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Detroit Edison

10CFR50.92

July 30, 1999
NRC-99-0048

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington D C 20555-0001

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

2) Detroit Edison Letter to NRC, NRC-97-0105, "Proposed Technical Specification Change (License Amendment) - Neutron Monitoring System," dated December 10, 1997

3) Fermi 2 License NPF 43 Appendix A - Technical Specifications, Amendment 122

4) NRC Generic Letter 94-02, "Long-Term Solutions and Upgrade of Interim Operating Recommendations for Thermal-Hydraulic Instabilities in Boiling Water Reactors," dated July 11, 1994

5) Detroit Edison Letter to NRC, NRC-94-0089, "Detroit Edison Response to Generic Letter 94-02," dated September 8, 1994

6) Licensing Topical Report NEDO-32465-A, "Reactor Stability Detect and Suppress Solutions Licensing Basis Methodology for Reload Applications," dated August 1996

7) Licensing Topical Report, "Nuclear Measurement Analysis and Control Power Range Neutron Monitor (NUMAC-PRNM) Retrofit Plus Option III Stability Trip Function," NEDC-32410P-A, October 1995, and its Supplement 1 dated November 1997

A001

8) NEDO-31960-A and NEDO-31960-A Supplement 1, "BWR Owner's Group Long-Term Stability Solutions Licensing Methodology," November 1995

Subject: Proposed Technical Specification Change (License Amendment) – Oscillation Power Range Monitor Upscale Trip Function in the Average Power Range Monitor

Pursuant to 10CFR50.90, Detroit Edison hereby proposes to amend the Fermi 2 Plant Operating License NPF-43, Appendix A, Technical Specifications (TS) to include provisions for enabling the Oscillation Power Range Monitor (OPRM) Upscale function in the Average Power Range Monitor (APRM).

The installation of the OPRM Upscale Function of the APRM and the implementation of the associated Technical Specification changes complete the implementation of Detroit Edison's response to Generic Letter 94-02 (References 4 and 5) through the implementation of the long-term solution designated as Option III in the Reference 8 General Electric Licensing Topical Reports. As described in the Reference 2 letter, Detroit Edison installed a new Power Range Neutron Monitoring (PRNM) System during the sixth refueling outage (RFO6). At the same time, the Option III automatic trip was installed in the "indicate only" mode for testing purposes. The changes made during RFO6 were implemented in the Fermi 2 Technical Specifications by License Amendment 122 (Reference 3). As previously stated in the Reference 2 letter, the automatic trip will be activated during the seventh refueling outage (RFO7), which is scheduled to commence in the spring of the year 2000.

The enclosed Technical Specification changes address the activation of the Option III trip during RFO7, consistent with the guidance in the Reference 6, 7, and 8 Licensing Topical Reports and related NRC approvals, and closely follow similar license amendments for the Hatch and Browns Ferry plants that have been previously approved by the NRC. In addition to changes to the TS Section 3.3.1 (Reactor Protection System) and associated Bases, changes are also proposed to TS Section 3.4.1 (Recirculation Loops Operating) and associated Bases to remove requirements related to the manual detection and suppression of thermal-hydraulic instabilities that are no longer needed after the OPRM trip is installed.

The purpose of the OPRM testing in the "indicate only" mode was to evaluate the adequacy of OPRM setpoint values and margins using the methodology described in the Reference 6 Licensing Topical Report (LTR). The subject OPRM testing completed during the current operating cycle indicates that use of the least sensitive OPRM corner frequency and period tolerance setpoints specified by LTR NEDO-32465-A would result in a system that is too sensitive and, therefore, susceptible to

spurious alarms and trips. Also, Detroit Edison is lowering the maximum period setpoint to further reduce the chance of spurious alarms and trips. Based on Fermi 2 test results obtained during the current operating cycle, an increased range for allowable corner frequency, period tolerance, and maximum period is presented and justified as part of this submittal. The submittal also includes a sampling of Fermi 2 OPRM count data at various OPRM settings to demonstrate the margin to spurious alarms and trips when the revised setpoint ranges are utilized. General Electric (GE) has reviewed and concurred with the setpoint range changes proposed in Enclosure 4. The proposed settings are consistent with the OPRM licensing bases specified in the Reference 8 LTR. These settings should substantially reduce the chance of spurious trips and alarms while allowing the OPRM to detect core wide and regional instabilities. It is Detroit Edison's understanding that Plant Hatch and Browns Ferry Nuclear Plant Unit 2 have found it necessary to modify their corner frequency, maximum period, and/or period tolerance setpoints in a similar manner, and the NRC has approved these changes.

Enclosure 1 provides a description and evaluation of the proposed TS change. Enclosure 2 provides an analysis of the issue of significant hazards consideration using the standards of 10CFR50.92. Enclosure 3 provides the marked up pages of the draft ITS to show the proposed change. Because Fermi 2 is in the process of converting to the Improved Technical Specifications (ITS) and is expected to have converted to the ITS prior to startup from RFO7, the proposed changes are provided in ITS format, based on the most recent ITS conversion package submitted to the NRC. A typed version of the affected TS pages with the proposed changes incorporated has not been provided at this time as is normally done. This is due to the significant ITS conversion activity that will have taken place between the time of this submittal and the implementation of the proposed change. Enclosure 4 provides a discussion of OPRM sensitivity characteristics, proposed setpoint revisions, and associated justifications for deviation from LTR NEDO-32465-A values.

Detroit Edison has reviewed the proposed TS changes against the criteria of 10CFR51.22 for environmental considerations. 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 TS changes meet the criteria provided in 10CFR51.22(c) (9) for a categorical exclusion from the requirements for an Environmental Impact Statement or an Environmental Assessment.

To support the RFO7 outage schedule, Detroit Edison requests that the NRC approve and issue these changes by February 1, 2000 for implementation prior to startup from RFO7.

Should you have any questions or require additional information, please contact Mr. Norman K. Peterson of my staff at (734) 586-4258.

Sincerely,

Enclosures

cc: A. J. Kugler
A. Vegel
NRC Resident Office
Regional Administrator, Region III
Supervisor, Electric Operators,
Michigan Public Service Commission

I, DOUGLAS R. GIPSON, 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.

DOUGLAS R. GIPSON
Senior Vice President, Nuclear Generation

On this 30th day of July, 1999 before me personally appeared Douglas R. Gipson, being first duly sworn and says that he executed the foregoing as his free act and deed.

