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Edison

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Nuclear
Operations

August 4, 1988
NRC-87-0132

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: Proposed Technical Specification Changes to Include
Single Recirculation Loop Operation (SLO)

Pursuant to 10CFR50.90, Detroit Edison Company hereby proposes to amend Operating License NPF-43 for the Fermi 2 plant by incorporating the enclosed change into the Plant Technical Specifications. Appropriate changes to the bases are also proposed.

Single recirculation loop operation at reduced power is highly desirable in the event a recirculation pump or other component failure renders one loop inoperative. Thus, we have completed the safety evaluation of plant operation with a single recirculation loop and concluded that Fermi 2 can operate up to 70% power with one recirculation loop out of service.

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 the proposed Technical Specifications and concurs with the enclosed determinations.

Pursuant to 10CFR170.12(c), enclosed with this amendment request is a check for one hundred fifty dollars (\$150.00).

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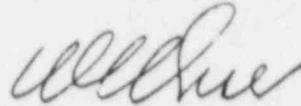
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In accordance with 10CFR50.91, Detroit Edison has provided a copy of this letter to the State of Michigan.

If you have any questions, please contact Mr. Glen Ohlemacher at (313) 586-4275.

Sincerely,



Enclosure

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

I, WILLIAM S. ORSER, 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.

William Orser

WILLIAM S. ORSER
Vice President Nuclear Operations

On this 4th day of August, 1988, before me personally appeared William S. Orser, being first duly sworn and says that he executed the foregoing as his free act and deed.

Marcia Buck

Notary Public

MARCIA BUCK
Notary Public, Washtenaw County, MI
My Commission Expires Jan. 11, 1992

*Acting in Monroe
County, MI*

Enclosure 1

Technical Evaluation

Background/Discussion

Single Loop Operation (SLO) capability provides increased operational flexibility for Fermi 2. Detroit Edison will be able to operate Fermi 2 up to 70% power with one recirculation loop out of service. This provides maintenance schedule flexibility in addition to plant availability improvements without compromising safety.

Detailed justifications of the changes to support single loop operation are provided by a safety evaluation which includes transient and accident analyses investigation similar to those reported in the UFSAR. This is provided in Enclosure 2. It is provided in FSAR format and will be included in a regular UFSAR update. A summary is provided below:

- (1) The Minimum Critical Power Ratio (MCPR) safety limit is increased during SLO primarily because of slightly increased uncertainties, but the MCPR operating limit does not change. The effect of transients with single loop operation is less severe than those which occur during two loop operation. This is due primarily to the reduced initial power level assumed in the transient analyses. These analyses have demonstrated that, even though the MCPR fuel cladding integrity safety limit is higher, there is sufficient MCPR margin in the existing operating limits to assure safe operation.
- (2) Appendix K (LOCA) large break analyses of the single recirculation loop operation result in higher peak clad temperature (PCT). The Maximum Average Planar Linear Heat Generation Rate (MAPLHGR) limits have been reduced in order to maintain PCT below 10CFR50.46 limits.
- (3) NRC's stability criteria are incorporated in the high power/low flow region for both single loop or two-loop operations to avoid potential limit cycle oscillations and to suppress them when detected.
- (4) All applicable parameters of the containment analysis are below their design limits for SLO.
- (5) Vessel internal vibration was also examined. Test data from BWR 4 prototype plants and other BWR plants were used to conservatively define a maximum pump operating speed for Fermi 2 during single loop operation to ensure vibration levels are within acceptable limits.

Detroit Edison has proposed stability requirements following the guidance of General Electric SIL-380. In addition, the recent experience at LaSalle has been examined for other changes which may be warranted at this time. Detroit Edison is actively participating in the BWR Owners Group efforts to examine this issue and make appropriate recommendations.

In this proposal, Detroit Edison has changed ACTIONS which formerly were required within 15 minutes to immediate ACTIONS. This is appropriate since the LaSalle incident has shown that in many cases these ACTIONS are necessary in a much shorter time frame.

While the BWR Owners Group efforts are on-going, Detroit Edison has modified its operating procedures to provide prescriptive actions related to stability concerns. These changes are consistent with the interim NRC guidance provided in NRC Bulletin 88-07.

Detroit Edison is including in this proposal an improvement to the jet pump surveillance requirements contained in Specification 4.4.1.2. Currently the surveillance requirements for the jet pumps must be performed prior to THERMAL POWER exceeding 25% of RATED THERMAL POWER and at least once per 24 hours thereafter.

However, meaningful performance of these surveillance requirements requires THERMAL POWER to be greater than 25% of RATED THERMAL POWER. This is because the required flow measurements, when taken at lower flows which correspond to lower power levels, display an inherent variability which make the comparisons meaningless. The flow variation acts to mask any variation which would be caused by an inoperable jet pump.

