Detroit Edison
2000 Second Avenue
Detroit, Michigan 48226
(313) 237-8000

December 3, 1982
EF2 - 60,333

Mr. L. L. Kintner
U. S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Division of Licensing
Washington, D. C. 20555

Dear Mr. Kintner:

Reference: Enrico Fermi Atomic Power Plant, Unit 2
NRC Docket No. 50-341

Subject: Channel Box Deflection

In our letter of January 15,1982 we committed to a program to address the concern of channel box deflection. The NRC Staff indicated their acceptance in the Fermi 2 Safety Evaluation Report Supplement 2. Subsequently the Licensing Review Group II (LRG II) has submitted a similar program to address the same subject which the NRC Staff has found acceptable.

In view of the simpler method of friction testing described in the LRG II position, Detroit Edison herewith intends to modify our previous commitment and adopt the LRG II position as detailed in the attachment.

Sincerely,

Harry Tauber

B001

Harry Tauber
Group Vice President

Attachment

cc: Mr. B. Little

CHANNEL BOX DEFLECTION GUIDELINES

The following general guidelines minimize the potential for and detect the onset of channel bowing:

A. Records will be kept of channel location and exposure for each operating cycle.

B. Channels shall not reside in the outer row of the core for more than two operating cycles.

C. Channels that reside in the periphery (outer row) for more than one cycle shall be situated in a core location each successive peripheral cycle which rotates the channel so that a different side faces the core edge.

D. At the beginning of each fuel cycle, the combined outer row residence time for any two channels in any control rod cell shall not exceed four peripheral cycles.

After core alterations (i.e., reload) and before reaching 40% thermal power, a control rod drive friction test* shall be performed for those cells exceeding the above general guidelines or containing fuel channels with exposures greater than 30,000 MWd/T (associated fuel bundle exposures). After the Technical Specification scram speed surveillance test on each rod, as required by BWR/4 Standard Technical Specification 4.1.3.2.a, each control rod meeting the above conditions will be allowed to settle a total of two notches, one notch at a time, from the fully inserted position.

Total control rod drive friction is acceptable if the rod settles, under its own weight, to the next notch within approximately ten seconds. If the rod settles too slowly, a rod block alarm will actuate, indicating possible impending channel box-control blade interference. The results of this test will be considered acceptable if no rod block alarm is received. This testing will give an early indication of this interference and will prompt an investigation into the source of the friction. If necessary, corrective action will be completed before startup after the next core alteration.

In lieu of friction testing, fuel channel deflection measurements may be used to identify the amount of remaining channel lifetime for channels exceeding 30,000 MWd/T (associated fuel bundle exposures).

In the future, analytic channel lifetime prediction methods, benchmarked by periodic deflection measurements of a sample of the highest duty fuel channels, could be used to ensure clearance between control blades and fuel channels without additional testing.

* This control rod settling friction test, also recommended by GE, provides an equivalent level of the tests described in NEDO-21354. This test provides adequate assurance of the scram function. The amount of friction detectable by this test is ~250 lbs. Control Rod Drive Tests indicate that the CRD will tolerate a relatively large increase in driveline friction (350 lb) while still remaining within technical specification limits. The control blade is in its most constrained, highest friction location when it is fully inserted. The ability of the blade to settle from this position demonstrates that the total drive line friction is less than the weight of the blade (~250 lbs).