Notary Public

KAREN M. REED-OCKERMAN
Notary Public, Monroe County, MI
My Commission Expires Sep. 2, 2003

ENCLOSURE 1

FERMI 2 NRC DOCKET NO. 50-341
OPERATING LICENSE NO. NPF-43

REQUEST TO REVISE TECHNICAL SPECIFICATIONS:

OSCILLATION POWER RANGE MONITOR UPSCALE TRIP FUNCTION IN THE AVERAGE POWER RANGE MONITOR

DESCRIPTION AND EVALUATION OF THE PROPOSED CHANGES

DESCRIPTION AND EVALUATION OF THE PROPOSED CHANGE(S)

DESCRIPTION:

The following proposed Technical Specification (TS) changes support the Oscillation Power Range Monitor (OPRM) as the long-term stability solution for the Fermi 2 plant. Specifically, the proposed TS changes include provisions for enabling the OPRM Upscale function in the Average Power Range Monitor (APRM). The APRM is part of the Power Range Neutron Monitoring (PRNM) system. The OPRM Upscale function provides protection from exceeding the fuel Minimum Critical Power Ratio (MCPR) safety limit in the event of thermal-hydraulic power oscillations.

The PRNM upgrade was installed at Fermi 2 during the sixth refueling outage (RFO6) and implemented in the Fermi 2 Technical Specification by License Amendment 122 (Reference 3). As part of the ongoing Fermi 2 conversion process to the Improved Technical Specification (ITS) format, the RPS Instrumentation and Reactor Coolant System Technical Specifications and associated Bases have been submitted to the NRC and are undergoing review. The base TS for the enclosed proposed changes is the most recent draft of the Fermi 2 ITS conversion TS.

The PRNM upgrade installed during RFO6 uses General Electric Nuclear Measurement Analysis and Control (NUMAC) components. Its OPRM trip function implements the long-term stability solution designated as "Option III' in NEDO-31960-A and NEDO-31960-A Supplement 1, "BWR Owner's Group Long-Term Stability Solution Licensing Methodology." The OPRM trip function is being operated during the entire current operating cycle in the "indicate only" mode and will be enabled during the seventh refueling outage (RFO7) for subsequent cycles.

The installation of the OPRM Upscale Function of the APRM and the implementation of the associated Technical Specification changes complete the implementation of Detroit Edison's response to Generic Letter 94-02 (References 4 and 5) through the implementation of the long-term solution designated as Option III in the Reference 8 General Electric Licensing Topical Reports.

The enclosed TS changes primarily affect the RPS Section 3.3.1 Technical Specifications that apply to the PRNM system. The requested changes are based on the methodology and examples provided in Supplement 1 of GE Licensing Topical Report NEDC-32410P-A, which has been reviewed and approved by the NRC (Reference 7). These TS changes provide appropriate operability requirements, limiting conditions for operation, surveillance requirements, and bases discussion for

the enabled OPRM Upscale function. In addition to changes to the RPS TS and associated Bases, changes are also proposed to TS Section 3.4.1 (Recirculation Loops Operating) and associated Bases to remove interim restrictions related to the manual detection and suppression of thermal-hydraulic instabilities that are no longer needed after the OPRM trip is installed.

Each requested TS change is defined and described below, corresponding to the changes provided in markup format in Enclosure 3. Unless otherwise noted, deleted text is shown in ~~strikethrough~~ and added text shown in **bold**.

1) Pages 3.3-1 & 3.3-1(i) – RPS Instrumentation 3.3.1.1 Actions

The Actions table for LCO 3.3.1.1 is revised to add the OPRM Upscale function to the APRM trips as Function 2.f. The note in LCO 3.3.1.1 Required Action A.2 is revised to say that the Required Action is not applicable for new Function 2.f. Required Action A.2 is not applicable for the new OPRM Upscale function because the OPRM provides signals to both RPS trip systems. Similarly, in Condition B, the Note is revised to say that Condition B is not applicable for new Function 2.f. Condition B is not applicable to the OPRM Upscale function because loss of more than one of the required OPRM channels results in loss of OPRM scram capability and entry to Condition C. These changes are consistent with the markups provided in the Reference 7 LTR Supplement 1, Appendix H.1.1 for Required Action A.2 and Condition B in TS 3.3.1.1. Both Notes have been changed as follows:

> ----------NOTE----------
> Not applicable for Functions 2.a, 2.b, 2.c, ~~and~~ 2.d**, and 2.f**.
> ----------

2) Page 3.3-3 – RPS Instrumentation 3.3.1.1 Actions

New Conditions J and K, together with Required Actions and Completion Times are added to the LCO Actions table. Condition J allows an alternate method to detect and suppress thermal-hydraulic instability. The TS 3.4.1 Interim Corrective Actions (ICAs) presently used by Fermi to detect and suppress thermal-hydraulic instabilities is being deleted from the TS as part of this proposed change, and will be relocated to the Technical Requirements Manual (TRM). These actions will be contingent on the inoperability of the OPRM trip function, consistent with the revised TS. The inclusion of the proposed Action Statement allows for such a contingency with an established alternate method within 12 hours and requires OPRM OPERABILITY to be restored within 120

days. If Condition J is not met, Condition K requires the plant to reduce THERMAL POWER to <25% RTP within 4 hours. These Conditions, Actions, and Completion Times are consistent with the markups provided in the Reference 7 LTR Supplement 1, Appendix H.1.1 for new OPRM conditions (I. and J.) In addition to these changes, a note has been added to Required Action J.2 stating that LCO 3.0.4 is not applicable to this action. Although this note and exclusion is not included in the Reference 7 LTR Supplement 1, it is consistent with Required Action J.2 in that the 3.0.4 exclusion does not eliminate the requirement to restore the OPRM Upscale function to OPERABLE status within a 120-day period. It, however, allows the plant to start up with the alternate detect and suppress provision of Action J.1 in the interim period. As a result, the note provides operational flexibility while not reducing the TS requirements as proposed by the Reference 7 LTR Supplement 1 and approved by the NRC. In addition, this change was discussed with General Electric and confirmed to implement the original intent of action J.2. The new entries read as follows:

CONDITION		REQUIRED ACTION		COMPLETION TIME
J.	**As required by Required Action D.1 and referenced in Table 3.3.1.1-1.**	**J.1**	**Initiate alternate method to detect and suppress thermal hydraulic instability oscillations.**	**12 hours**
		AND		
		----------NOTE---------- LCO 3.0.4 is not applicable. ----------		
		J.2	**Restore required channels to OPERABLE.**	**120 days**
K.	**Required Action and associated Completion Time of Condition J not met.**	**K.1**	**Reduce THERMAL POWER to <25% RTP.**	**4 hours**

3) Page 3.3-7 – RPS Instrumentation 3.3.1.1 Surveillance Requirements

A new Surveillance, SR 3.3.1.1.20, is added to the Surveillance Requirements table. The format of the Surveillance Requirement is identical to the Reference 7 Supplement 1 Appendix H.1.1 markups. Fermi 2 plant-specific parameters defining the conditions under which the OPRM is verified to be enabled (≥28% Simulated Thermal Power and <60% recirculation drive flow) and a 24-month frequency are reflected in the proposed change. The Bases for the enabled range parameters have been added to the TS Bases as discussed in item 17 below. The OPRM auto-enable region is determined by Simulated Thermal Power and drive flow setpoints in the APRM channels. Even though these setpoints are unlikely to change once set, periodic confirmation is appropriate. The Surveillance assures that the OPRM Upscale Function is enabled in the intended region on the plant power/flow map.

