Fermi 2
6400 North Dixie Hwy., Newport, MI 48166

Detroit Edison

10CFR50.90

September 26, 2002
NRC-02-0043

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) Technical Specifications Task Force (TSTF) Traveler TSTF-225, Revision 1, Fuel Movement With Inoperable Refueling Equipment Interlocks

Subject: Proposed Technical Specification Change (License Amendment) – Refueling Equipment Interlocks

Pursuant to 10CFR50.90, Detroit Edison hereby proposes to amend the Fermi 2 Plant Operating License NPF-43, Appendix A, Technical Specifications (TS). The proposed amendment would modify TS 3.9.1, "Refueling Equipment Interlocks." Specifically, Detroit Edison proposes a change to Limiting Condition for Operation (LCO) 3.9.1 to provide an alternative Required Action if the refueling interlocks become inoperable as described in Technical Specifications Task Force (TSTF) Traveler TSTF-225. (Reference 2)

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 to show the proposed change and a typed version of the affected TS pages with the proposed changes incorporated. Enclosure 4 provides a copy of the marked up TS Bases change pages for information.

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

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involve a significant hazards consideration, nor significantly change the types or significantly increase the amounts of effluents that may be released offsite. Additionally, the proposed changes do not 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.

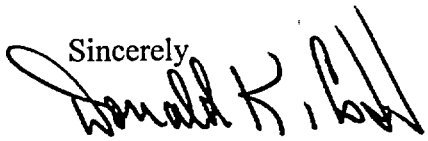
Detroit Edison requests that the NRC approve and issue these changes by January 1, 2003 with an implementation period of within 60 days following NRC approval. This approval date is requested to allow for adequate planning and scheduling of the upcoming ninth refueling outage, scheduled to start in March 2003.

Similar TS changes have been approved for Perry Nuclear Plant, Browns Ferry Nuclear Plant, Units 1, 2, and 3, and Clinton Power Station.

There are no commitments being made in this letter.

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

Sincerely,



Donald K. Cobb
Director, Nuclear Production/Plant Manager

Enclosures

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

I, DONALD K. COBB, 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.

DONALD K. COBB
Director, Nuclear Production/Plant Manager

On this 26 day of September, 2002 before me personally appeared Donald K. Cobb, being first duly sworn and says that he executed the foregoing as his free act and deed.

Notary Public

CYNTHIA L. SMITH
Notary Public, Monroe County, MI
My Commission Expires Oct. 5, 2005

NRC-02-0043
ENCLOSURE 1

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

REQUEST TO REVISE TECHNICAL SPECIFICATION 3.9.1, REFUELING EQUIPMENT INTERLOCKS

DESCRIPTION AND EVALUATION OF THE PROPOSED CHANGES

DESCRIPTION AND EVALUATION OF THE PROPOSED CHANGE

DESCRIPTION:

This letter is a request to amend Operating License No. NPF-43 for Fermi 2. This proposed TS change revises LCO 3.9.1, Refueling Equipment Interlocks, to provide two new alternative Required Actions for the condition when the refueling equipment interlocks are inoperable. Specifically, the TS change adds Required Actions 3.9.1.A.2.1 to immediately block control rod withdrawal and 3.9.1.A.2.2 to perform a verification that all of the control rods are fully inserted. The associated TS Bases for the new Required Actions are likewise being modified to reflect the TS changes. The proposed change would allow the plant to continue to perform fuel movements in the reactor vessel should the refueling equipment interlocks become inoperable or the surveillance requirement not be met.

The proposed changes to TS 3.9.1 are consistent with TSTF-225, Revision 1 (Reference 2), submitted to the NRC by the Technical Specifications Task Force (TSTF). The changes are consistent with changes approved by the NRC for the Perry Nuclear Plant, Browns Ferry Nuclear Plant, Units 1, 2, and 3, and Clinton Power Station.

Refer to the marked-up TS (Enclosure 3) and TS Bases (Enclosure 4) pages for the specific changes.

The refueling equipment interlocks are described in detail in Section 7.6, Refueling Interlocks, of the Updated Final Safety Analysis Report (UFSAR) and in the Bases for TS LCO 3.9.1. UFSAR Sections 15.4.1 and 15.4.1.1.2.2 describe the analysis assumptions for the control rod removal error and fuel assembly insertion error during refueling.

