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Detroit Edison

A DTE Energy Company

10CFR50.90

August 24, 2001
NRC-01-0055

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

Reference: Fermi 2
NRC Docket No. 50-341
NRC License No. NPF-43

Subject: Proposed Technical Specification Change (License Amendment) – Deletion of Required Action for the Restoration of Oscillation Power Range Monitor Function, Reactor Protection System (RPS) Instrumentation TS 3.3.1.1

Pursuant to 10CFR50.90, Detroit Edison hereby proposes to amend the Fermi 2 Plant Operating License NPF-43, Appendix A, Technical Specifications (TS) to delete TS Required Action 3.3.1.1.J.2 which in the event of the inoperability of the Oscillation Power Range Monitor (OPRM) trip function, limits plant operation above 25% power to 120 days. For this situation, the proposed TS change would allow plant operation to continue if TS Required Action 3.3.1.1.J.1 is taken to implement an alternate method to detect and suppress thermal hydraulic instability oscillations.

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 existing TS and TS Bases pages to show the proposed change and a typed version of the affected TS and TS Bases pages with the proposed changes incorporated.

Detroit Edison has reviewed the proposed TS change against the criteria of 10CFR51.22 for environmental considerations. The proposed change does not

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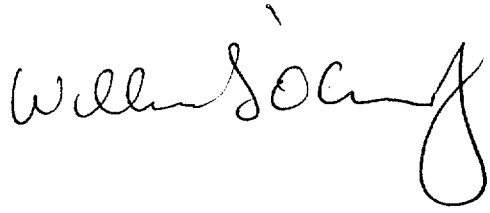
involve a significant hazards consideration, nor does it significantly change the types or significantly increase the amounts of effluents that may be released offsite. The change does not significantly increase individual or cumulative occupational radiation exposures. Based on the foregoing, Detroit Edison concludes that the proposed TS change meets the criteria provided in 10CFR51.22(c) (9) for a categorical exclusion from the requirements for an Environmental Impact Statement or an Environmental Assessment.

Detroit Edison requests that the NRC approve and issue a License Amendment by March 1, 2002 with an implementation period of within 30 days following NRC approval. This schedule is requested in order to eliminate any potential for shutdown, delays in startup, or urgent regulatory actions which could arise pending resolution of the General Electric 10CFR Part 21 issues associated with the OPRM trip function.

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: T. J. Kim
M. A. Ring
NRC Resident Office
Regional Administrator, Region III
Supervisor, Electric Operators,
Michigan Public Service Commission

I, WILLIAM T. O'CONNOR, JR., 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 T. O'Connor, Jr.
Vice President - Nuclear Generation

On this 24th day of August, 2001 before me personally appeared William T. O'Connor, Jr., being first duly sworn and says that he executed the foregoing as his free act and deed.

Notary Public

KAREN M. REED
Notary Public, Monroe County, MI
My Commission Expires 09/02/2005

ENCLOSURE 1 to
NRC-01-0055

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

REQUEST TO REVISE TECHNICAL SPECIFICATIONS:

REACTOR PROTECTION SYSTEM (RPS) INSTRUMENTATION, TS 3.3.1.1

DESCRIPTION AND EVALUATION
OF THE PROPOSED CHANGE

DESCRIPTION AND EVALUATION OF THE PROPOSED CHANGE

DESCRIPTION:

The Oscillation Power Range Monitor (OPRM) module of the General Electric (GE) Power Range Neutron Monitoring (PRNM) system was installed to satisfy the Fermi 2 long-term solution regarding reactor stability referred to as Option III in NEDO-31960, Supplement 1, "BWR Owners' Group Long-term Stability Solution Licensing Methodology," November 1995. TS changes for the installation of the PRNM system and subsequent arming of the OPRM system were approved by the NRC in Safety Evaluation Reports (SERs) dated July 13, 1998 and March 31, 2000 respectively. In the current Fermi 2 TS, Required Action 3.3.1.1.J.1 provides for an action to be taken in the event of the inoperability of the OPRM Upscale Function (Function 2.f in the TS table 3.3.1.1-1, Reactor Protection System Instrumentation). In the event of the inoperability of the OPRM upscale trip function, TS require an alternate method to detect and suppress thermal hydraulic instability oscillations be initiated within 12 hours. Required Action 3.3.1.1.J.2 further requires the return of the OPRM upscale function to service within 120 days. If 120-day Completion Time is not met, then Required Action 3.3.1.1.K.1 would require reactor thermal power be reduced to < 25% within 4 hours.