Consistent with this Surveillance Requirement, the OPRM Upscale Function is bypassed automatically when APRM Simulated Thermal Power is below 28% RTP or with drive flow above 60% rated recirculation drive flow. In the regions below 28% RTP and above 60% rated recirculation drive flow, thermal-hydraulic instabilities are not considered to be credible. A new reference (Bases 3.3.1 Reference 20) has been added to the Bases that defines the enabled (operational bypass removed) region consistent with the Reference 7 Supplement 1 generic nominal values of ≥30% RTP and <60% of rated core flow. The proposed Fermi 2 TS has scaled the enabled region power setpoint of 30% recommended in Supplement 1 of the Reference 7 LTR down by the Fermi 2 power uprate ratio and rounded down to the next whole percent, resulting in a conservative Fermi-specific enabled region power setpoint of ≥28% RTP. In addition, the Fermi 2 proposed TS defines the upper flow limit in terms of <60% rated recirculation drive flow. On the 100% rod line (the reference rod line), 60% drive flow will always be conservative with respect to 60% core flow as represented by recirculation drive flow for the purpose of defining the enabled region upper flow setpoint.

The 24 month maximum surveillance frequency is based on engineering judgement and the fact that the actual values are stored digitally, with no drift. Any hardware failures affecting the Simulated Thermal Power and recirculation drive flow setpoints will likely be detected by the automatic self-test functions. The new table entry reads as follows:

	SURVEILLANCE	FREQUENCY
SR 3.3.1.1.20	**Verify OPRM is not bypassed when APRM Simulated Thermal Power is ≥ 28% and recirculation drive flow is <60% of rated recirculation drive flow.**	**24 months**

4) Page 3.3-9 – RPS Instrumentation 3.3.1.1 - Table 3.3.1.1-1

New APRM Function 2.f, the OPRM Upscale function, together with Applicable Specified Conditions, Required Channels, Conditions Referenced, Surveillance Requirements, and Allowable Value are added to Table 3.3.1.1-1. The new entry, inserted between functions 2.e and 3, reads as follows:

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
2. Average Power Range Monitors (continued)					
f. OPRM Upscale	**≥25% RTP**	**3[(c)]**	**J**	**SR 3.3.1.1.2 SR 3.3.1.1.8 SR 3.3.1.1.12 SR 3.3.1.1.18 SR 3.3.1.1.20**	**NA**

Because hardware to implement the OPRM Upscale Function 2.f is housed in the same chassis as the APRM trip functions, the OPRM Upscale trip is considered a sub-function of the APRM System, hence the placement of the OPRM trip in Section 2 of Table 3.3.1.1-1. Only the period based detect and suppress algorithm is used as the basis for the safety analysis for the OPRM Upscale function. The other two algorithms (amplitude based and growth rate based discussed in the TS Bases) provide defense in depth and will cause a trip, but are not required for OPRM Upscale Function OPERABILITY.

The OPRM Upscale Function is voted separately from the Inop trip in the 2-out-of-4 Voter function. Thus, an APRM/OPRM Inop trip in one APRM channel and an OPRM Upscale trip in another channel will result in two half-trips in each of the 2-out-of-4 Voter channels, but no RPS trip.

The OPRM Upscale Function is required only when the plant is operating at power levels ≥25% RTP. As stated in the Reference 7 Supplement 1, Appendix H.1.1, this is the region of power-flow operation where anticipated events could

lead to thermal-hydraulic instabilities and related neutron flux oscillations. In addition, the OPRM Upscale Function is bypassed automatically in the power-flow regions where thermal-hydraulic instabilities are not considered to be credible, as discussed in SR 3.3.1.1.20 (item 3 above).

Certain identified events (e.g., recirculation pump trips or run-backs) can change drive flow to less than 60% without operator action. Other events (e.g., loss of feedwater heaters) can take the plant from a power less than 25% RTP to a power greater than 25% RTP without operator action. Therefore, even though the OPRM Upscale Function is bypassed above 60% drive flow and below 28% RTP, the function must be OPERABLE so that if one of the identified events occurs, the OPRM Upscale Function trip capability is immediately available without operator action. Requiring OPRM OPERABILITY $\geq$25% RTP provides adequate margin to cover the operating region where oscillations may occur as well as the operating regions from which the plant might enter the potential instability region without operator action.

Any two of the four OPRM channels and one of the 2-out-of-4 Voter channels in each RPS trip system are required to function for the OPRM Upscale Function to be accomplished. Therefore, a minimum of three OPRM channels assures that at least two OPRM channels can provide trip inputs to the 2-out-of-4 Voter channels, even in the event of a single OPRM channel failure. This is reflected in the TS Table 3.3.1.1-1 "Required Channels per Trip System" column for APRM Function 2.f, and is consistent with the Reference 7 LTR Supplement 1 TS markups provided in Appendix H.1.1.

The Surveillance Requirements listed in TS Table 3.3.1.1-1 for 2.f correspond to the same surveillances listed in the Reference 7 LTR Supplement 1 TS markups provided in Appendix H.1.1.

Consistent with the Reference 7 LTR Supplement 1 TS markups and associated Bases, there is no Allowable Value associated with the OPRM Upscale Function trip. However, OPRM Trip Setpoint limits are calculated in accordance with the methodologies outlined in the Reference 6 LTR.

5) Page 3.4-1 – Recirculation Loops Operating LCO 3.4.1

LCO 3.4.1 is revised to delete the restrictions related to thermal-hydraulic stability regions, including the deletion of the "a." and "b." designators for the remaining conditions. These restrictions were added to the TS as part of Interim Corrective Actions (ICAs) while the BWROG worked with the NRC to develop a long-term resolution to stability concerns. With the OPRM Upscale Function enabled, the long-term stability solution will be fully implemented, and the ICAs

will no longer be required. The OPRM will detect and automatically suppress any significant core-wide or regional power oscillations over the "Scram" or "Exit" regions of the power-to-flow map defined in this LCO and related Bases Figure B 3.4.1-1. The resulting format is consistent with the Standard ITS for this LCO.

