 1 and 2 in accordance with these changes would not:

(1) Involve a significant increase in the probability or consequences of an accident previously evaluated.

The purpose of the fire protection system is to protect equipment from damage due to fires. The probability of a fire occurring is not impacted by the proposed change, which only involves temporary relief from the fire protection water flow surveillance testing requirements. The consequences of an accident will not be significantly increased because the reliability of the fire protection water system has been shown in testing over the past years. The fire protection systems has not shown signs of system degradation that would require TS surveillance testing during this 17 month period of relief. Consequently, the fire fighting capability will not be compromised. The fire protection water system will adequately perform its function in the event of a fire. This is based on actions taken to prevent zebra mussel infestation such as chemical biocide treatments five times a year and visual inspection during maintenance activities. To date, the licensee has found no signs of zebra mussel infestation in the fire protection systems. In addition, the licensee indicated that not performing the surveillance testing will help prevent mussel infestation. For these reasons, the staff concludes that the relief from fire protection water flow testing will not significantly increase the probability or consequences of an accident.

(2) Create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed amendments do not create the possibility of a new or different kind of accident from any accident previously evaluated because the proposed change involves no physical changes to the plant or changes in the way equipment is operated. The licensee's review of past system performance leads to the conclusion that systems will function adequately in the event of a fire, despite the temporary relief from testing. Consequently, fire fighting capability will not be compromised. The fire protection water system will adequately perform its function in the event of a fire. This is based on actions taken to prevent zebra mussel infestation such as chemical biocide treatments five times a year and visual inspection during maintenance activities. To date, the licensee has found no signs of zebra mussel infestation in the fire protection system. In addition, not performing the surveillance testing will help prevent mussel infestation. For these reasons, the staff concludes that the relief from conducting fire protection water flow surveillance testing will not create the possibility of a new or different kind of accident from any accident previously evaluated.

(3) Involve a significant reduction in a margin of safety.

The proposed amendments do not involve a significant reduction in the margin of safety because of the reliability of the fire protection water system over the past years. The fire protection system has not shown signs of system degradation that would warrant our need to continued the TS surveillance testing during this period of relief. Consequently, fire fighting capability will not be compromised. The staff finds the fire protection water system will adequately perform its function in the event of a fire. This is based on actions taken by the licensee to prevent zebra mussel infestation such as chemical biocide treatments five times a year and visual inspection during maintenance activities. To date, the licensee has found no signs of zebra mussel infestation in the fire protection systems. In addition, not performing the surveillance testing will help prevent mussel infestation. For these reasons, the staff concludes that any reduction in the margin of safety would not be significant. Consequently, the proposed amendments do not involve a significant reduction in the margin of safety.

5.0 STATE CONSULTATION

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

6.0 ENVIRONMENTAL CONSIDERATION

The amendments change the requirements with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes in surveillance requirements. The staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has made a final no significant hazards consideration with respect to these amendments. Accordingly, these amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of these amendments.

7.0 CONCLUSION

The staff has concluded, based on the considerations discussed above that (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: J. Stang

Date: May 22, 1992

DATED: MAY 22, 1992

AMENDMENT NO. 165 TO FACILITY OPERATING LICENSE NO. DPR-58-D. C. COOK
AMENDMENT NO. 150 TO FACILITY OPERATING LICENSE NO. DRP-74-D. C. COOK

Docket File
NRC & Local PDRs
PDIII-1 Reading
D.C. Cook Plant File
B. Boger
J. Zwolinski
L. Marsh
M. Shuttleworth
J. Stang
OGC-WF
D. Hagan, 3302 MNBB
G. Hill (8), P-137
Wanda Jones, MNBB-7103
C. Grimes, 11/F/23
C. McCracken 8/D/1
ACRS (10)
GPA/PA
OC/LFMB
W. Shafer, R-III

cc: Plant Service list

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

Sincerely,

Original signed by

John F. Stang, Project Manager
Project Directorate III-1
Division of Reactor Projects III/IV/V
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 165 to DPR-58
2. Amendment No. 150 to DPR-74
3. Safety Evaluation

cc w/enclosures:
See next page

OGC opinion - as modified 5/21/92

OFFICE	LA:PD31	PM:PD31	BC:SPLB	OGC	D:PD31
NAME	MShuttleworth	JStang	CMcCracken		LMarsh
DATE	5/21/92	5/21/92	5/21/92		5/21/92

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