B. Ralph Sylvia
Group Vice President

Detroit Edison

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January 27, 1988
NRC-87-0177

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) Detroit Edison to NRC, "Fermi 2 Operation with Reduced Feedwater Temperature and Moisture Separator Reheater Out-of-Service (TAC-65400)," dated September 11, 1987 (NRC-87-0129)

Subject: Proposed Technical Specification (License Amendment) Change - Minimum Critical Power Ratio (3/4.2.3) and Main Turbine Bypass System (3/4.7.9)

On September 11, 1987, Detroit Edison committed to the NRC (Reference 2) to provide a proposed Technical Specification change clarifying the bases of operation with a Moisture Separator Reheater (MSR) out-of-service. Pursuant to 10CFR50.90, Detroit Edison Company hereby proposes to amend Operating License NPF-43 for the Fermi 2 plant by incorporating the enclosed changes into Technical Specification 3/4.2.3, Minimum Critical Power Ratio and 3/4.7.9, Main Turbine Bypass System. Detroit Edison also proposes to amend Bases 3/4.2.3 and 3/4.7.9.

Detroit Edison has evaluated the proposed Technical Specifications against the criteria of 10CFR50.92 and determined that no significant hazards consideration is involved. The Fermi 2 Onsite Review Organization has approved and the Nuclear Safety Review Group has reviewed these proposed Technical Specification changes and concurs with the enclosed determinations.

Pursuant to 10CFR170.12(c), enclosed with this amendment is a check for one hundred fifty dollars ($150.00). In accordance with 10CFR50.91, Detroit Edison has provided a copy of this letter to the State of Michigan.

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If you have any questions, please contact Ms. Lynne Goodman at (313) 586-4211.

Sincerely,

B Ralph Sylvia

Enclosure

cc: Mr. A. B. Davis
Mr. E. G. Greenman
Mr. T. R. Quay
Mr. W. G. Rogers
Supervisor, Advanced Planning and Review Section,
Michigan Public Service Commission

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
Group Vice President

On this 27th day of January, 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.

Karen M. Reed

Notary Public

KAREN M. REED
Notary Public, Monroe County, Mich.
My Commission Expires May 14, 1990

BACKGROUND/DISCUSSION

The current Technical Specifications 3/4.2.3, Minimum Critical Power Ratio, and 3/4.7.9, Main Turbine Bypass System, are not explicit with regards to the operating limitations with the Moisture Separator Reheater (MSR) out-of-service. The proposed change request:

A. Modifies Technical Specification 3/4.7.9 by specifying operating limitations of the MSR.

B. Demonstrates conservatism to the existing transient analysis and clarifies that the limits in Technical Specification 3/4.2.3, Figure 3.2.3-1 (Curve B) bounds the operating scenario for the MSR out-of-service.

C. Provides an additional limitation (Curve C) to Technical Specification 3/4.2.3, Figure 3.2.3-1 for the operating scenario of an inoperable main turbine bypass and MSR out-of-service.

The Technical Specification Figure 3.2.3-1 provides two operating limit Minimum Critical Power Ratio (MCPR) curves which are based on the delta-CPRs resulting from the following transients:

Curve A provides the MCPR limit assuming operation above 25 percent rated thermal power with both the MSR and main turbine bypass system operable. The curve was developed based upon the operating MCPR limits for a Rod Withdrawal Error transient (UFSAR, Section 15.4.2) and a Main Turbine Trip with Turbine Bypass Failure transient (UFSAR, Section 15.2.3). The analysis of the Main Turbine Trip with Turbine Bypass Failure takes credit for the steam flow (10 percent of rated) to the MSR. As shown in UFSAR Figure 15.0-1, the operating limit MCPR for the two limiting transients is bounded by the limits of 1.24 @ T = 0 and 1.25 @ T = 1 as provided in Curve A.

Curve B provides the MCPR limit assuming operation above 25 percent rated thermal power with the MSR operable and the main turbine bypass system inoperable. The curve was developed based upon the operating MCPR limits for a Feedwater Controller Failure with Inoperable Turbine Bypass transient. The analysis of the Feedwater Controller Failure transient also takes credit for steam flow (10 percent of rated) to the MSR. With the postulated inoperability of the main turbine bypass system, the Feedwater Controller Failure becomes the most limiting transient and yields a MCPR limit of 1.24 @ T = 0 and 1.31 @ T = 1.