After the deletions, the LCO (excluding the note) reads as follows:

LCO 3.4.1 ~~The reactor core shall not exhibit core thermal hydraulic instability or operate in the "Scram" or "Exit" Regions.~~

~~AND~~

~~a.~~ Two recirculation loops with matched recirculation loop jet pump flows shall be in operation:

OR

~~b.~~ One recirculation loop may be in operation provided:

1. LCO 3.3.1.1, "Reactor Protection System (RPS) Instrumentation," Function 2.b (Average Power Range Monitors Simulated Thermal Power – Upscale) Allowable Value of Table 3.3.1.1-1 is reset for single loop operation, when in MODE 1; and

2. THERMAL POWER is $\leq$ 67.2% RTP.

6) Pages 3.4-1 & 3.4-2 – Recirculation Loops Operating 3.4.1 Actions

In the Actions table, Condition B and Condition D, together with the associated Required Actions and Completion Times are deleted. Condition C is relabeled "B" and revised to consolidate the action for no recirculation loops operating for both MODES 1 and 2 (previous Actions C.1 and D.1).

Previous Condition B and associated Action B.1 is exclusively related to stability ICAs that are no longer needed with the OPRM Upscale Function enabled. After removing the stability content from previous Condition D, the only remaining Required Action is for an immediate scram with no recirculation loops operating while in MODE 1. Previous Condition C required being in MODE 3 in 6 hours with no recirculation loops operating while in MODE 2. These two conditions and associated Required Actions were consolidated into a

single condition for both MODES 1 and 2, with the Required Action and Completion Time made consistent with the most recent approved Standard Improved Technical Specifications (which require being in MODE 3 in 12 hours). The associated Bases were also updated consistent with the Standard ITS.

The changed Actions table reads as follows:

	CONDITION		REQUIRED ACTION	COMPLETION TIME
A.	Recirculation jet pump loop flow mismatch not within limits.	A.1	Declare recirculation loop with lower flow: "not in operation."	2 hours
~~B.~~	~~Reactor core operating in the "Exit" Region.~~	~~NOTE~~ ~~Restart of an idle recirculation loop or resetting a recirculation flow limiter is not allowed.~~ ~~B.1~~	~~Initiate action to insert control rods or increase core flow to restore operation outside the "Exit" Region.~~	~~Immediately~~
~~C~~**B**.	No recirculation loops operating ~~while in MODE 2.~~	~~C~~**B**.1	Be in MODE 3	~~6~~**12** hours
~~D.~~	~~No recirculation loops operating while in MODE 1.~~ ~~OR~~ ~~Reactor core operating in the "Scram" Region.~~ ~~OR~~ ~~Core thermal hydraulic instability evidenced.~~	~~D.1~~	~~Place the reactor mode switch in the shutdown position.~~	~~Immediately~~

7) Page 3.4-3 – Recirculation Loops Operating 3.4.1 - Surveillance Requirements

Surveillance Requirement SR 3.4.1.1 for when the reactor is operating in the "Stability Awareness" Region is deleted in its entirety and SR 3.4.1.2 is renumbered SR 3.4.1.1. The deleted Surveillance Requirement 1 is exclusively

related to stability ICAs that are no longer needed with the OPRM Upscale Function enabled.

8) Page B 3.3.1.1-7 RPS Instrumentation Bases - Average Power Range Monitor

In the "Applicable Safety Analyses, LCO, and Applicability" section for the APRM, changes were made to the two paragraphs providing a general discussion of the Average Power Range Monitor to describe the new OPRM Upscale function.

The first three inserts incorporate the recommended text of the Reference 7 LTR Supplement 1 Appendix H.1.1 TS markups without changes. The first two sentences of the fourth insert (at the end of the second paragraph) are based on the Reference 7 LTR Supplement 1 Appendix H.1.1 TS markups, providing Fermi-specific values for the OPRM OPERABILITY discussion. The last sentence was added to define the source of the OPRM Upscale Function Trip Setpoint limits calculation methodology.

After the changes, the APRM description reads as follows:

> The APRM channels provide the primary indication of neutron flux within the core and respond almost instantaneously to neutron flux increases. The APRM channels receive input signals from the local power range monitors (LPRMs) within the reactor core to provide an indication of the power distribution and local power changes. The APRM channels average these LPRM signals to provide a continuous indication of average reactor power from a few percent to greater than RTP. **Each APRM also includes an Oscillation Power Range Monitor (OPRM) Upscale Function which monitors small groups of LPRM signals to detect thermal-hydraulic instabilities.**
>
> The APRM System is divided into 4 APRM channels and 4 2-out-of-4 voter channels. Each APRM channel provides inputs to each of the four voter channels. The four voter channels are divided into two groups of two each, with each group of two providing inputs to one RPS trip system. The APRM System is designed to allow one APRM channel, but no voter channels, to be bypassed. A trip from any one unbypassed APRM will result in a "half-trip" in all four voter channels, but no trip inputs to either RPS trip system. ~~A~~ **APRM trip functions 2.a, 2.b, 2.c, and 2.d are voted independently from OPRM Upscale Function 2.f. Therefore, any Function 2.a, 2.b, 2.c, or 2.d** trip from any two unbypassed APRM channels will result in a full-trip in each of the four voter channels, which in turn results in two trip inputs into each RPS trip logic channel (A1, A2, B1, and B2). **Similarly, a Function 2.f trip**

from any two unbypassed APRM channels will result in a full trip from each of the four voter channels. Three of the four APRM channels and all four of the voter channels are required to be OPERABLE to ensure that no single failure will preclude a scram on a valid signal. In addition, to provide adequate coverage of the entire core, consistent with the design bases for APRM Functions 2.a, 2.b, and 2.c, at least 20 LPRM inputs, with at least three LPRM inputs from each of the four axial levels at which the LPRMs are located, are required for each APRM channel. **For the OPRM Upscale Function 2.f, LPRMs are assigned to cells of 4 detectors, with a total of 30 cells assigned to each APRM channel. A minimum of 21 cells per channel, each with a minimum of 2 LPRMs per cell, must be OPERABLE for the OPRM Upscale Function 2.f to be OPERABLE. The OPRM Upscale Trip Setpoint limits are calculated in accordance with methodologies outlined in Reference 16.**

9) Page B 3.3.1.1-11 RPS Instrumentation Bases - APRM Function 2.e

The first sentence of the Applicable Safety Analyses Bases for APRM Function 2.e is modified as follows, consistent with Reference 7 LTR Supplement 1 Appendix H.1.1, to add the OPRM Upscale Function to the general description of the 2-out-of-4 Voter:

The 2-out-of-4 Voter Function provides the interface between the APRM Functions**, including the OPRM Upscale Function,** and the final RPS trip system logic.

