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April 20, 1988
NRC-88-0105

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 (License Amendment)
Change - Reactor Protection System Instrumentation
Surveillance Requirements (Table 4.3.1.1-1)

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 Table 4.3.1.1-1, Reactor Protection System Instrumentation Surveillance Requirements. The proposed change is to delete the Daily Channel Check requirements of Note (g) for the Average Power Range Monitor Flow Biased Neutron Flux - High Scram Functional Unit. As described herein, the requirements of this note may potentially unnecessarily limit the operation of Fermi 2. Therefore, your prompt consideration of this proposal is requested.

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.

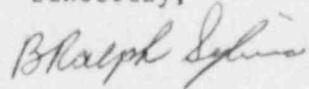
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If you have any questions, please contact Mr. Glen Ohlemacher at
(313) 586-4275.

Sincerely,



Enclosure

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

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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
Group Vice President

On this 20th day of April, 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.

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

Acting in Monroe
County, Mi.

Background/Discussion

Technical Specification Table 4.3.1.1-1, "Reactor Protection System Instrumentation Surveillance Requirements," is being revised to delete the Daily Channel Check requirements of Note (g) for the Average Power Range Monitor Flow Biased Neutron Flux - High Scram Functional Unit identified as item 2.b on Table 4.3.1.1-1. Justification for the proposed change (see attached marked-up pages 3/4 3-7 and 3/4 3-8 from the Fermi 2 Technical Specifications) is provided as follows:

The existing Note (g) requires that measured core flow be less than or equal to established core flow at the existing loop drive flow. The measured core flow is the total core flow as measured by the use of jet pump dP instrumentation and flow summers. The established core flow is determined from a correlation between recirculation drive flow and the total core flow along the rated load line.

With a properly established Drive Flow versus Core Flow correlation along the rated load line, and with properly calibrated instrumentation used to measure the core flow, the two methods would result in essentially the same core flow value for the same loop flow while operating on the rated load line. In other words, the measured core flow may be somewhat lower than or somewhat higher than the established core flow and still be acceptable depending on the allowable range of instrumentation accuracy. Based on this, proper operation along the rated load line does not ensure compliance with Note (g).

If operation is below the rated load line but within the allowable region of the Power to Flow map, the measured core flow will be greater than the established core flow for the loop drive flow. This is because for a given core flow, the maximum resistance to flow from core voids is at the rated load line. Operation below the rated load line at the same core flow would result in less resistance to flow in the core; consequently a lower loop drive flow would be required to maintain the constant core flow. This lower loop drive flow results in a lower established core flow. Thus, as the operating point moves below the rated load line, at a constant measured core flow, the established core flow decreases. Therefore, proper operation below the rated load line would result in non-compliance with Note (g).

The problems with the existing Note (g) detailed above were discovered as a result of the on-going Technical Specification review effort at Fermi 2. During a comparison of Fermi 2 Technical Specifications with other comparable BWR Technical Specifications the difference in the wordings of this item was noted and investigated. The existing

provisions of Note (g) have not yet posed an operational problem at Fermi 2 since the correlation between recirculation drive flow and total core flow to determine "established core flow" is based upon Start-up Testing performed at 100% power and flow. Fermi 2 has not yet completed this portion of the Start-up Test Phase Program and has therefore not yet made the comparisons covered by Note (g). When the correlation is established, the requirements of Note (g) will unnecessarily limit the operation of Fermi 2.

Detroit Edison has researched this item to determine the specific intent of Note (g). It is believed that the note comes from a concern that the correlation between recirculation drive flow and total core flow may change non-conservatively with respect to the flow biased scram setpoint. However, the specific event and/or phenomenon of concern could not be determined.

It was confirmed that the note was incorporated into the proposed Revision 4 of Standard Technical Specifications with the following wording:

"Verify measured core flow to be greater than or equal to established core flow at the existing pump speed."

It has also been confirmed that the wording of the note varies from plant to plant. The Fermi 2 Note (g) reads as follows:

"Verify measured core flow to be less than or equal to established core flow at the existing loop drive flow."

It may be noted that the inequality in the Fermi 2 Note (g) is worded backwards relative to the proposed Standard Technical Specifications. A review of selected samples of different plant Technical Specifications has shown how the original intent of the note has been obscured as each of these plants have negotiated their own wording. Discussions with these plants and/or General Electric reveal that the differences in the wording is due to each plant's attempt to rationalize the note or to have it worded as innocuously as possible having determined or concluded that the note does not reflect a serious concern or has no basis for being in the Reactor Protection System (RPS) instrumentation Technical Specification.

Detroit Edison has decided that rather than attempting to reword the note into a more "meaningful" or "convenient" form, justification will be provided for deleting the note from the RPS instrumentation Technical Specification.

A review of the various versions of the note shows that, with minor variations, there are two general versions, neither of which exactly matches the wording appearing in the Standard Technical Specifications, nor do they match the wording appearing in the Fermi 2 Technical Specifications.

- (I) One version of the note requires verifying that indicated or measured reactor recirculation loop drive flow for a given flow control valve position is less than or equal to a previously established reactor recirculation loop drive flow for that flow control valve position.
- (II) The other version requires verifying that measured total core flow (total jet pump flow) for a given indicated reactor recirculation loop drive flow (as sensed by the APRMs) is greater than or equal to a previously established total core flow for that particular reactor recirculation loop drive flow. (An alternative version replaces the "greater than or equal to" inequality with a general requirement to check that the two items compare favorably).