TS LCO 3.9.1 requires that the refueling equipment interlocks be OPERABLE during fuel movement. If the refueling equipment interlocks are not OPERABLE, then TS Required Action 3.9.1.A.1 requires that in-vessel fuel movement be immediately suspended.

The proposed TS change would allow fuel movement to continue if the refueling interlocks were inoperable provided that a control rod withdrawal block is placed in effect (new Required Action 3.9.1.A.2.1) and that all control rods are verified to be fully inserted (new Required Action 3.9.1.A.2.2). These new Required Actions ensure that fuel loading will not occur with a control rod withdrawn. The approval of this TS would allow refueling activities to continue in the event of the failure of one or more of the refueling interlocks, while continuing to maintain a sufficient level of protection against inadvertent criticality. The change will be particularly beneficial during outages where refueling operations constitute critical path activities as a contingency provision for unexpected refuel interlock equipment problems.

The related Surveillance Requirement (SR) 3.9.1.1 (Refueling Equipment Interlocks Channel Functional Test) has a 7-day frequency. Should the 7-day SR interval become due shortly before the completion of fuel movement activities, it would also be beneficial to have the option afforded by this TS change to apply the new 3.9.1.A.2 Required Actions, rather than halting refueling activities to perform the SR. This would reduce the risk associated with halting and resumption of fuel bundle movements.

The proposed Detroit Edison TS change is similar to the proposed generic change provided in Technical Specifications Task Force (TSTF) item TSTF-225, Revision 1, which was transmitted to NRC on November 22, 2000 (Reference 2). TSTF-225, Revision 1, in addition to adding the two new alternative Required Actions being requested in this submittal, also proposed to extend the surveillance frequency of SR 3.9.1.1 from 7 days to 31 days. This TS change request does not include the 31-day SR extension provision. This is similar to license amendments approved for other plants.

Refueling equipment interlocks restrict the operation of the refueling equipment or the withdrawal of control rods to reinforce plant procedures in preventing the reactor from achieving criticality during refueling. The control rods, when fully inserted, serve as the system capable of maintaining the reactor subcritical in cold conditions during all fuel movement activities and accidents, as prescribed by General Design Criterion (GDC) 26 of 10 CFR 50, Appendix A.

This TS change provides that, in the event of the inoperability of the refueling interlocks, that fuel movement may continue if all control rods are verified to be fully inserted and a rod block is inserted. These alternative actions also satisfy the safety objective of maintaining the reactor subcritical in cold conditions during all fuel movement activities and accidents by verifying all rods are fully inserted and by inserting a rod block to prohibit control rod withdrawal.

EVALUATION OF THE PROPOSED CHANGES:

The following provide input to the refueling interlock instrumentation: 1) the position of the refueling platform and fuel grapple, 2) the loading of the refueling platform grapple and hoists, and 3) the full insertion of all control rods. It should be noted that the refueling service platform is no longer in service at Fermi 2. Criticality is prevented during the loading of fuel provided all control rods are fully inserted. The refueling equipment interlocks accomplish this by preventing the loading of fuel into the core with any control rod withdrawn, or by preventing withdrawal of a control rod from the core during fuel loading. To prevent these potential criticality conditions from developing, the all-rods-in signal, the refueling platform and grapple position, and the refueling platform grapple and hoists fuel loaded inputs are required to be OPERABLE by TS LCO 3.9.1. These inputs are combined in logic circuits that provide refueling equipment interlocks or control rod blocks to prevent operations that could result in criticality during refueling operations.

As discussed in the Bases for current TS Required Action 3.9.1.A.1, the purpose of the requirement (to suspend invessel fuel movement) is to ensure that operations are not performed with equipment that would potentially not be blocked from unacceptable operations (e.g., loading fuel into a cell with a control rod withdrawn). The method that the refueling equipment interlocks use to perform their function is to block control rod withdrawal whenever fuel is being moved over or in the reactor vessel. Conversely, when a control rod is withdrawn, the refueling interlocks prevent fuel from being moved over or in the vessel. Basically, operable refueling interlocks permit fuel loading to proceed without the need to have a control rod withdrawal block in effect at all times.