Detroit Edison therefore proposes to modify specification 4.4.1.2 to require monitoring for jet pump OPERABILITY only after exceeding 25% of RATED THERMAL POWER. This will ensure that monitoring takes place only when the results will be meaningful and will prevent unnecessary delays in power ascension in order to resolve discrepant test results due to meaningless flow comparisons. To ensure monitoring begins promptly after exceeding 25% of RATED THERMAL POWER, Detroit Edison proposes to begin monitoring within 12 hours of exceeding 25% of RATED THERMAL POWER.

Significant Hazards Consideration

In accordance with 10CFR50.92, Detroit Edison has reviewed the attached proposed technical specification and has concluded that it does not involve a significant hazards consideration. The basis for

this conclusion is that the three criteria of 10CFR50.92(c) are not compromised.

Evaluation of the accident and transients scenarios with a single recirculation loop operating has resulted in revisions to the Technical Specifications. These changes are made to assure adequate safety margin is maintained during single loop operation. In addition, implementation of the stability surveillance technical specification changes assures that limit cycle oscillation is detected and suppressed. The increased surveillance in the low-flow high power region of the operating map also provides further assurance that single loop operation can be performed safely.

- (1) The proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

The changes made for single loop operation do not increase the probability of any evaluated accidents because plant equipment and systems still operate within their design limits. In addition, evaluation of accident and performance analyses have been performed for single loop operation:

- Appendix K (large break LOCA) analyses for single loop operation result in higher peak clad temperature (PCT) than 2-loop operation. The MAPLHGR limits have been reduced accordingly to assure 10CFR50.46 is not violated.
- The Containment response for a Design Basis Accident with single loop operation is bounded by the two-loop operation analysis presented in UFSAR Section 6.2. As stated in the Enclosure 2 Analysis, the containment responses with single loop operation are within the present design values.
- The existing evaluation of the inadvertent startup of the idle loop recirculation pump, described in Section 15.4.4 of the UFSAR, remains applicable to single loop operation.
- The added stability surveillance is an increase in technical specification requirements and has no impact on the consequences or probability of evaluated accidents.

On the basis of these evaluations, it is found that single loop operation does not increase the probability or the consequences of previously evaluated accidents.

The additional changes to the jet pump surveillance requirements do not increase the probability or the consequences of previously evaluated accidents. The surveillance requirement continues to ensure that jet pump OPERABILITY monitoring begins as soon as it is practicable to detect a failed jet pump.

- (2) The proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

Single loop operation has been evaluated as described in Enclosure 2 analysis. The UFSAR accident and transient analyses were evaluated with the initial condition of single loop operation. The idle recirculation pump start transient has been previously analyzed in the UFSAR. There is no change to the plant design required to accommodate single loop operation. No new or different accidents are created by single loop operation.

The increased surveillance requirements are intended to heighten operator awareness of stability and do not require any change to plant design or operation. The remedial actions to suppress thermal-hydraulic instability involve normal plant operating practices. Therefore, no new or different accident is created by these stability surveillance changes.

The additional changes to the jet pump surveillances involve no new plant operating mode or change in plant equipment or design. Therefore, the change does not create a new or different kind of accident from any previously evaluated.

- (3) The proposed change does not involve a significant reduction in a margin of safety.

The changes in setpoints and safety limits to address single loop operation are derived from the safety evaluation and analyses given in Enclosure 2. The revised values are established so as to assure adequate safety margin is maintained. Therefore, there is no significant reduction in the margin of safety.

The additional stability surveillance requirements increase the margin of safety by assuring potential thermal-hydraulic instabilities can be detected and suppressed. These

requirements are invoked when operating in regions of potential instability. They represent new requirements on two loop operation in the region and are also applied to single loop operation which is proposed in this request.

The additional changes to the jet pump surveillances do not involve a significant change to a margin of safety as the change still requires jet pump OPERABILITY monitoring to begin as soon as it is practicable to detect a failed jet pump.

Based on the foregoing, Detroit Edison has concluded that the proposed changes do not involve significant hazard to the public safety.

Environmental Impact

Detroit Edison has reviewed the proposed Technical Specification against the criteria of 10CFR51.22 for environmental considerations.

As discussed above, the changes concern operation of Fermi 2 with a single recirculation loop. This does 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 Specification does meet the criteria given in 10CFR51.22(c)(9) for a categorical exclusion from the requirement for an Environmental Impact Statement.

Conclusion

Various BWRs have, over the past few years, performed similar safety evaluations for SLO, submitted similar license amendment requests and obtained approval.

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 this proposed Amendment will not be inimical to the common defense and security or to the health and safety of the public.

Enclosure 2

Detailed Transient Analyses

and

UFSAR Update