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June 16, 1981

EF2 - 53699

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

Dear Mr. Kintner:

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

Subject: Response to NRC Question 020.27

The subject question requested a description of the effects on the safety and operability of the CRD Hydraulic System if the drive/cooling water pressure control valve, F003, fails either closed or open.

As the designer of the CRD Hydraulic System, General Electric prepared the following response.

The function of the F003 pressure control valve (PCV) is to provide a means of adjusting the drive water header and cooling water header pressures. The F003 PCV is a manually controlled motor operated valve which is controllable from the main control room. Indicating lights are provided in the control room for the valve full open and full closed positions. Adjustment of the F003 PCV in concert with adjustments to the F002 flow control valve permit adjustment of the drive water header pressure to approximately 260 psi above vessel pressure while, at the same time, maintaining the drive cooling water header pressure at approximately 20 psi above vessel pressure.

If the F003 PCV were to fail to a full-open position, the cooling water pressure would increase and the drive water pressure would decrease. The resulting cooling water pressure increase could cause control rods to drift inward. The existence of rod drifts would be alarmed to the control room operator for appropriate action. The resulting drop in drive water pressure would make normal control rod notch movements impossible but would not affect the ability of the scram function.

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Conversely, if the F003 PCV were to fail to a full-closed position, the cooling water pressure would decrease while the drive water pressure would increase. The reduction in cooling water pressure (and flow) would eventually lead to high CRD temperature being alarmed in the control room. In the limiting case, the resulting increase in drive water pressure would reach up to the shutoff pressure of the supply pump (1600 psig). The occurrence of this condition during withdrawal of a drive at zero reactor pressure will result in a drive pressure increase from 260 psig to no more than 1600 psig. Calculations indicated that the drive would accelerate from 3 inch/sec to approximately 6 inch/sec. The rod movement would stop as soon as the driving signal is removed.

In both of the cases described above, the manually operated bypass PCV (F004) in conjunction with isolation gate valves at upstream and downstream of the F003 PCV would enable the operators to take corrective action.

In conclusion, although the failure to the full-open or full-closed position of the drive/cooling water PCV would cause perturbation in the CRD system operation, it does not present a safety problem or affect the scram capability of the CRD system.

Sincerely,

W. F. Colbert
Technical Director
Enrico Fermi 2

WFC/MLB/dk