The first refueling equipment interlock safety function is to block control rod withdrawal whenever fuel is being moved over or in the reactor vessel. The new Required Action 3.9.1.A.2.1 will perform this function by requiring that a control rod block be placed in effect continuously.

The second refueling equipment interlock safety function (fuel grapple or hoists loaded) is to prevent fuel from being loaded into the vessel when a control rod is withdrawn. This function will continue to be performed by the proposed alternate Required Actions in 3.9.1.A.2. Required Action 3.9.1.A.2.1 will require that a control rod block first be placed in effect, thereby ensuring that control rods are not subsequently inappropriately withdrawn. In addition, Required Action 3.9.1.A.2.2 will require that all control rods be verified to be fully inserted. This verification is in addition to the periodic requirement to verify control rod position every 12 hours specified in TS 3.9.3, Control Rod Position, SR 3.9.3.1. These proposed Required Actions will ensure that control rods are not withdrawn and cannot be inappropriately withdrawn, because an electrical or hydraulic block to prevent control rod withdrawal will be in place. Like Required Action 3.9.1.A.1, proposed Actions 3.9.1.A.2.1 and 3.9.1.A.2.2 will ensure that unacceptable operations

are blocked (e.g., loading fuel into a cell with a control rod withdrawn). Hence, the misloading of fuel in cells with control rods withdrawn or rod withdrawal during fuel loading is equivalently prevented.

The proposed Required Actions also increase consistency within the TS, since they are similar to the Required Actions for the existing LCO in TS 3.9.4, "Control Rod Position Indication." LCO 3.9.4 controls the operability of the control rod position indicators, which serve a support system role for the refueling interlocks controlled by LCO 3.9.1 (the rod position indicators provide information to the all-rods-in interlock). LCO 3.9.4 requires that when one or more control rods do not have the required position indication OPERABLE, that either all the insertable control rods be inserted and fuel movement and control rod withdrawal be suspended (Required Actions 3.9.4.A.1.1, -A.1.2 and -A.1.3), or, that the associated control rod(s) be inserted and disarmed (Required Actions 3.9.4.A.2.1 and -A.2.2). The key is that if Required Actions 3.9.4.A.2.1 and -A.2.2 are complied with, then refueling activities can continue. The proposed LCO 3.9.1 Required Actions are consistent with the current Required Actions of LCO 3.9.4 in that they require either fuel movement be suspended (similar to Required Action 3.9.1.A.1), or that all control rods required to be inserted be verified to be inserted, and that control rod withdrawal be blocked (similar to the new TS 3.9.1.A.2 Required Actions).

This TS change revises the operability requirements for the refueling equipment interlocks in TS LCO 3.9.1. Specifically, the proposed change will add alternative Required Actions for the condition when the LCO requirement that the refueling interlocks be OPERABLE during in-vessel fuel movement cannot be met. The new TS 3.9.1 Required Actions would be to suspend fuel movement or alternatively, immediately insert a control rod withdrawal block and verify all control rods are fully inserted. This change is acceptable since these alternative Required Actions equivalently satisfy the safety objective of maintaining the reactor subcritical in cold conditions during in-vessel fuel movement activities and for analyzed events by verifying all rods are fully inserted and by inserting a rod block, prohibiting control rod withdrawal. If an equipment problem renders any of the refueling interlocks inoperable, the proposed TS change would provide an option to defer corrective maintenance by equivalently enforcing the refueling interlocks using the new alternate Required Actions. Similarly, if performance of SR 3.9.1 (Refueling Equipment Interlock Channel Functional Test) came due during fuel movement activities, the TS change would also allow declaring the refueling interlocks inoperable because of the overdue SR, using the new 3.9.1.A.2 Required Actions to equivalently enforce the refueling interlocks, and then continuing fuel movement. This has the benefit of not interrupting a potentially critical path evolution such as fuel movement, and reduces the risk of stopping and restarting fuel handling activities.

Similar TS changes have been approved for Perry Nuclear Plant, Browns Ferry Nuclear Plant, Units 1, 2, and 3, and Clinton Power Station.

The Perry Nuclear Plant, Docket Number 50-440, submitted their request on August 4, 1999, and received NRC approval September 12, 2000. The Fermi 2 submittal is similar to what was approved for the Perry Nuclear Plant (TAC No. MA6237).