GE notified Detroit Edison on June 27, 2001 of a potential 10CFR Part 21 condition associated with a potentially non-conservative calculation of the OPRM setpoints for the current operating cycle (Cycle 8). For Fermi 2, these calculations are defined in the Licensing Topical Report NEDO-32465-A, "Reactor Stability Detect and Suppress Solutions Licensing Basis Methodology for Reload Applications," August 1996. This document specifies two generic curves (Delta Critical Power Ratio/Initial Critical Power Ratio Vs. Oscillation Magnitude (DIVOM curves)), one for core-wide mode oscillations and one for regional mode oscillations, relating normalized critical power ratio to hot bundle oscillation magnitude. Fermi 2 has implemented the Option III stability detect and suppress solution. In Option III, the generic regional mode curve is used to determine setpoints for the OPRM System to provide adequate Safety Limit Minimum Critical Power Ratio (SLMCPR) protection. In recent evaluations, the vendor identified a non-conservative deficiency for high peak bundle power-to-flow ratios in the generic regional DIVOM curve. As a result, the OPRM System trip setpoint may be overpredicted by the generic regional DIVOM curve. Formal notification to the NRC on the same subject was provided by a letter from GE on June 29, 2001. The net effect of the Part 21 condition is the possible generation and implementation of non-conservative OPRM upscale trip setpoints that could result in inadequate Safety Limit MCPR protection during an instability event. Based on the preliminary notification of the potential for non-conservative setpoints, the OPRM was conservatively declared inoperable on June 27, 2001. By declaring the OPRM inoperable, Fermi 2 entered TS 3.3.1.1.J, which invokes the alternate instability monitoring

action statement and the 120-day requirement to return the OPRM system to operable status. On July 5, 2001, Detroit Edison received confirmation from GE that this issue was applicable to Fermi 2 Cycle 8.

Detroit Edison is aware that Perry Nuclear Plant and Columbia Generating Station have previously received approval of OPRM TS without the 120-day Required Action statement. The SERs for the approval of their license amendments in this regard are dated February 26, 2001 and April 5, 2001, respectively. On July 26, 2001, NRC granted an emergency TS change to Browns Ferry Unit 2 to delete the 120-day Required Action statement. Hence, in consideration of the precedent regulatory approvals and to avoid the potential need for an exigent TS change request or Notice of Enforcement Discretion (NOED) request to allow continued operation above 25% power past 120 days prior to resolution of the Part 21 condition, Detroit Edison finds it prudent to request a TS change similar to those approved for Perry, Columbia, and Browns Ferry Unit 2 stations.

EVALUATION OF THE PROPOSED CHANGE:

The OPRM trip system is designed to detect and suppress possible reactor thermal hydraulic instabilities and implements the long-term solution known as the Boiling Water Reactor Owners Group (BWROG) "Stability Option III" alternative. Prior to the installation and arming of the OPRM, monitoring for thermal hydraulic instability oscillations and suppression thereof was performed exclusively by operating procedures. These operator stability monitoring functions are commonly referred to in the industry as interim corrective actions (ICAs) and are the same actions referenced in existing TS Required Action 3.3.1.1.J.1 for the situation in which the OPRM trip capability is lost. In summary, the stability ICAs, which are implemented in plant procedures, prescribe that reactor stability be monitored through instrumentation whenever the plant is operating in the power/flow map regions associated with potential stability concerns and to take specific actions in the event an instability condition is observed or likely.

