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**DTE Energy**



10 CFR 50.90

May 14, 2010  
NRC-10-0047

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 Emergency License Amendment for a Onetime Extension of the Completion Time in Technical Specification 3.7.3, "Control Room Emergency Filtration (CREF) System, Condition B

Pursuant to 10 CFR 50.90, Detroit Edison hereby proposes to amend the Fermi 2 Plant Operating License, Appendix A, Technical Specifications 3.7.3 "Control Room Emergency Filtration (CREF) System," Condition B, "Two CREF subsystems inoperable due to inoperable control room boundary in MODE 1, 2 or 3," Completion Time from 24 hours to 48 hours on a onetime basis.

Enclosure 1 provides an evaluation of the proposed license amendment, including an analysis of the issue of significant hazards consideration using the standards of 10 CFR 50.92. Detroit Edison has concluded that the change proposed in this submittal does not result in a significant hazards consideration. Enclosure 2 provides marked up pages of the existing Technical Specifications to show the proposed change. Enclosure 3 provides a typed version of the affected Technical Specifications pages with the proposed change incorporated. No change is proposed to the current Technical Specification Bases as a result of this license amendment request.

Detroit Edison has reviewed the proposed change against the criteria of 10 CFR 51.22 and has concluded that it meets the criteria provided in 10 CFR 51.22(c)(9) for a categorical exclusion from the requirements for an Environmental Impact Statement or an Environmental Assessment.

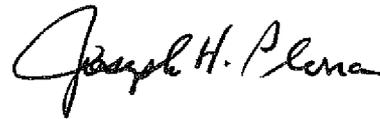
Detroit Edison is requesting that this license amendment request be processed as an emergency Technical Specification change in accordance with 10CFR50.91(a)(5) where "failure to act in a timely way would result in derating or shutdown of a nuclear power plant."

The Fermi 2 Onsite Review Organization and Nuclear Safety Review Group have reviewed and concurred with the proposed change.

In accordance with 10 CFR 50.91, a copy of this application, with attachments, is being provided to the designated Michigan State Official.

Should you have any questions or require additional information, please contact Mr. Rodney W. Johnson of my staff at (734) 586-5076.

Sincerely,

A handwritten signature in black ink, appearing to read "Joseph H. Plena". The signature is written in a cursive style with a large initial "J".

Enclosures

cc: NRC Project Manager  
NRC Resident Office  
Reactor Projects Chief, Branch 4, Region III  
Regional Administrator, Region III  
Supervisor, Electric Operators,  
Michigan Public Service Commission

I, Joseph H. Plona, 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.

Joseph H. Plona

Joseph H. Plona  
Site Vice President, Nuclear Generation

On this 14 day of May, 2010 before me personally appeared Joseph H. Plona, being first duly sworn and says that he executed the foregoing as his free act and deed.

Sharon S. Marshall

Notary Public

SHARON S. MARSHALL  
NOTARY PUBLIC, STATE OF MI  
COUNTY OF MONROE  
MY COMMISSION EXPIRES Jun 14, 2013  
ACTING IN COUNTY OF Monroe

**ENCLOSURE 1  
TO NRC-10-0047**

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

**PROPOSED EMERGENCY LICENSE AMENDMENT FOR A ONETIME  
REVISION OF THE COMPLETION TIME OF CONDITION B IN  
TECHNICAL SPECIFICATION 3.7.3 FOR THE CONTROL ROOM EMERGENCY  
FILTRATION (CREF) SYSTEM**

**EVALUATION OF THE PROPOSED LICENSE AMENDMENT**

## **Evaluation of the Proposed License Amendment**

Subject: Revision of the Completion Time for Condition B of Technical Specification 3.7.3,  
"Control Room Emergency Filtration (CREF) System"

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## **1.0 Description**

Detroit Edison is requesting NRC approval of this proposed onetime emergency revision to the Fermi 2 Technical Specification (TS) 3.7.3 "Control Room Emergency Filtration (CREF) System," Condition B, "Two CREF subsystems inoperable due to inoperable control room boundary in MODE 1, 2 or 3," Completion Time from 24 hours to 48 hours to complete repairs of Division 2 Return Air Fan.

## **2.0 Proposed Change**

The proposed change would allow the extension of the Completion Time for Condition B of TS 3.7.3 from 24 hours to 48 hours on a onetime basis.

## **3.0 Background**

TS 3.7.3 governs the Control Room Emergency Filtration (CREF) System and is applicable in Modes 1, 2, 3, during movement of recently irradiated fuel assemblies in the secondary containment, and during operations with a potential for draining the reactor vessel (OPDRVs). Condition B states that with two CREF subsystems inoperable due to inoperable control room boundary in Mode 1, 2, or 3 the boundary is to be restored to OPERABLE status within 24 hours. Condition C states that, if the Required Action of Condition B is not met within the associated Completion Time, the unit must be placed in MODE 3 within 12 hours and in MODE 4 within 36 hours.

