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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 68 TO FACILITY OPERATING LICENSE NO. DPR-74

INDIANA AND MICHIGAN ELECTIC COMPANY

DONALD C. COOK NUCLEAR PLANT UNIT NO. 2

DOCKET NO. 50-316

Background

License Amendment No. 6 to Facility Operating License DPR-74 was issued on June 16, 1978. The amendment modified the license by superceding the original license condition 2.C(3)(r) and imposing the following conditions.

> "A. Indiana and Michigan Power Company shall, prior to startup following the first regularly scheduled refueling outage, demonstrate the qualification of the safety injection system front panel, hot shutdown panel and auxiliary relay panels via in situ testing of or requalification and modification of the panels.
>
> B. Indiana and Michigan Power Company shall prior to startup following the first regularly scheduled refueling outage, complete documentation of the seismic qualification of switchboard and switchgear components, relays and pressure switches as identified in the safety evaluation which supports Amendment No. 6 to Facility Operating License No. DPR-74."

The staff evaluation requiring the subject license conditions indicated the following:

(1) results of in-situ testing of safety injection system front panel, hot shutdown panel and auxiliary relay panels for natural frequencies should be provided to demonstrate the conservatism of the original qualification,

(2) results of satisfactory seismic testing of various Agastat 7000 series relays and pressure switches should be provided, and

(3) complete documentation of the switch board and switchgear components should be provided to indicate how functionality verification was performed during testing.

The objective of this evaluation is to determine the advisability of the removal of the subject license condition based on the information provided by the licensee.

Evaluation

In order to support the removal of subject license conditions, the licensee provided the following information:

(A) Letter from G. P. Maloney to E. G. Case, NRC dated May 19, 1978 No. AEP:NRC:00001 with attachments

(B) Letter from J. E. Dolan to H. R. Denton, NRC dated December 18, 1979 No. AEP: NRC 00001A with attachments I and II

(C) Letter from G. P. Maloney to H. R. Denton, NRC dated March 28, 1980 No. AEP:NRC:00001B

(D) Letter from M. P. Alexich to H. R. Denton, NRC dated July 8, 1983 No. AEP: NRC:0001C with Attachment 1.

(E) Letter from M. P. Alexich to H. R. Denton, NRC dated June 1, 1984 No. AEP: NRC:0001D with attachments 1 and 2.

(F) Verbal clarification provided through telephone conference on 11/8/84

(G) Letter M. P. Alexich to H. R. Denton, NRC dated December 7, 1984 No. AEP:NRC:00001E with attachments

The December 18, 1979 letter contained detailed information about the in-situ testing of the three panels in question. Staff concerns were that for panels with natural frequencies below 10 Hz the input motion to the

panels would be considerably amplified, and the two directional excitation in an actual earthquake might cause cross coupling between modes that may not have been excited in the one directional test input; therefore, the qualification status of the panel mounted equipment would be in question. The licensee performed the required test and summarized the results as follows:

Safety Injection System Panel: No resonant frequencies were found in the range of interest. Also, no significant coupling between modes was observed. This demonstrates the acceptability of this panel. This item is closed.

Auxiliary Relay Panel: Resonant frequencies found were 11.2, 18.1 and 33.3 Hz. The lowest natural frequency of 11.1 compares against 14.9 Hz predicted. The value of 11.2 Hz is still above the range of significant amplification in the floor response spectrum and the margin against code allowable still exceeds 2.5. Also, no significant coupling between modes was observed. This is acceptable to the staff and this item is closed.

Hot Shutdown Panel: The resonant frequencies found are 16.1, 22.9 and 24.4 Hz. The predicted natural frequency of 16 Hz compares to 24.4 Hz observed. This means that the actual stresses will be lower than predicted. Also, no significant coupling between modes was observed. This is acceptable and this item is closed. The letter of June 1, 1984 indicated that the existing Marcoid pressure switches in safety related application are being replaced by Mercoid Type DAW pressure switches. The type DAW pressure switches were qualified through a successful testing program conducted by Action Environmental Testing Corporation (Test Report No. 1-16013-2). Additional verbal clarification was obtained on 11/8/84 and it was indicated that 18 out of 97 switches were already replaced in

the two units and the entire replacement program will be completed during the Unit 2 refueling outage, now scheduled for November, 1985. This is acceptable and this item is closed.

The letter of June 1, 1984 indicated that the existing Agastat 7000 series relays were qualified on the basis of similarity to Agastat E7000 series relays. The similarity review was performed on the basis of disassembly of both types and complete similarity between corresponding parts. The manner in which the similarity review was performed was clarified during the phone call of 11-8-84. Attachment 2 to the June 1, 1984 letter indicated that the E7000 series relays were qualified by tests in accordance with the requirements of IEEE 323-1974 and IEEE 344-1975 Standards. However, it was not clear from the June 1, 1984 submittal that the test response spectra envelope all the required response spectra at the location of installation of the relays in the plant. It was also observed that the qualified life of the subject relays is 10 years and 25,000 operations and should be replaced on or before those limits are reached. The licensee in a letter dated December 7, 1984 insured that the plant specific required response spectra for the subject relays are enveloped by the test response spectra and that a maintenance schedule has been implemented to maintain the relays in a qualified status. This is acceptable and this item is closed. The letter of June 1, 1984 also compared the existing relays manufactured by General Electric (GE) Co. with a similar GE relay qualified by testing. The evaluation of similarity was based on mounting method, physical dimensions and movable

elements. It is recognized that the evaluation of similarity is based on engineering judgement and this was clarified verbally during the phone conversation on 11/8/84. The staff accepts the evaluation of similarity by the licensee because these relays have relatively high natural frequencies (above 33 Hz). This item is closed.

Summary

Based on the above evaluation the staff concludes that the licensee has satisfactorily resolved the staff concerns relating to the subject license conditions and recommends that the license conditions 3A and 3B of License No. DPR-74 be removed.

7.0 ENVIRONMENTAL CONSIDERATION

This amendment involves a change in the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The staff has determined that the amendment involves 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 this amendment involves no significant hazards consideration and there has been no public comment on such finding. Accordingly, this amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR Sec 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 this amendment.

8.0 CONCLUSION

We have 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, and (2) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Dated: April 9, 1985

Principal Contributors:

G. Bagchi
D. Wigginton