The following new paragraph is added to after the first two existing paragraphs, consistent with Reference 7 LTR Supplement 1 Appendix H.1.1, to describe the independence of the OPRM Upscale Function 2.f from the APRM Functions 2.a, 2.b, 2.c, and 2.d, and to discuss considerations that may go into declaring voter Function 2.e inoperable:

The 2-out-of-4 Voter Function votes APRM Functions 2.a, 2.b, 2.c, and 2.d independently of Function 2.f. The voter also includes separate outputs to RPS for the two independently voted sets of Functions, each of which is redundant (four total outputs). The voter Function 2.e must be declared inoperable if any of its functionality is inoperable. However, due to the independent voting of APRM trips, and the redundancy of outputs, there may be conditions where the voter Function 2.e is inoperable, but trip capability for one or more of the other APRM Functions through that voter is still maintained. This may be considered when determining the condition of other APRM Functions resulting from partial inoperability of the Voter Function 2.e.

10) Page B 3.3.1.1-11 RPS Instrumentation Bases - APRM Function 2.f

The following new section, 2.f Oscillation Power Range Monitor (OPRM) Upscale was added to the Applicable Safety Analyses Bases, consistent with Reference 7 LTR Supplement 1 Appendix H.1.1, to describe the new OPRM Upscale Function. The Reference 7 LTR wording at the end of the fourth paragraph was changed to more generally include any power increase transient rather than only loss of feedwater heating. The last sentence was added to the LTR recommended Bases text to define the source of the OPRM Trip Setpoint limit calculation methodology.

The new section reads as follows:

2.f. Oscillation Power Range Monitor (OPRM) Upscale

The OPRM Upscale Function provides compliance with GDC 10 and GDC 12, thereby providing protection from exceeding the fuel MCPR safety limit (SL) due to anticipated thermal-hydraulic power oscillations.

References 14, 15, and 16 describe three algorithms for detecting thermal-hydraulic instability related neutron flux oscillations: the period based detection algorithm, the amplitude based algorithm, and the growth rate based algorithm. All three are implemented in the OPRM Upscale Function, but the safety analysis takes credit only for the period based detection algorithm. The remaining algorithms provide defense in depth and additional protection against unanticipated oscillations. OPRM Upscale Function OPERABILITY for Technical Specification purposes is based only on the period based detection algorithm.

The OPRM Upscale Function receives input signals from the local power range monitors (LPRMs) within the reactor core, which are combined into cells for evaluation by the OPRM algorithms.

The OPRM Upscale Function is required to be OPERABLE when the plant is at ≥25% RTP, the region of power-flow operation where anticipated events could lead to thermal-hydraulic instability and related neutron flux oscillations. Within this region, the automatic trip is enabled when THERMAL POWER, as indicated by the APRM Simulated Thermal Power, is ≥28% RTP and recirculation drive flow is <60% of rated flow, the operating region where actual thermal-hydraulic oscillations may occur. The lower bound, 25% RTP, is chosen

to provide margin in the unlikely event of a power increase transient that could occur without operator action while the plant is operating below the 28% automatic OPRM Upscale trip enable point.

An OPRM Upscale trip function trip is issued from an APRM channel when the period based detection algorithm in that channel detects oscillatory changes in the neutron flux, indicated by the combined signals of the LPRM detectors in a cell, with the period confirmations and relative cell amplitude exceeding specified setpoints. One or more cells in a channel exceeding the trip conditions will result in a channel trip. An OPRM Upscale trip is also issued from the channel if either the growth rate or amplitude based algorithms detect growing oscillatory changes in the neutron flux for one or more cells in that channel.

Three of the four channels are required to be operable. Each channel is capable of detecting thermal-hydraulic instabilities, by detecting the related neutron flux oscillations, and issuing a trip signal before the MCPR SL is exceeded. There is no allowable value for this function. The OPRM Upscale Trip Setpoint limits are calculated in accordance with methodologies outlined in Reference 16.

11) Page B 3.3.1.1-21 RPS Instrumentation Bases - Actions A.1 and A.2

In the first paragraph, a citation to References 9 and 13 was replaced with a citation to References 9, 13, and 17. This is consistent with assigning separate references to NEDC-32410P-A and NEDC-32410P-A, Supplement 1, which were both previously included in Reference 13.

The second paragraph of the bases for Actions A.1 and A.2 was modified as follows, consistent with Reference 7 LTR Supplement 1 Appendix H.1.1, to include the new APRM Function 2.f as one of the APRM trip functions for which Required Action A.2 is not applicable:

As noted, Required Action A.2 is not applicable for APRM Functions 2.a, 2.b, 2.c, ~~and 2.d.~~ **2.d, and 2.f.** Inoperability . . .

12) Pages B 3.3.1.1-22 & 23 RPS Instrumentation Bases - Actions B.1 and B.2

The sixth paragraph of the bases for Actions B.1 and B.2 was modified as follows, consistent with Reference 7 LTR Supplement 1 Appendix H.1.1, to include the new APRM Function 2.f as one of the APRM trip functions for which Condition B is not applicable:

As noted, Condition B is not applicable for APRM Functions 2.a, 2.b, 2.c, ~~and 2.d.~~ **2.d, and 2.f.** Inoperability of an APRM channel affects both trip systems and is not associated with a specific trip system, as are the APRM 2-out-of-4 voter and other non-APRM channels for which Condition B applies. Required Action A.1 must be satisfied, and is the only action (other than restoring OPERABILITY) that will restore capability to accommodate a single failure. Inoperability of a Function in more than one required APRM channel results in a loss of trip capability **for that function** and entry into Condition C, as well as entry into Condition A or each channel. Because Conditions A and C provide Required Actions that are appropriate for the inoperability of APRM Functions 2.a, 2.b, 2.c, ~~and~~ 2.d, **and 2.f,** and these Functions are not associated with specific trip systems as are the APRM 2-out-of-4 voter and other non-APRM channels, Condition B does not apply.

13) Page B 3.3.1.1-24 RPS Instrumentation Bases - Actions E.1, F.1, G.1, H.1, and H.2

In the Actions Bases, the existing discussion of Actions E.1, F.1, G.1, H.1, and H.2 is made applicable to new action K.1 by changing the heading of this discussion and adding Action K.1 to the discussion in the last sentence regarding consistency of Completion Times with the MCPR LCO 3.2.2. These changes are consistent with Reference 7 LTR Supplement 1 Appendix H.1.1, and appear as follows:

E.1, F.1, G.1, H.1, ~~and~~ H.2**, and K.1**

. . . In addition, the Completion Time of Required Actions E.1 **and K.1 are** ~~is~~ consistent with the Completion Time provided in LCO 3.2.2, "MIMIMUM CRITICAL POWER RATIO (MCPR)."

No other change to the existing discussion is made.