Regulation 10 CFR 50.91(a)(5) states that where the Nuclear Regulatory Commission (NRC) finds that an emergency situation exists, in that failure to act in a timely manner would result in derating or shutdown of a nuclear power plant, or in prevention of either resumption of operation or of increase in power output up to the plant's licensed power level, it may issue a license amendment involving no significant hazards consideration without prior notice and opportunity for a hearing or for public comment. The regulation also states that the NRC will decline to dispense with notice and comment on the determination of no significant hazards if it determines that the licensee has abused the emergency provision by failing to make timely application for the amendment and thus itself creating the emergency. The regulation requires that a licensee requesting an emergency amendment explain why the emergency situation occurred and why the licensee could not avoid the situation. As explained below, an emergency amendment is needed to preclude an unnecessary plant shutdown, and Detroit Edison could not have reasonably avoided the situation or made timely application for an amendment.

At 0830 hrs on May 12, 2010, Division 2 of the Control Center Air Conditioning (AC) System (TS 3.7.4) and Division 2 of the CREF System (TS 3.7.3) were declared inoperable. This declaration was made due to a high vibration reading obtained on the Division 2 Return Air Fan inboard bearing. Shortly before the readings were taken, a loud cyclical rumbling noise in the

fan housing was heard in the area and in the Main Control Room. Vibration readings taken on the bearing exceeded the administrative limit; therefore, the fan was shutdown and the TS Required Actions were entered. TS 3.7.4, Action A, for one inoperable control center AC subsystem requires restoration of the subsystem to OPERABLE status within 30 days and TS 3.7.3, Action A, for one inoperable CREF subsystem requires restoration of the subsystem to OPERABLE status within 7 days.

Spectral analysis taken on the fan bearing housing showed several multiples of fan running speeds which indicates looseness in the fan bearings. Based on this, it has been determined that a loose bearing was the likely cause of the high vibrations. No adverse trends in vibration or other indications of potential failure were known about this fan before May 12, 2010.

A plan has been developed for the repair of the Return Air Fan by replacing the shaft and both inboard and outboard bearings. The plan requires breaching a section of the ductwork common to both Divisions of the system; therefore, Condition B of TS 3.7.3 would be entered. The schedule for affecting the repairs indicates that the common section of the ductwork would be open for 28 hours which is longer than the 24 hours Completion Time for restoring the control room boundary to OPERABLE status.

There are three access hatches in the area where the fan repairs will be performed. Covers will be removed from these hatches to provide access to the work area. The largest access hatch is approximately 22 inches by 22 inches in size. Additionally, a smaller size hatch will be removed at the location where the fan shaft protrudes out of the ductwork. If the need arises during the time the system is breached, all four openings can be restored within 20 minutes by dedicated personnel stationed in the area for this purpose.

This Emergency License Amendment Request provides the technical basis for a onetime extension of the Completion Time associated with Condition B of TS 3.7.3 from 24 hours to 48 hours. The change is requested to allow for completion of the repairs required to the Division 2 return air fan in order to restore CREF subsystem to OPERABLE status within the allowed 7-day Completion Time for TS 3.7.3, Condition A.

#### **4.0 Technical Analysis**

The CREF System provides a radiologically controlled environment from which the unit can be safely operated following a Design Basis Accident (DBA). The CREF System is designed to maintain the control room environment for a 30 day continuous occupancy after a DBA without exceeding 5 rem whole body dose or its equivalent to any part of the body of the control room occupants.

The CREF System normal mode supplies outside air to mix with recirculated air, bypassing the emergency filters, during normal unit operations to maintain the control room environment. Upon receipt of an initiation signal, the CREF System automatically switches to the recirculation

mode of operation to prevent infiltration of contaminated air into the control room. A part of the recirculated air is routed through the emergency recirculation filter train. Outside air is taken in at one of two emergency outside air ventilation intakes and is passed through the emergency makeup filter train before being mixed with recirculated air. The air mixture is then returned to the control room.

The ability of the CREF System to maintain the habitability of the control room is an explicit assumption for the safety analyses presented in the Fermi 2 Updated Final Safety Analysis Report (UFSAR). The recirculation mode of the CREF System is assumed to operate following a loss of coolant accident, fuel handling accident involving recently irradiated fuel, main steam line break, and control rod drop accident.

The CREF System performs its safety function with redundant active components and non-redundant passive components. The non-redundant passive components and both divisions of the redundant active components of the CREF System must be OPERABLE to ensure that the system safety function can be performed assuming any active single failure.