The Browns Ferry Nuclear Plant, Units 1, 2, and 3, Docket Numbers 50-259, 260, and 296, submitted their request August 10, 2001, and received NRC approval March 6, 2002 (TAC Nos. MB2590, MB2591, and MB2592).

The Clinton Power Station, Docket Number 50-461, submitted their request May 21, 2001, and received approval April 4, 2002 (TAC No. MB2053).

In summary, the proposed TS change provides equivalent protection against inadvertent criticality equal to that provided when the interlocks are OPERABLE, and is, therefore, acceptable.

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ENCLOSURE 2

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

REQUEST TO REVISE TECHNICAL SPECIFICATION 3.9.1, REFUELING EQUIPMENT INTERLOCKS

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) changes described above do not involve a significant hazards consideration for the following reasons:

This proposed TS change revises LCO 3.9.1, "Refueling Equipment Interlocks," to provide two new alternative Required Actions for the condition when the refueling equipment interlocks are inoperable. Specifically, the TS change adds Required Actions 3.9.1.A.2.1 to immediately block control rod withdrawal, and 3.9.1.A.2.2 to perform a verification that all of the control rods are fully inserted.

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

   Response: No.

   The proposed amendment to the Technical Specifications does not result in the alteration of the design, material, or construction standards that were applicable prior to the change. The same Refueling Interlocks instrumentation is used, and the control rod removal error and fuel assembly insertion error assumptions in the Updated Final Safety Analysis Report (UFSAR) Chapter 15 analysis remain unchanged. The proposed additional Required Actions provide an equivalent level of assurance that fuel will not be loaded into a core cell with a control rod withdrawn as does the current TS Required Action. The proposed change will not result in the modification of any system interface that would increase the likelihood of an accident since these events are independent of the proposed change. The proposed amendment will not change, degrade, or prevent actions, or alter any assumptions previously made in evaluating the radiological consequences of an accident described in the UFSAR. Therefore, the proposed amendment does not result in a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

   Response: No.

   This change in the TS requirements does not alter the performance of the Refueling Equipment Interlocks. The change does not involve a change in plant design or to the analyzed condition of the reactor core during refueling. The proposed new

Required Actions will ensure that control rods are not withdrawn and cannot be inappropriately withdrawn because a block to control rod withdrawal is in place. Implementation of the proposed amendment does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

Response: No.

As discussed in the Bases for the affected TS requirements, inadvertent criticality is prevented during the loading of fuel provided all control rods are fully inserted. The refueling interlocks function to support the refueling procedures by preventing control rod withdrawal during fuel movement, and the inadvertent loading of fuel when a control rod is withdrawn. The proposed change will allow the refueling interlocks to be inoperable and fuel movement to continue, only if a control rod withdrawal block is in effect and all control rods are verified to be fully inserted. These proposed Required Actions provide an equivalent level of protection as the refueling interlocks by preventing a configuration which could lead to an inadvertent criticality event. The refueling procedures will continue to be supported by the proposed Required Actions because control rods cannot be withdrawn and as a result, fuel cannot be inadvertently loaded when a control rod is withdrawn. Plant and system response to an initiating event will remain in compliance within the assumptions of the safety analyses, and therefore, the margin of safety is not affected. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, Detroit Edison has determined that the proposed amendment presents no significant hazards consideration under the standards set forth in 10CFR50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

NRC-02-0043
ENCLOSURE 3

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

REQUEST TO REVISE TECHNICAL SPECIFICATION 3.9.1, REFUELING EQUIPMENT INTERLOCKS

Attached is a mark-up of the existing TS indicating the proposed changes (Part 1) and a typed version incorporating the proposed changes (Part 2)

NRC-02-0043
ENCLOSURE 3
PART 1

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

PROPOSED TS MARKED UP PAGES

INCLUDED PAGE(S):

3.9-1

3.9 REFUELING OPERATIONS

3.9.1 Refueling Equipment Interlocks

LCO 3.9.1 The refueling equipment interlocks associated with the refuel position of the reactor mode switch shall be OPERABLE.

