Wayne H. Jens
Vice President
Nuclear Operations

**Detroit
Edison**

Fermi-2
6400 North Dixie Highway
Newport, Michigan 48166
(313) 586-4150

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 ouput relay
energized or deenergized 120VAC field relays. Further test-
ing 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 follow-
ing 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 elec-
    tric 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