The main turbine bypass system is an active bypass system designed to open the bypass valves in the event of a turbine trip to decrease the severity of the pressure transient. Each valve is sized to pass a nominal 13 percent reactor steam flow in the full-open position for a controlled total bypass of approximately 26 percent reactor steam flow. The primary purpose of the MSR is to improve cycle efficiency by using primary system steam to heat the high pressure turbine exhaust before it enters the low-pressure turbines. In doing so, it also provides a passive steam bypass flow of about 10 percent that mitigates the early effects of over-pressure transients.

The main turbine bypass system and the MSR combines for a total (active and passive) reactor steam flow bypass capability of 36 percent. Curve A represents the MCPR limitations when both the MSR and main turbine bypass system are operable. This represents a total reactor steam flow bypass capability of 36 percent. Curve B represents the MCPR limitations when the main turbine bypass system is inoperable. This represents a total reactor steam flow bypass capability of 10 percent (through the MSR). Curve B represents the more limiting transient scenario of the two curves.

A Main Turbine Trip with Turbine Bypass Failure transient assuming an inoperable MSR results in a MCPR limit of 1.19 @ T = 0 and 1.30 @ T = 1. This transient is bounded by the MCPR limits for a Feedwater Controller Failure with Inoperable Turbine Bypass (Curve B). Additionally, the consequences of a Feedwater Controller Failure, assuming an operable main turbine bypass system and inoperable MSR, results in a less severe (smaller delta-CPR's) transient than the Feedwater Controller Failure with Inoperable Turbine Bypass (Curve B). The consequences are less severe because the Feedwater Controller Failure event with inoperable MSR provides approximately 26 percent bypass flow capability while the Feedwater Controller Failure event with inoperable main turbine bypass provides approximately 10 percent bypass flow capability.

Considering the Main Turbine Trip with Turbine Bypass Failure and the Feedwater Controller Failure transients, the resulting MCPR limits from an operational condition with the MSR inoperable and main turbine bypass operable would not result in a pressure transient as severe as that postulated for a Feedwater Controller Failure with Inoperable Turbine Bypass. Thus, these MCPR limits are bounded by those limits in Curve B. Since Curve B is bounding, clarifying the applicability of Curve B when the MSR is inoperable or when the main turbine bypass is inoperable, would allow the plant greater operational flexibility should there ever be a need to perform preventative or corrective maintenance above 25 percent rated thermal power.

Additionally, Detroit Edison requests the incorporation of Curve C to Technical Specification 3/4.2.3, Figure 3.2.3-1. Curve C provides the MCPR operating limit assuming operation above 25 percent rated thermal power with both the MSR and the main turbine bypass inoperable. The curve was developed based upon the operating MCPR limits for a Feedwater Controller Failure with Inoperable Turbine Bypass transient. This transient is the same as that used to develop Curve B, however, the analysis of the Feedwater Controller Failure transient did not, in this case, take credit for steam flow to the MSR. As a result, the analysis yields a MCPR limit of 1.28 @ T = 0 and 1.35 @ T = 1. As in the case of the two existing curves, Curve C provides the most limiting transient for the specified bypass condition that results in the largest reduction of CPR. This assures that the fuel cladding integrity Safety Limit MCPR of 1.06 is not exceeded during any anticipated abnormal operation transient.

SIGNIFICANT HAZARDS CONSIDERATION

In accordance with 10CFR50.92, Detroit Edison has made a determination that the proposed amendment involves no significant hazards considerations. To make this determination, Detroit Edison must establish that operation in accordance with the proposed amendment would not: 1) involve a significant increase in the probability or consequences of an accident previously evaluated, or 2) create the possibility of a new or different kind of accident from any accident previously evaluated, or, 3) involve a significant reduction in a margin of safety.