The alternate methods to detect and suppress oscillations which are implemented via TS Required Action 3.3.1.1.J.1 were evaluated in NEDC-32410P-A, "Nuclear Measurement Analysis and Control Power Range Neutron Monitor (NUMAC PRNM) Retrofit Plus Option III Stability Trip Function," October 1995, based on use up to 120 days. The 120-day period was 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. The evaluation was based on engineering judgment, and 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.

Indeed, in practice, it is very unlikely that the 120-day Completion Time specified in TS Required Action 3.3.1.1.J.2 would not be sufficient for correcting any software errors in the OPRM system or other analytical problems such as the recent GE Part 21. However, considering

that BWR plants have satisfactorily operated using stability ICAs for a number of years, operation beyond the current 120-day limit specified in required Action 3.3.1.1.J.2 is justifiable and does not create a safety concern. Stability ICA's have been used at Fermi 2 as the standard method of stability monitoring beginning in 1988 up to the recent installation and arming of the OPRM system in April 2000 and procedure is in place as the alternate method of monitoring stability per Required Action 3.3.1.1.J.1. Hence, use of stability ICAs is a well-established methodology and has a lengthy experience base at Fermi 2.

Therefore, use of ICAs as invoked by Required Action 3.3.1.1.J.1 provides a satisfactory means of monitoring reactor stability and an adequate level of plant safety. Problems with the OPRM system will still be required to be remedied in a timely manner in accordance with 10CFR50, Appendix B Criterion XVI, "Corrective Actions". Additionally, management attention would continue to be focused on restoring OPRM operability since it is a plant objective to remedy nonconforming conditions in a prompt manner and to avoid operating using TS ACTIONS such as would be the case with inoperable OPRM equipment. Thus, it is not expected that prolonged plant operation under TS 3.3.1.1.J.1 ICAs would be a common occurrence.

ENCLOSURE 2 to
NRC-01-0055

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

REQUEST TO REVISE TECHNICAL SPECIFICATIONS:
REACTOR PROTECTION SYSTEM (RPS) INSTRUMENTATION TS 3.3.1.1
10CFR50.92 SIGNIFICANT HAZARDS CONSIDERATION

10CFR50.92 SIGNIFICANT HAZARDS CONSIDERATION

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) change described above does 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 OPRM function is not considered as an initiator of any previously analyzed accident. Therefore, this proposed change does not significantly increase the probability of such accidents. This proposed change would allow the use of existing well-established alternate methods to detect and suppress the thermal hydraulic instability oscillations. Considering that multiple Boiling Water Reactor plants, including Fermi 2, have satisfactorily operated using alternate stability monitoring methods for extended periods of time prior to the installation of OPRM systems, it is concluded that these measures are adequate. Therefore, the consequences of a previously analyzed accident would not be significantly increased.

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 does not involve a physical alteration of the plant, add any new equipment, or require any existing equipment to be operated in a manner different from the present design. Therefore, the proposed amendment 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.

   This proposed change would allow the use of an existing alternate method to detect and suppress thermal hydraulic instability oscillations to continue to operate the reactor above 25% power in the event of the inoperability of the OPRM system. Considering that multiple Boiling Water Reactor plants, including Fermi 2, have satisfactorily operated using alternate stability monitoring methods for extended periods of time, it is concluded that these measures are adequate, and that the proposed change does not significantly reduce the margin of safety.

ENCLOSURE 3 to
NRC-01-0055

FERMI 2

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

REQUEST TO REVISE TECHNICAL SPECIFICATIONS

REACTOR PROTECTION SYSTEM INSTRUMENTATION, TS 3.3.1.1

Attached is a mark-up of the existing Technical Specifications (TS) and TS Bases, indicating the proposed changes (Part 1) and a typed version of the TS and TS Bases incorporating the proposed changes with a list of included pages (Part 2).