APPLICABILITY: During in-vessel fuel movement with equipment associated with the interlocks when the reactor mode switch is in the refuel position.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required refueling equipment interlocks inoperable.	A.1 Suspend in-vessel fuel movement with equipment associated with the inoperable interlock(s).	Immediately
	OR	
	A.2.1 Insert a control rod withdrawal block	Immediately
	AND	
	A.2.2 Verify all control rods are fully inserted.	Immediately

NRC-02-0043
ENCLOSURE 3
PART 2

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

PROPOSED TS PAGES

INCLUDED PAGE(S):

3.9-1

3.9 REFUELING OPERATIONS

3.9.1 Refueling Equipment Interlocks

LCO 3.9.1 The refueling equipment interlocks associated with the refuel position of the reactor mode switch shall be OPERABLE.

APPLICABILITY: During in-vessel fuel movement with equipment associated with the interlocks when the reactor mode switch is in the refuel position.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required refueling equipment interlocks inoperable.	A.1 Suspend in-vessel fuel movement with equipment associated with the inoperable interlock(s).	Immediately
	OR	
	A.2.1 Insert a control rod withdrawal block	Immediately
	AND	
	A.2.2 Verify all control rods are fully inserted.	Immediately

NRC-02-0043
ENCLOSURE 4

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

REQUEST TO REVISE TECHNICAL SPECIFICATION 3.9.1, REFUELING EQUIPMENT INTERLOCKS

(FOR INFORMATION ONLY)

PROPOSED TS BASES MARKED UP PAGES

INCLUDED PAGE(S):

B 3.9.1-4

BASES

ACTIONS

A.1

A.2.1, and A.2.2 Add

Insert B.3.9.1-4A

With one or more of the required refueling equipment interlocks inoperable (does not include the one-rod-out interlock addressed in LCO 3.9.2), the unit must be placed in a condition in which the LCO does not apply. In-vessel fuel movement with the affected refueling equipment must be immediately suspended. This action ensures that operations are not performed with equipment that would potentially not be blocked from unacceptable operations (e.g., loading fuel into a cell with a control rod withdrawn).

Insert B.3.9.1-4B

Suspension of in-vessel fuel movement shall not preclude completion of movement of a component to a safe position.

SURVEILLANCE REQUIREMENTS

SR 3.9.1.1

Performance of a CHANNEL FUNCTIONAL TEST demonstrates each required refueling equipment interlock will function properly when a simulated or actual signal indicative of a required condition is injected into the logic. The CHANNEL FUNCTIONAL TEST may be performed by any series of sequential, overlapping, or total channel steps so that the entire channel is tested.

The 7 day Frequency is based on engineering judgment and is considered adequate in view of other indications of refueling interlocks and their associated input status that are available to unit operations personnel.

REFERENCES

1. 10 CFR 50, Appendix A, GDC 26.
2. UFSAR, Section 7.6.1.
3. UFSAR, Section 15.4.1.1.
4. UFSAR, Section 15.4.1.1.2.2.

Insert B 3.9.1-4A

This can be performed by ensuring fuel assemblies are not moved in the reactor vessel or by ensuring that the control rods are inserted and cannot be withdrawn. Therefore, Required action A.1 requires that

Insert B 3.9.1-4B

Alternatively, Required Action A.2.1 and A.2.2 require a control rod withdrawal block to be inserted, and all control rods to be subsequently verified to be fully inserted. Required Action A.2.1 ensures no control rods can be withdrawn, because a block to control rod withdrawal is in place. The withdrawal block utilized must insure that if rod withdrawal is requested, the rod will not respond (i.e., it will remain inserted). Required Action A.2.2 is normally performed after placing the rod withdrawal block in effect, and provides a verification that all control rods are fully inserted. This verification that all control rods are fully inserted is in addition to the periodic verifications required by SR 3.9.3.1. Similar to Required Action A.1, Required Actions A.2.1 and A.2.2 ensure unacceptable operations are blocked (e.g., loading fuel into a cell with the control rod withdrawn). For this action all 185 control rods must be fully inserted, including core cells containing no fuel assemblies. This will eliminate the possibility of a reloading error in cells which are not protected by refueling interlocks or an inserted control rod. It is not the intent of this alternative action to eliminate the first performance of SR 3.9.1.1 prior to in-vessel fuel movement (e.g.; fuel shuffle). It is expected that the refueling interlocks would be operable except for equipment failures or expiration of the required surveillance interval.