14) Page B 3.3.1.1-25 RPS Instrumentation Bases - New Actions J.1 and J.2

In the Actions Bases, bases discussions are added for the new J.1 and J.2 actions. The J.1 bases and the first paragraph of the J.2 bases are consistent with Reference 7 LTR Supplement 1 Appendix H.1.1, to discuss new Actions J.1 and J.2 (I.1 and I.2 in the LTR). The second paragraph of the J.2 bases provides the rationale for the note preceding Action J.2 stating that LCO 3.0.4 is not applicable. Although this note and exclusion is not included in the Reference 7 LTR Supplement 1, it is consistent with the first paragraph of the Action J.2 bases in that the 3.0.4 exclusion does not eliminate the requirement to restore

the OPRM Upscale function to OPERABLE status within a 120-day period. It, however, allows the plant to start up with the alternate detect and suppress provision of Action J.1 in the interim period. The new bases paragraphs read as follows:

J.1

If OPRM Upscale trip capability is not maintained, Condition J exists. References 13 and 17 justified use of alternate methods to detect and suppress oscillations for a limited period of time. The alternate methods are procedurally established consistent with the guidelines identified in References 18 and 19 requiring manual operator action to scram the plant if certain predefined events occur. The 12 hour allowed action time is based on engineering judgment to allow orderly transition to the alternate methods while limiting the period of time during which no automatic or alternate detect and suppress trip capability is formally in place. Based on the small probability of an instability event occurring at all, the 12 hours is judged to be reasonable.

J.2

The alternate method to detect and suppress oscillations implemented in accordance with J.1 was evaluated (References 13 and 17) based on use up to 120 days only. The evaluation, based on engineering judgment, concluded that the likelihood of an instability event that could not be adequately handled by the alternate methods during this 120 day period was negligibly small. The 120 day period is intended to be an outside limit to allow for the case where design changes or extensive analysis might be required to understand or correct some unanticipated characteristic of the instability detection algorithms or equipment. This action is not intended and was not evaluated as a routine alternative to returning failed or inoperable equipment to OPERABLE status. Correction of routine equipment failure or inoperability is expected to normally be accomplished within the completion times allowed for Actions for Condition A.

A note is provided to indicate that LCO 3.0.4 is not applicable. The intent of that note is to allow plant startup while operating within the 120-day completion time for action J.2. The primary purpose of this exclusion is to allow an orderly completion of design and verification activities without undue impact on plant operation in the event of a required design change to the OPRM function as described in the paragraph above. It is not intended as an alternative to restoring

inoperable equipment to OPERABLE status in a timely manner.

15) Page B 3.3.1.1-31 RPS Instrumentation Bases – SR 3.3.1.1.12

A citation to Reference 13 was changed to cite both References 13 and 17, consistent with the change to have separate reference numbers for NEDC-32410P-A and NEDC-32410P-A, Supplement 1.

16) Page B 3.3.1.1-31 RPS Instrumentation Bases - SR 3.3.1.1.15 & SR 3.3.1.1.19

In the last paragraph describing the LOGIC SYSTEM FUNCTIONAL TEST, the words "and OPRM" are added, consistent with Reference 7 LTR Supplement 1 Appendix H.1.1, as reflected below:

. . . For the 2-out-of-4 Voter Function, the LSFT includes simulating APRM **and OPRM** trip conditions at the APRM channel inputs to the 2-out-of-4 trip voter channel to check all combinations of two tripped inputs to the 2-out-of-4 trip voter logic in the voter channels.

17) Page B 3.3.1.1-34 RPS Instrumentation Bases - New SR 3.3.1.1.20

In the Surveillance Requirements Bases, a new discussion of SR 3.3.1.1.20 is added, consistent with Reference 7 LTR Supplement 1 Appendix H.1.1. The third sentence of the first paragraph was changed from the LTR suggested text to incorporate a more concise basis for the setpoint margins through the introduction of new Bases 3.3.1 Bases Reference 20 and mention of the setpoint adjustment for the Fermi power uprate. The new discussion reads as follows:

SR 3.3.1.1.20

This SR ensures that scrams initiated from the OPRM Upscale Function (Function 2.f) will not be inadvertently bypassed when THERMAL POWER, as indicated by the APRM Simulated Thermal Power, is ≥28% RTP and recirculation drive flow is <60% rated flow. This normally involves confirming the bypass setpoints. The bypass setpoint values are considered to be nominal values as discussed in Reference 20, and have been adjusted for power uprate. The surveillance ensures that the OPRM Upscale Function is enabled (not bypassed) for the correct values of APRM Simulated Thermal Power and recirculation drive flow.

If any bypass setpoint is nonconservative (i.e., the OPRM Upscale Function is bypassed when APRM Simulated Thermal Power ≥28% and recirculation drive flow <60% rated), then the affected channel is

considered inoperable for the OPRM Upscale Function. Alternatively, the bypass setpoint may be adjusted to place the channel in a conservative condition (unbypassed). If placed in the unbypassed condition, this SR is met and the channel is considered OPERABLE.

The Frequency of 24 months is based on engineering judgment and reliability of the components.

18) Page B 3.3.1.1-35 RPS Instrumentation Bases - References

Reference 13 is modified as follows to be consistent with listing Supplement 1 as a separate reference.

13. NEDC-32410P-A, "Nuclear Measurement Analysis and Control Power Range Neutron Monitor (NUMAC PRNM) Retrofit Plus Option III Stability Function," October 1995~~, and Supplement 1, May 1996~~.

The following new references are added to the list of references. References 14 through 19 are consistent with the Reference 7 LTR Supplement 1 suggested markups provided in Appendix H.1.1. Reference 20 is cited from the new SR 3.3.1.1.20 bases as described above.

14. NEDO-31960-A, "BWR Owners' Group Long-Term Stability Solutions Licensing Methodology," November 1995.

15. NEDO-31960-A, Supplement 1, "BWR Owners' Group Long-Term Stability Solutions Licensing Methodology," November 1995.

16. NEDO-32465-A, "Reactor Stability Detect and Suppress Solutions Licensing Basis Methodology for Reload Applications," August 1996.

17. NEDC-32410P-A, Supplement 1, "Nuclear Measurement Analysis and Control Power Range Neutron Monitor (NUMAC PRNM) Retrofit Plus Option III Stability Trip Function," November 1997.

18. Letter, L. A. England (BWROG) to M. J. Virgilio, "BWR Owners' Group Guidelines for Stability Interim Corrective Action," June 6, 1994.

19. NRC Generic Letter 94-02, "Long-Term Solutions and Upgrade of Interim Operating Recommendations for Thermal Hydraulic Instabilities in Boiling Water Reactors," July 1994.

20. BWROG Letter 96113, Kevin P. Donovan (BWROG) to L. E. Phillips (NRC), Guidelines for Stability Option III 'Enable Region' (TAC M92882)," dated September 17, 1996.

19) Page B 3.4.1-2 Recirculation Loops Operating Bases - Background

The following three paragraphs related to the detection and suppression of thermal hydraulic instabilities are deleted, consistent with deleting the ICAs from TS 3.4.1:

~~GDC 12 of 10 CFR 50 Appendix A (Ref. 4) states that the reactor core and associated coolant, control, and protection systems shall be designed to assure that power oscillations which can result in exceeding specified fuel design limits are not possible or can be reliably detected and suppressed.~~

~~BWR cores typically operate with the presence of global flux noise in a stable mode which is due to random boiling and flow noise. As the power / flow conditions are changed, along with other system parameters (xenon, subcooling, power distribution, etc.) the thermal hydraulic / reactor kinetic feedback mechanism can be enhanced such that the perturbations may result in sustained limit cycle or divergent oscillations in power and flow.~~

~~Two major modes of oscillations have been observed in BWRs. The first mode is the fundamental or core-wide oscillation mode in which the entire core oscillates in phase in a given axial plane. The second mode involves regional oscillation in which one half of the core oscillates 180 degrees out of phase with the other half. Studies have indicated that adequate margin to the Safety Limit MCPR may not exist during oscillations.~~

20) Page B 3.4.1-4 Recirculation Loops Operating Bases - Applicable Safety Analyses

The next to last full paragraph of the Applicable Safety Analyses discussion is deleted, consistent with the removal of ICAs to detect and suppress thermal-hydraulic instabilities from TS 3.4.1:

~~Thermal-hydraulic stability analysis (Ref. 5) has concluded that procedures for detecting and suppressing power oscillations that might be induced by a~~

~~thermal-hydraulic instability are necessary to provide reasonable assurance that the requirements of Reference 4 are satisfied.~~

21) Page B 3.4.1-4 Recirculation Loops Operating Bases - LCO

Two cross-references to Surveillance Requirement SR 3.4.1.2 have been changed to SR 3.4.1.1 to reflect the renumbering as described in Change 7 above.

The following paragraph of the LCO Bases related to thermal-hydraulic instability has been deleted in its entirety:

~~Operations that exhibit core thermal-hydraulic instability are not permitted. Additionally, in order to avoid potential power oscillations due to thermal-hydraulic instability, operation at certain combinations of power and flow are not permitted. These restricted power and flow regions are referred to as the "Scram" and "Exit" regions and are defined by Bases Figure B 3.4.1-1.~~

22) Pages B 3.4.1-6 and -7 Recirculation Loops Operating Bases - Actions B.1, C.1, and D.1

The Actions Bases discussion of Actions B.1 and D.1 are deleted, consistent with the change to TS 3.4.1 Actions as described in item 6 above. These deleted discussions, related to the occurrence of thermal-hydraulic instability, read as follows:

~~B.1~~

~~When operating in the "Exit" region, (refer to Figure B 3.4.1-1), the potential for thermal-hydraulic instabilities is increased and sufficient margin may not be available for operator response to suppress potential power oscillations. Therefore, action must be initiated immediately to restore operation outside of the "Exit" region. Control rod insertion and/or core flow increases are designated as the means to accomplish this objective.~~

~~D.1~~

~~If operating with no recirculation pumps in operation in Mode 1 or operating in the "Scram" region (refer to Bases Figure 3.4.1-1), or if core thermal-hydraulic instability is detected, then unacceptable power oscillations may result. Therefore, the reactor mode switch must be immediately placed in the~~

~~shutdown position to terminate the potential for unacceptable power oscillations.~~

~~Thermal-hydraulic instability is evidenced by a sustained increase in APRM or LPRM peak-to-peak noise level reaching 2 or more times its initial level and occurring with a characteristic periods of less than 3 seconds.~~

~~If entry into this condition is an unavoidable and well known consequence of an event, early initiation of the Required Action is appropriate. Also it is recognized that during certain abnormal conditions, it may become operationally necessary to enter the "Scram" or "Exit" region for the purpose of: 1) protecting plant equipment, which if it were to fail could impact plant safety, or 2) protecting a safety or fuel operating limit. In these cases, the appropriate actions for the region entered would be performed as required.~~

~~These requirements are consistent with References 5 and 6.~~

Action C.1 is redesignated B.1 and modified as follows, consistent with the Standard ITS, to reflect combining the TS 3.4.1 Actions as described in item 6 above (no recirculation pumps in operation in either MODE 1 or 2):

~~C.1~~**B.1**

With no recirculation loops in operation in MODE **1 or** 2, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to MODE 3 within ~~6~~**12** hours. In this condition, the recirculation loops are not required to be operating because of the reduced severity of DBAs and minimal dependence on the recirculation loop coastdown characteristics. The allowed Completion Time of ~~6~~**12** hours is reasonable, based on operating experience, to reach MODE 3 from MODE **1 or** 2 conditions in an orderly manner and without challenging plant systems.

23) Page B 3.4.1-7 Recirculation Loops Operating Bases - Surveillance Requirements SR 3.4.1.1

The Surveillance Requirements discussion of SR 3.4.1.1 is deleted due to the deletion of SR 3.4.1.1 as discussed in item 7 above. This deleted discussion, related to the occurrence of thermal-hydraulic instability, reads as follows:

~~SR 3.4.1.1~~

~~This SR provides frequent periodic monitoring for core thermal-hydraulic instability by monitoring APRM and LPRM signals for a sustained increase in~~

~~APRM or LPRM peak to peak noise level reaching 2 or more times its initial level and occurring with a characteristic period of less than 3 seconds. The 1 hour frequency is based on the small potential for core thermal hydraulic oscillations to occur outside the "Scram" or ""Exit" regions. Therefore, frequent monitoring of the APRM and LPRM signals is appropriate when operating in the "Stability Awareness" region.~~

~~This SR is modified by a Note that states performance is only required when operating in the "Stability Awareness" region (refer to Bases Figure B 3.4.1-1) (i.e., in the power-to-flow region that is ne ɜr regions of higher probability for thermal hydraulic instabilities). This is acceptable because outside the "Stability Awareness" region, power and flow conditions are such that sufficient margin exists to the potential for core thermal hydraulic instability to allow routine core monitoring. Any unanticipated entry into the "Stability Awareness" region would require immediate verification of core stability since the Surveillance would not be current.~~

24) Page B 3.4.1-8 Recirculation Loops Operating Bases - Surveillance Requirements SR 3.4.1.2

The Bases discussion for SR 3.4.1.2 is renumbered SR 3.4.1.1, consistent with the deletion of SR 3.4.1.1 and change of SR 3.4.1.2 to SR 3.4.1.1 as described in Item 7 above.

25) Page B 3.4.1-9 Recirculation Loops Operating Bases - References

Reference 4, 5, and 6 for Bases 3.4.1 are deleted as follows due to their only points of citation having been deleted. It should be noted that References 5 and 6 now appear in the Bases references for TS 3.3.1 (as References 18 and 19), consistent with the Reference 7 LTR Supplement 1 suggested TS markups presented in Appendix H.1.1:

~~4. 10 CFR 50, Appendix A, GDC 12~~

~~5. NRC Generic Letter 94-02, "Long-Term Solutions and Upgrade of Interim Operating Recommendations for Thermal Hydraulic Instabilities in Boiling Water Reactors," July 1994.~~

~~6. BWROG Letter 94078, "BWR Owners' Group Guidelines for Interim Corrective / ,etion," June 1994.~~

26) Page B 3.4.1-10 Recirculation Loops Operating Bases - Figure B 3.4.1-1

Figure B 3.4.1-1, Thermal Power vs. Core Flow, is deleted. All citations to this figure, which defines the "Scram", "Exit", and "Stability Awareness" regions, have been deleted by the changes described above to TS 3.4.1 and associated Bases.

EVALUATION OF THE PROPOSED CHANGE(S):

Under certain conditions, BWRs may be susceptible to coupled neutronic/thermal-hydraulic instabilities. These instabilities are characterized by periodic power and flow oscillations. If power and flow oscillations become large enough, the Minimum Critical Power Ratio (MCPR) Safety Limit could be challenged.

Stability Long-Term Solution Option III, as described in Reference 8, consists of hardware and software that provides for reliable, automatic detection and suppression of stability related power oscillations. The Option III hardware automatically initiates control rod insertion to terminate the power oscillation while it is still small. The combination of hardware, software, and system setpoints provide protection against violation of the MCPR Safety Limit for oscillations.

Descriptions of the stability detect and suppress methodology and of the Option III solution have been submitted to, reviewed, and approved by the NRC (Reference 8 and related NRC SER dated July 12, 1993). Specific hardware and software designs, as well as sample TS changes have been submitted to, reviewed, and approved by the NRC (Reference 7 which includes the NRC approval Safety Evaluation Reports). Additional methodologies related to the application of the reactor stability detect and suppress solutions to reload applications (including Option III) have been submitted to, reviewed, and approved by the NRC (Reference 6).

The Technical Specification changes defined and described in the Description above address the activation of the Option III trip during RFO7, consistent with the guidance in the Reference 6, 7, and 8 Licensing Topical Reports and related NRC approvals, and closely follow similar license amendments for the Hatch and Browns Ferry plants that have been previously approved by the NRC. The Reference 6, 7, and 8 BWROG Licensing Topical Reports are applicable to the Fermi 2 plant hardware and associated TS changes described in this enclosure, or in several cases, differences have been described, discussed, and justification provided.

Based on the information provided in this enclosure, adding the OPRM Upscale Function to Section 3.3.1.1 (Reactor Protection System) of the Fermi TS is reasonable and consistent with the instability detect and suppress objectives.

In conjunction with the addition of the OPRM Upscale Function to the RPS TS Section 3.3.1.1, stability related ICAs are being deleted from TS Section 3.4.1 (Recirculation Loops Operating) related to the manual detection and suppression of thermal-hydraulic instabilities that are no longer needed after the OPRM trip is installed. Based on the information provided in this enclosure, deletion of the stability related ICAs is reasonable and acceptable, and is consistent with and supported by the implementation of the OPRM Upscale Function.

ENCLOSURE 2

FERMI 2 NRC DOCKET NO. 50-341
NRC LICENSE NO. NPF-43

REQUEST TO REVISE TECHNICAL SPECIFICATIONS:
10CFR50.92 SIGNIFICANT HAZARDS CONSIDERATION

10CFR50.92 SIGNIFICANT HAZARDS CONSIDERATION

BASIS FOR SIGNIFICANT HAZARDS DETERMINATION

In accordance with 10CFR50.92, Detroit Edison has made a determination that the proposed amendment involves no significant hazards consideration. The proposed Technical Specification (TS) changes described above do not involve a significant hazards consideration for the following reasons:

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

   The proposed change is to enable the OPRM Upscale Function that is contained in the previously installed PRNM equipment. Enabling the OPRM hardware provides the long-term stability solution required by Generic Letter 94-02. This hardware incorporates the Option III detect and suppress solution reviewed and approved by the NRC in the Reference 6, 7, and 8 Licensing Topical Reports and their Supplements. The OPRM is designed to meet all requirements of GDC 10 and 12 by automatically detecting and suppressing design basis thermal-hydraulic power oscillations prior to violating the fuel MCPR Safety Limit. The OPRM system provides this protection in the region where Interim Corrective Actions (ICAs) restricted operation because of stability concerns. Thus, the ICA restrictions on plant operation are deleted from the TS, including region avoidance and the requirement for the operator to manually scram the reactor with no recirculation loops operating. Operation at high core powers with low core flows may cause a slight, but not significant, increase in the probability that an instability may occur. This slight increase is acceptable because subsequent to the automatic detection of an instability, the OPRM Upscale function provides an automatic scram signal to the RPS that is faster than the operator-initiated manual scram required by the current ICAs. Because of this rapid automatic action, the consequences of an instability event are not increased as a result of the installation of the OPRM system because it eliminates dependence on operator actions.

   Based on the above discussion, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

   The proposed change permits Fermi 2 to enable the OPRM power oscillation detect and suppress function provided in previously installed PRNM hardware,

and it simultaneously deletes certain restrictions which preclude operation in regions of the power-flow map where oscillations potentially may occur. Enabling the OPRM Upscale function does not create any new system hardware interfaces nor create any new system interactions. Potential failures of the OPRM Upscale function result either in failure to perform a mitigation action or in spurious initiation of a reactor scram. These failures would not create the possibility of a new or different kind of accident.

Based on the above discussion, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. The change does not involve a significant reduction in the margin of safety.

The OPRM Upscale function implements BWROG Stability Option III, which was developed to meet the requirements of GDC 10 and GDC 12 by providing a hardware system that detects the presence of thermal-hydraulic instabilities and automatically initiates the necessary actions to suppress the oscillations prior to violating the MCPR Safety Limit. The NRC has reviewed and accepted the Option III methodology described in the Reference 6, 7, and 8 Licensing Topical Reports and their supplements, and concluded that this solution will provide the intended protection. Therefore, it is concluded that there will be no reduction in the margin of safety as defined in the TS as a result of enabling the OPRM Upscale function and simultaneously removing the operating restrictions previously imposed by the ICAs.

Based on the above discussion, the proposed change does not involve a significant reduction in the margin of safety.

ENCLOSURE 3

FERMI 2

NRC DOCKET NO. 50-341
OPERATING LICENSE NPF-43

REQUEST TO REVISE TECHNICAL SPECIFICATIONS

OSCILLATION POWER RANGE MONITOR UPSCALE TRIP FUNCTION IN THE AVERAGE POWER RANGE MONITOR

Attached is a mark-up of the draft Improved Technical Specifications (ITSs), indicating the proposed changes. A typed version of the affected TS pages with the proposed changes incorporated has not been provided at this time as is normally done. This is due to the significant ITS conversion activity that will have taken place between the time of this submittal and the implementation of the proposed change.