ENCLOSURE 3 - PART 1 to
NRC-01-0055

PROPOSED TECHNICAL SPECIFICATIONS (TS) AND TS BASES MARKED UP PAGES

INCLUDED PAGE(S):

3.3-3
B 3.3.1.1-25
B 3.3.1.1-25a

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
G. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	G.1 Be in MODE 3.	12 hours
H. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	H.1 Isolate all main steam lines. OR H.2 Be in MODE 3.	12 hours 12 hours
I. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	I.1 Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately
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 status.	 120 days

(continued)

BASES

ACTIONS (continued)

I.1

If the channel(s) is not restored to OPERABLE status or placed in trip (or the associated trip system placed in trip) within the allowed Completion Time, the plant must be placed in a MODE or other specified condition in which the LCO does not apply. This is done by immediately initiating action to fully insert all insertable control rods in core cells containing one or more fuel assemblies. Control rods in core cells containing no fuel assemblies do not affect the reactivity of the core and are, therefore, not required to be inserted. Action must continue until all insertable control rods in core cells containing one or more fuel assemblies are fully inserted.

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.

SEE INSERT

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

INSERT

Required Action J.1 calls for initiating an alternate method to detect and suppress thermal hydraulic instability oscillations.

BASES

ACTIONS (continued)

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.

SURVEILLANCE REQUIREMENTS

As noted at the beginning of the SRs, the SRs for each RPS instrumentation Function are located in the SRs column of Table 3.3.1.1-1.

The Surveillances are modified by a Note to indicate that when a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours, provided the associated Function maintains RPS trip capability. For the case of the APRM Functions 2.a, 2.b, 2.c, and 2.d, RPS trip capability is maintained with any two OPERABLE APRMs remaining. Upon completion of the Surveillance, or expiration of the 6 hour allowance, the channel must be returned to OPERABLE status or the applicable Condition entered and Required Actions taken. This Note is based on the reliability analysis (Ref. 9) assumption of the average time required to perform channel Surveillance. That analysis demonstrated that the 6 hour testing allowance does not significantly reduce the probability that the RPS will trip when necessary.

SR 3.3.1.1.1 and SR 3.3.1.1.2

Performance of the CHANNEL CHECK once every 12 hours or once every 24 hours ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring

ENCLOSURE 3 - PART 2 to
NRC-01-0055

PROPOSED TECHNICAL SPECIFICATIONS AND TS BASES REVISED PAGES

INCLUDED PAGE(S):

3.3-3
B 3.3.1.1-25
B 3.3.1.1-25a

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
G. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	G.1 Be in MODE 3.	12 hours
H. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	H.1 Isolate all main steam lines. OR H.2 Be in MODE 3.	12 hours 12 hours
I. As required by Required Action D.1 and referenced in Table 3.3.1.1-1.	I.1 Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately
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

(continued)

BASES

ACTIONS (continued)

I.1

If the channel(s) is not restored to OPERABLE status or placed in trip (or the associated trip system placed in trip) within the allowed Completion Time, the plant must be placed in a MODE or other specified condition in which the LCO does not apply. This is done by immediately initiating action to fully insert all insertable control rods in core cells containing one or more fuel assemblies. Control rods in core cells containing no fuel assemblies do not affect the reactivity of the core and are, therefore, not required to be inserted. Action must continue until all insertable control rods in core cells containing one or more fuel assemblies are fully inserted.

J.1

If OPRM Upscale trip capability is not maintained, Condition J exists. Required Action J.1 calls for initiating an alternate method to detect and suppress thermal hydraulic instability oscillations. 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.

BASES

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The Surveillances are modified by a Note to indicate that when a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours, provided the associated Function maintains RPS trip capability. For the case of the APRM Functions 2.a, 2.b, 2.c, and 2.d, RPS trip capability is maintained with any two OPERABLE APRMs remaining. Upon completion of the Surveillance, or expiration of the 6 hour allowance, the channel must be returned to OPERABLE status or the applicable Condition entered and Required Actions taken. This Note is based on the reliability analysis (Ref. 9) assumption of the average time required to perform channel Surveillance. That analysis demonstrated that the 6 hour testing allowance does not significantly reduce the probability that the RPS will trip when necessary.

SR 3.3.1.1.1 and SR 3.3.1.1.2

Performance of the CHANNEL CHECK once every 12 hours or once every 24 hours ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring