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August 1, 1984
EF2-69657

Mr. James G. Keppler
Regional Administrator
Region III
U. S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Dear Mr. Keppler:

Reference: (1) Fermi 2
NRC Docket No. 50-341

(2) Letter, D. A. Wells to J. G. Keppler
November 11, 1983, EF2-65293

Subject: Final Report of 10CFR50.55(e) Item 104
"Premature Resetting of the Automatic
Digital Load Sequencer System (ADLSS)"

This is Detroit Edison's final report concerning premature resetting of the Automatic Digital Load Sequencer System (ADLSS). Item 104 was originally reported as a potential deficiency on October 4, 1983, and subsequently documented in Reference (2).

Description of Deficiency

During the performance of preoperational testing, the Division I ADLSS control logic prematurely reset before the sequencer completed the full cycle. An investigation revealed the reset would occur when the ADLSS output relay energized or deenergized 120VAC field relays. Further testing showed that the ADLSS would also reset when deenergizing 125VDC field relays. The problem was caused by the field relays inducing electronic noise on the low voltage control logic wiring in the ADLSS. This was confirmed by recording electronic noise of sufficient voltage at various ADLSS panel locations.

Analysis of Safety Implications

The function of the ADLSS is to initiate and control the sequential loading of the Emergency Diesel Generators (EDG's) in the event of a Loss of Offsite Power (LOP) or a LOP combined with a Loss of Coolant Accident (LOCA). The

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ADLSS accomplishes this by arming the closing relays of breakers and MCC contactors required for the safe shutdown of the reactor. Premature resetting of the ADLSS would inhibit the operations of this equipment. The equipment affected would depend upon the point in the sequencing cycle that the erroneous reset occurs. If a LOCA occurred following a LOP, a premature reset would prevent the ADLSS from tripping the EDG breaker, load shedding the busses, and sequencing on the loads. Therefore, the EDG could become overloaded when the ECCS equipment started.

Corrective Action

To prevent premature resetting of the ADLSS, the following modifications were made to both divisional cabinets:

- a. The control logic wiring was separated from the output relay contact wires to reduce the induced voltages.
- b. Low pass filters were installed in the control logic by the vendor, Vitro Laboratories, to mitigate the electric current induced by loads external to the cabinets.
- c. Surge suppression assemblies were added to all DC relay coils operated by the ADLSS to eliminate the voltage spikes caused by the relays operating.
- d. The effectiveness of the corrective action has been confirmed during preoperational testing.

This type of problem is unique to D.C. power supplies feeding digital logic circuits. The ADLSS is the only known combination of this type and this problem is considered an isolated occurrence.

This is Detroit Edison's final report on this item. If you have questions concerning this matter, please contact Mr. Lewis P. Bregni (313) 586-5083.

Sincerely,

cc: Mr. P. M. Byron
Mr. R. C. DeYoung
Mr. R. C. Knop