1) The proposed change clarifying the basis of operation with the Moisture Separator Reheater (MSR) out-of-service does not involve a significant increase in the probability of an accident previously evaluated as the MCPR Curve B of Figure 3.2.3-1 is still applicable and bounding to this condition. The MSR is a passive bypass capable of passing a nominal reactor steam flow of 10 percent. The consequences of a Main Turbine Trip with Bypass Failure transient with the MSR inoperable and Feedwater Controller Failure transient with the MSR inoperable result in less severe transients (smaller delta-CPR's) than that of the Feedwater Controller Failure with Inoperable Turbine Bypass. The incorporation of MCPR Curve C of Figure 3.2.3-1 does not involve a significant increase in the probability of an accident previously evaluated as the reduction of CPR's specified for the operating scenario of an inoperable main turbine bypass and MSR out-of-service continues to assure that the Safety Limit MCPR of 1.06 is not exceeded. The operating limitations, provided in Curve C, are based upon the consequences of a Feedwater Controller

Failure with Inoperable Turbine Bypass transient with no steam flow through the MSR.

2) The proposed change clarifying the basis of operation with MSR out-of-service does not create the possibility of a new or different kind of accident from any accident previously evaluated. The proposed change only addresses the operating MCPR limits and does not involve any hardware or physical changes to the plant. The consequences of the Main Turbine Trip with Turbine Bypass Failure and MSR inoperable have been evaluated and are bounded by the limits of MCPR Curve B. The consequences of a Feedwater Controller Failure assuming an operable main turbine bypass system and inoperable MSR are less severe because the transient provides approximately 26 percent bypass flow capability while the Feedwater Controller Failure with Inoperable Turbine Bypass transient provides approximately 10 percent bypass flow capability. These events result in a less severe pressure transient than that postulated for a Feedwater Controller Failure with Inoperable Turbine Bypass. The incorporation of MCPR Curve C of Figure 3.2.3-1 continues to assure that the Safety Limit CPR of 1.06 is not exceeded.

3) The proposed change clarifying the basis of operation with MSR out-of-service does not involve a significant reduction in a margin of safety as detailed in 1) and 2) above. The Feedwater Controller Failure with Inoperable Turbine Bypass as specified by MCPR Curve B remains the bounding limit. The incorporation of MCPR Curve C of Figure 3.2.3-1 does not involve a significant reduction in a margin of safety as detailed in 1) and 2) above. The Safety Limit MCPR of 1.06 has not been reduced.

ENVIRONMENTAL IMPACT

Detroit Edison has reviewed the proposed Technical Specification changes against the criteria of 10CFR51.22 for environmental considerations. As shown above, the proposed changes do not involve a significant hazards consideration, nor significantly change the types or significantly increase the amounts of effluents that may be released offsite, nor significantly increase individual or cumulative occupational radiation exposures. Based on the foregoing, Detroit Edison concludes that the proposed Technical Specifications do meet the criteria given in 10CFR51.22(c)(9) for a categorical exclusion from the requirement for an Environmental Impact Statement.

CONCLUSION

Considering the Main Turbine Trip with Turbine Bypass Failure and the Feedwater Controller Failure transients, the resulting MCPR limits from an operational condition with the MSR inoperable and the main turbine bypass operable would not result in a pressure transient as severe as that postulated for a Feedwater Controller Failure with Inoperable Turbine Bypass (basis for Curve B). Thus, these MCPR limits are bounded by those limits in Curve B. Since Curve B is bounding, clarifying the applicability of Curve B when the MSR is inoperable or when the main turbine bypass is inoperable, would allow the plant greater operational flexibility should there ever be a need to perform preventative or corrective maintenance above 25 percent rated thermal power. Additionally, the incorporation of MCPR Curve C of Figure 3.2.3-1 would allow the operation with an inoperable main turbine bypass and MSR out-of-service. The limits provided in Curve C are based upon a Feedwater Controller Failure with Turbine Bypass Failure transient assuming no steam flow through the MSR. The proposed scenario of operating with an inoperable main turbine bypass and MSR out-of-service is offset by the restrictions of MCPR limits which assure that the Safety Limit of 1.06 is not exceeded.

Based on the evaluations above: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (2) such activities will be conducted in compliance with the Commission's regulations and proposed amendments will not be inimical to the common defense and security or to the health and safety of the public.

PROPOSED PAGE CHANGES