On the basis of discussions with General Electric and other utilities, it appears that the following concerns and/or events may have been considered when the note was incorporated in the Technical Specifications:

- (1) Flow control valve crudding
- (2) Jet pump beam cracking
- (3) Jet pump blockage
- (4) Core crudding
- (5) Jet Pump Instrumentation problem

(1) Flow Control Valve (FCV) Crudding

This does not apply to the Fermi 2 plant as Fermi 2 Recirculation System does not have Flow Control Valves.

(2) Jet Pump Beam Cracking

This concern has already been addressed by the requirements of Technical Specification 3/4.4.1.2 (Jet Pumps). The Surveillance requirements for this Technical Specification (4.4.1.2) are stated as follows:

Each of the required jet pumps shall be demonstrated OPERABLE prior to THERMAL POWER exceeding 25% of RATED THERMAL POWER and at least once per 24 hours by determining recirculation loop

flow, total core flow, and diffuser-to-lower plenum differential pressure for each jet pump and verifying that no two of the following conditions occur when the recirculation pumps are operating at the same speed:

- a. The indicated recirculation loop flow differs by more than 10% from the established pump speed-loop flow characteristics.
- b. The indicated total core flow differs by more than 10% from the established total core flow value derived from recirculation loop flow measurements.
- c. The indicated diffuser-to-lower plenum differential pressure of any individual jet pump differs from the mean of all jet pump differential pressures in the same loop by more than 20% deviation from its normal deviation.

If Jet Pump Beam Cracking was to occur, this surveillance check would recognize it. Failure to meet the acceptance criteria would then require a plant shutdown because the corresponding ACTION under 3.4.1.2 states, "With one or more jet pumps inoperable, be in at least HOT SHUTDOWN within 12 hours." Additional ACTION or surveillance under the RPS instrumentation Technical Specification should not be required.

(3) Jet Pump Blockage

In the unlikely event a jet pump becomes blocked or obstructed, the aforementioned jet pump performance surveillances would reveal this condition as well.

(4) Core Crudding

General Electric has indicated that the change in m-ratio (core flow minus recirculation loop drive flow divided by recirculation loop drive flow) that might occur from beginning-of-cycle to end-of-cycle due to core crudding is so slight that this phenomenon is not considered to be a significant concern and that the resultant change in the m-ratio would have negligible impact on the APRM-Flow Biased Neutron Flux (APRM-FBNF) trip setpoint. The m-ratio will be checked at least once per cycle using Reactor Engineering procedures. The recirculation flow units and APRM flow biased scram circuitry is checked periodically per required surveillances. These activities ensure that W (percent of rated recirculation drive

flow) as required for RPS instrumentation, is accurate or conservative.

(5) Jet Pump Instrumentation Problem

If any of the surveillances under 4.4.1.2 yielded unacceptable results, a jet pump instrumentation problem would be suspected. Cross checks against other related instruments associated with the required jet pump surveillances would be performed to determine if it is indeed just an instrument problem. If an instrument problem is identified, then the necessary actions would be performed to restore the instrumentation to operable status. No concern with respect to the APRM-FBNF trip exists (assuming the APRM-FBNF instrumentation is operable as verified by the performance of its associated surveillances) because a jet pump instrument problem does not involve an actual change in the m-ratio.

In summary, the above concerns are adequately addressed by the RPS instrumentation surveillances, the recirculation flow unit surveillances, the jet pump surveillances and the check of the m-ratio. Jet pump beam cracking or jet pump blockage, which could cause a gross change in m-ratio are already covered by specific surveillance requirements. Changes to the m-ratio due to core crudding would be expected to be minimal over the course of the cycle. As such, the check of m-ratio at least once per cycle and the surveillance requirements for RPS and recirculation flow unit instrumentation provide assurance that the concerns associated with core crudding are adequately addressed. A requirement like Note (g) therefore, should not be included in the RPS instrumentation Technical Specification because the concerns described above do not require it.

As described above, adequate steps are taken without Note (g) to detect and take appropriate action for degradation in the amount of core flow resulting from a given recirculation loop flow. Therefore, Detroit Edison proposes to delete the Daily Channel Check for the APRM-FBNF signal and the associated Note (g) from Table 4.3.1.1-1.

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 to the Fermi 2 Technical Specifications does not involve a significant increase in the probability or consequences of an accident previously evaluated (with respect to the fuel cladding safety limits) because the proposed change only removes a requirement determined to have no meaningful value from a safety point of view. With properly maintained RPS instrumentation and periodic m-ratio checks, the accuracy/conservatism of the APRM-FBNE trip is assured and the validity of the Loss of Feedwater Heater transient analysis (which takes credit for the APRM-FBNE trip) is not adversely affected by the deletion of Note (g). Gross deviations from established core-flow and drive-flow conditions (m-ratio) will continue to be indicated by performance of the surveillances required under Technical Specification 3/4.4.1.2.
- (2) The proposed change does not create the possibility of a new or different kind of accident from any previously evaluated because no new modes of operation or changes to plant design are involved. The scope of the proposed change is strictly limited to the deletion of the channel check requirement specified by Note (g).
- (3) The proposed change does not involve a significant reduction in a margin of safety because the relationships (under Specification 3.2.2) used to establish the APRM Flow-Biased Neutron Flux - High scram and Flow-Biased Neutron Flux-Upscale control rod block trip setpoints will remain unchanged. The APRM-indicated recirculation loop drive flows will continue to be appropriately checked to ensure that their established relationship to total core flow is preserved. All other OPERABILITY and surveillance requirements associated with the affected instrumentation remains unchanged.

Based on the above reasoning, Detroit Edison has determined that the proposed amendment does not involve a significant hazards consideration.

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 amount 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

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.

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PROPOSED PAGE CHANGES