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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 137TO FACILITY OPERATING LICENSE NO. DPR-58

AND AMENDMENT NO. 124TO 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 November 29, 1988, Indiana Michigan Power Company proposed an amendment to the technical specifications (TS) for the D.C. Cook Nuclear Plant, Units 1 and 2 to raise the trip set points and increase the span of allowable values for the 4KV Bus Loss of Voltage and 4KV Bus Degraded Grid Voltage actuation relays. The trip set points and allowable values of these relays are specified in TS 3/4.3.2, "Engineered Safety Feature Actuation System Instrumentation," Table 3.3.4.

An equipment trend investigation performed on the loss of voltage and degraded grid voltage relays, revealed that the "as found" trip set points of these relays were found to be beyond the technical specification allowable values. This caused repetitive violation of ESF Instrumentation Limiting Conditions For Operation Tolerances. Based on an engineering review, the licensee has proposed new trip set points and allowable values for these relays. The proposed values are also suitable for more accurate undervoltage relays which are scheduled to be installed during each units next refueling outage.

2.0 EVALUATION

The loss of voltage relays are installed to sense a loss of off-site or normal auxiliary power to the 4kV safety buses. These relays initiate load shedding and emergency diesel generator starting when loss of voltage has been sensed in a two-out-of-three coincident logic with a two second time delay. Degraded grid voltage relays are installed to sense degraded grid voltage at the 4kV safety buses and, on a two-out-of-three coincident logic with a two-minute time delay, trip open the reserve feed breakers and start the diesel generators. Once the emergency diesel generator has restored bus voltage to normal, safety loads (i.e., either safe shutdown or safety injection as required) are sequenced on to the safety buses. However, these relays are in force only when the safety buses are powered from the off-site power and are not normally active during unit operation. During unit operation, safety buses are powered from the generator auxiliary transformer through non-safety buses. The technical

specifications for Units 1 and 2 have existing set points of 79.9 percent (+.5%,-1.0%) for loss of voltage relays and 89.9 percent (+1.0%,-.5%) for the degraded grid detection relays. The licensee has proposed new trip set points of 82 percent with allowable values of ±3% (79%-85%) for loss of voltage relays and 90.95 percent with allowable values of ±1.5% (89.45%-92.45%) for the degraded grid voltage relays. The licensee is not proposing to change the time delays specified for loss of voltage relays (2 sec.) and degraded grid voltage relays (2 minutes). The acceptability of these time delays was evaluated in our previous SEs. In addition, the licensee is not proposing to change the minimum allowable 4kV bus loss of voltage or 4kV bus degraded voltage trip set points. These values remain to be 79% for the loss of voltage relays and 89.45% for the degraded grid voltage relays.

The proposed set points and ranges are based on the Electrical Auxiliary Bus Voltage analysis which was performed recently to ensure protection of Class 1E equipment and systems while preventing spurious engineered safety feature actuation. The analysis considers worst-case bus loading conditions and off-site system voltages. The analysis indicates a minimum possible steady-state bus voltage of 92.2%. The earlier analysis showed that minimum possible steady-state and transient bus voltage could be 93.3% and 87.3%, respectively.

The difference in the minimum steady-state values is attributed to the method of calculation changing from hand-calculated to a conservative computer modeling technique. The new study also considers the auxiliary system loading for an operating period of 1985-1990 and incorporates the latest transformer impedances and tap settings. The proposed technical specification change will result in a maximum 4kV bus degraded voltage trip set point of 369V which is 92.45% of nominal bus voltage. Since this set point is below the maximum conservatively calculated steady-state bus voltage of 92.7%, spurious actuation of the degraded grid voltage relays should not occur. The proposed technical specification change will result in a maximum 4kV bus loss of voltage trip set point of 3400V, which is 85% of the nominal bus voltage. Since this set point is below the minimum calculated transient bus voltage of 87.3%, spurious actuation of the loss of voltage relays is precluded.

Based on the above, we conclude that the trip set points and allowable values for the 4kV Bus Loss of Voltage relays and 4kV Bus Degraded Grid Voltage relays listed in Sections 6b, 8a and 8b of Table 3.3-4 are acceptable.

3.0 ENVIRONMENTAL CONSIDERATION

These amendments involve a change in a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and a change in a surveillance requirement. We have 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 previously issued a proposed finding that these amendments involve no significant hazards

consideration and there has been no public comment on such finding. 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 amendment.

4.0 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) issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Date: May 25, 1990

Principal Contributor: Om Chopra, SELB/DST