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10CFR50.73
November 15, 1996
NRC-96-0097

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D. C. 20555

Reference: Fermi 2
NRC Docket No. 50-341
NRC License No. NPF-43

Subject: Licensee Event Report (LER) No. 96-017

Pursuant to 10 CFR 50.73, Detroit Edison is submitting the enclosed LER No. 96-017 regarding the failure of multiple Safety Relief Valves (SRVs) to open within their required technical specification (TS) allowable tolerance. This is being reported as a condition that had the potential to prevent the fulfillment of an accident mitigation safety function.

On October 25, 1996, Detroit Edison determined that eleven of the fifteen pilot valves would not have lifted within the TS one percent allowable tolerance. Subsequent testing determined that of the fifteen pilot valves, six would not open under maximum applied test pressure, eight would have lifted at pressures greater than the one percent allowable tolerance, and one valve would have lifted within the one percent allowable tolerance. Detroit Edison has taken comprehensive action in response to these test results.

A thorough root cause investigation into the magnitude of the condition for Cycle 5 in comparison to previous operating cycles was initiated. Detroit Edison, after consultation with both Target Rock (the SRV vendor) and General Electric, believes that the cause of the pilot valve setpoint drift poor performance is oxide bonding between the pilot valve disc and seat. The investigation includes review of system process chemistry results, SRV location and pilot valve serial number trend data, and differences related to plant operation. Two of the plant operational differences were the number of heatup and cooldown evolutions and having the SRVs installed for approximately six months prior to restart from the fourth refueling outage. In addition, the records for the previous two pilot valve refurbishment and recertification processes have been reviewed. The pilot valves were refurbished in accordance with Target Rock procedures and recertified in accordance with approved test facility procedures under the supervision of Detroit Edison personnel with no significant anomalies identified. As part of this ongoing investigation, a representative sample of the pilot valve discs is being sent to an off-site laboratory for a comprehensive composition analysis of the corrosion bond material.

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In addition to the root cause investigation, transient analyses for Cycle 5 performance with the as-found conditions as well as hypothetical analyses for Cycle 6 performance were performed. As detailed in the enclosed LER, the analysis demonstrates that the ASME Code allowable peak reactor vessel pressure limit would not have been exceeded for Cycle 5 using the reload licensing analysis assumptions and the as-found conditions. For Cycle 6, the reactor core configuration results in even more margin over the Cycle 5 configuration. Therefore, poor SRV setpoint test performance did not have the potential to adversely impact the health and safety of the public.

Detroit Edison has been, and will continue to be, involved with industry experience regarding SRV setpoint drift performance for more than fourteen years. Fermi 2 was a lead plant for the unsuccessful implementation of a molybdenum material as a replacement disc in the pilot valve assemblies, installing eight of the replacement discs in 1986. Detroit Edison has been monitoring the use of the new platinum alloyed pilot valve discs, being used in several plants, for results prior to implementation at Fermi 2. Detroit Edison continues to be committed to implementing the best solution for addressing the SRV setpoint drift reliability issue.

Detroit Edison believes that operation for Cycle 6 does not have the potential to adversely impact the health and safety of the public. The SRV pilots in service for Cycle 6 will not be installed in an idle configuration for a prolonged period of time in a warm and moist environment, it is expected that the recent turbine upgrades will result in better plant performance with fewer power reductions, and Cycle 6 is scheduled for approximately 486 at power days. This is significantly less than the Cycle 5 operating length of 597 days, and more in line with Cycle 3 and Cycle 4 operating durations. In addition, the Cycle 6 reload licensing overpressure analysis has more margin than the Cycle 5 overpressure analysis due to Cycle 6 core performance characteristics. Hypothetically, using Cycle 5 SRV pilot valve assembly as-found setpoints applied to Cycle 6 limiting overpressure transient (all-M3IV closure with scram on high neutron flux) would result in a steam dome pressure of 1,325 psig and a peak RPV bottom pressure of 1,344 psig.

Nonetheless, Detroit Edison does not consider Fermi 2 historical SRV performance to be acceptable in the long term. Detroit Edison is aggressively pursuing resolution of this issue.

The following commitments are made in this LER.

1. All fifteen Cycle 5 SRV pilot valve assemblies have been replaced with refurbished and recertified pilot valve assemblies. The removed SRV pilot valve assemblies are being examined and refurbished, using new platinum alloyed Stellite 6B discs, and recertified. Platinum acts as an oxygen recombiner catalyst and industry results available to date indicate reduced setpoint drift. The fifteen Cycle 5 refurbished SRV pilot valve assemblies will be installed by June 1, 1997, during a planned Cycle 6 mid-cycle outage.

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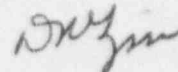
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2. The investigation into the as-found SRV setpoint drift condition is being aggressively pursued by Detroit Edison. Analysis of the composition of representative pilot discs removed during the fifth refueling outage is one of the investigative actions being pursued. Other actions as determined during the ongoing investigation will be pursued as part of our corrective action program.
3. An amendment application to expand the technical specification allowable setpoint tolerance to plus or minus three percent will be submitted to the NRC by April 18, 1997.
4. A modification to actuate the pilot in relief mode during pressure transients is being evaluated. If evaluation determines the installation of such a modification will result in an increase in the overall safe operation of Fermi 2, then the modification will be implemented during the sixth refueling outage.
5. Detroit Edison will continue to follow industry developments and the Fermi 2 site specific investigation related to the improved reliability of SRV setpoint performance. If better solutions than those proposed above are identified, Detroit Edison will evaluate those approaches for possible implementation.

If you have any questions, please contact Ken Riches at (313) 586-5529.

Sincerely,



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