B. Ralph Sylvia
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NRC-88-0236

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

References: 1) Fermi 2
NRC Docket No. 50-341
NRC License No. NPF-43

2) NRC Bulletin No. 88-08 and Supplement 1,
"Thermal Stresses in Piping Connected
to Reactor Coolant Systems" dated
June 22, 1988 and June 24, 1988, respectively

Subject: Response to NRC Bulletin No. 88-08, and Supplement 1

This letter is to provide Detroit Edison's response to NRC Bulletin 88-08, and Supplement 1 (Reference 2). Detroit Edison has performed a comprehensive review of Fermi 2 reactor coolant systems (RCSs) to identify any connected, unisolable piping that could be subjected to temperature distributions which would result in unacceptable thermal stresses.

Our review has determined that there are no unisolable sections of piping connected to the RCS at Fermi 2 that could be subjected to unacceptable thermal stresses due to temperature oscillations induced by leaking valves. The detailed response to the Bulletin is provided in Enclosure 1 of this letter.

If you have any questions, please contact Mr. Girija Shukla at (313) 586-4270.

Sincerely,

B Ralph Sylvia

Enclosure

cc: Mr. A. B. Davis
Mr. R. C. Knop
Mr. T. R. Quay
Mr. W. G. Rogers

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I, B. RALPH SYLVIA, do hereby affirm that the foregoing statements are based on facts and circumstances which are true and accurate to the best of my knowledge and belief.

B. Ralph Sylvia
B. RALPH SYLVIA
Senior Vice President

On this 30th day of September, 1988, before me personally appeared B. Ralph Sylvia, being first duly sworn and says that he executed the foregoing as his free act and deed.

Shirley L. Carlson
Notary Public
SHIRLEY L. CARLSON
Notary Public, Wayne County, MI
My Commission Expires Jan. 28, 1991

Response to NRC Bulletin 88-08 & Supplement 1
"Thermal Stresses in Piping Connected to Reactor Coolant Systems"

Bulletin 88-08 and Supplement 1 requested licensees to review systems connected to the Reactor Coolant System (RCS). The purpose was to determine whether sections of piping connected to the RCS, which cannot be isolated, will be subjected to unacceptable stresses from temperature stratification or temperature oscillations. The postulated water source was valve leakage. The review excluded conditions which were previously evaluated and documented in the design stress analysis of the piping. Where piping may have been subjected to excessive thermal stresses, the need and extent of non-destructive examination was to be addressed. Also, those measures taken to ensure that fatigue failure would not occur during the remaining life of the unit were to be discussed.

A comprehensive review of the applicable Fermi 2 piping was performed. It was comprised of a list of all RPV nozzles, and piping, including branch lines, from the nozzle to the outboard isolation valve(s). The system operating characteristics were then examined to determine if there was any potential for either temperature stratification or oscillations that could be induced by leaking valves. The plant's normal operating conditions were considered when establishing the temperatures and pressures of the RCS and piping upstream of the isolation valve(s). The results of this review determined that Fermi 2, under normal operation, does not have any sections of piping which could not be isolated and which might be subjected to unacceptable thermal cycle loadings due to leakage past valves. A summary of this review is provided below for each system which can inject water into the RCS.

- High Pressure Coolant Injection System/Reactor Core Isolation Cooling System

  The pressure developed by the High Pressure Coolant Injection system and Reactor Core Isolation Cooling system can exceed the pressure of the RCS during the system surveillance tests. Even if the isolation valves were to leak during testing, the duration and frequency of testing is not sufficient to justify a concern over objectionable thermal cycle induced fatigue failure. The isolation valves are monitored for leakage during the local leak rate testing (LLRT). Normally, these systems are in standby at a pressure considerable below RCS pressure.

  Valve leakage out of the RCS would not cause any thermal fatigue concerns since the magnitude and number of cycles of temperature

fluctuations discussed in Bulletin 88-08 would not exist due to lack of intersecting flows.

- Control Rod Drive Hydraulic System

  Control Rod Drive (CRD) Hydraulic system pressure exceeds the pressure of the RCS under normal operating conditions. However, the CRD is designed for cooling water seal leakage into the reactor pressure vessel. Therefore, the postulated valve leakage scenario is bounded by the current system design.

- Standby Liquid Control System

  The Standby Liquid Control system is isolated with explosive valves that prevent leakage into the RCS. The system is not normally maintained under pressure. Surveillance testing frequency is also low. Therefore, no concern over thermal stressing remains.

- Residual Heat Removal System/Core Spray System

  The Residual Heat Removal system and Core Spray system are in standby conditions under normal operation, charged with the keep fill system to a pressure considerably below RCS pressure. Leakage past the isolation valves would not occur during testing since the RCS pressure is greater than the pump's shutoff heads. Any significant leakage out of the RCS would be detected through the system over pressure annunciators. Also, as previously discussed, leakage out of the RCS does not cause the same thermal fatigue concerns discussed in Bulletin 88-08.

- Feedwater System/Reactor Water Cleanup Return Line

  The feedwater system and the Reactor Water Cleanup Return to Feedwater are in operation when the RCS is at operating pressure and, therefore, valve leakage is not applicable. (Cracking problems have been reported in the industry with feedwater nozzles due to temperature oscillations from continuous cold water injection under low power operation. However, the analysis required by NUREG 0619 considers this condition).

In conclusion, Fermi 2 does not have any normally isolated cold water systems connected to the RCS that are pressurized above the normal operating pressure on a continuous basis. Therefore, it is not possible for potentially leaking isolation valves to allow cold water to be injected into the RCS and cause an unanalyzed thermal cyclic loading in unisolable RCS piping.