With one CREF subsystem inoperable, the inoperable CREF subsystem must be restored to OPERABLE status within 7 days. With the unit in this condition, the remaining OPERABLE CREF subsystem is adequate to perform control room radiation protection. However, the overall reliability is reduced because a single failure in the OPERABLE subsystem could result in reduced CREF System capability. The 7 day Completion Time is based on the low probability of a DBA occurring during this time period, and that the remaining subsystem can provide the required capabilities.

If the control room boundary is inoperable in MODE 1, 2 or 3, the CREF system cannot perform its intended function. Actions must be taken to restore an OPERABLE control room boundary within 24 hours. The 24-hour Completion Time is a typically reasonable time to diagnose, plan and possibly repair, and test most problems with the control room boundary; however, for the conditions described in this license amendment request, an extension of the 24 hour Completion Time is required to complete the planned repairs.

The CREF System is not assumed to be an initiator of any analyzed accident. Therefore, the proposed change does not affect the probability of any accident previously evaluated.

Additionally, the CREF System is not modeled in the Fermi 2 Probabilistic Risk Assessment (PRA) because it does not serve a mitigating function for the prevention of core damage or large-early containment release; therefore, the PRA does not model the impact of the CREF System boundary outage time. CREF is also a non-risk significant system in the Maintenance Rule (based upon both qualitative and quantitative considerations).

Certain plant transients are more likely during plant shutdown and startup transitions. The Fermi 2 PRA does not directly model these transitions. Therefore, for the purpose of assessing these transitions, an increase in reactor trip frequency is assumed during shutdown and startup

transitions. Station PRA analysis indicates that the risk associated with plant shutdown and restart would result in an approximate increase in Core Damage Frequency (CDF) of about 9.8% (baseline is  $1.53E-06$  per year) during the transition. The Large Early Release Frequency (LERF) increase is about 1.36% (baseline of  $1.47E-07$  per year). While the overall risk remains low, this approximation demonstrates that there is an increase in risk associated with the shutdown and startup transitions.

The additional requested 24 hours allows maintenance personnel a total of 48 hours to complete repairs when the common section of the system ductwork is breached and the fan motor shaft is pulled. This evolution is required to be completed in order to repair Division 2 of the CREF System and exit the 7-day TS Condition. The requested 24 hour extension of Allowed Outage Time provides the plant staff with sufficient time to replace the fan shaft and bearings without entering a Technical Specification shutdown and challenging the plant staff and equipment.

The NRC published a model safety evaluation and model no significant hazards consideration (NSHC) for Technical Specification Task Force (TSTF)-448 regarding habitability of the control room envelope on January 17, 2007. The safety evaluation and NSHC allows licensees to request changing the restoration action for the existing technical specification condition for control room boundary from 24 hours to 90 days, provided that mitigating actions are in place to ensure that control room envelope occupants exposure to radiological, chemical and smoke hazards will not exceed limits. The safety evaluation states that the 90 day completion time for restoration is reasonable based on the determination that mitigating actions will ensure protection of control room envelope occupants within analyzed limits while limiting the probability that control room occupants will have to implement protective measures that may adversely affect their ability to control the reactor and maintain it in a safe shutdown condition in the event of a Design Basis Accident (DBA).

During the CREF System breach, compensatory measures will be in place to restore the control room envelope boundary and Division 1 of the CREF System to operable status within 20 minutes should a Design Basis Accident (DBA) occur. A walkdown of the area has been performed to identify any potential sources of hazards in the vicinity of the repair area that could result in the introduction of hazardous material into the control room envelope. No hazards in the immediate work area were identified that would pose any risk to control room occupants. It was also verified that no unnecessary transient combustibles are located in the area that could increase the risk of fire or smoke infiltration into the control room envelope. These compensatory measures and controls ensure that control room occupant radiological exposures will be minimized and will not exceed the calculated dose in the DBA analysis, and that control room occupants are protected from hazardous chemicals and smoke.

During the breach of the control room envelope boundary, the fan shaft will be removed and replaced with a new identical shaft that will seal the ductwork. If unforeseen problems are encountered that would prevent normal removal or installation of the shaft, a temporary modification has been prepared to cover the fan shaft hole which would seal the common

ductwork breach and restore the control room boundary. All access hatches can be restored within 20 minutes if needed by replacing the hatch covers and securing the bolts.

While performing the repair work on Division 2 return air fan, Division 1 of the CREF System including all the controls and power supplies will be protected. The station work schedule has been reviewed to identify any risk significant work during the evolution. All activities identified as risk significant will be suspended during the system breach evolution. Additionally, no other risk significant work will be allowed during that time.

During the period that the control room envelope boundary is inoperable, compensatory measures will be in place to promptly restore the boundary to protect control room occupants from potential hazards such as radioactive contamination, toxic chemicals, smoke, temperature and relative humidity, and physical security. If conditions arise that would require restoration of the boundary, maintenance activities would be immediately suspended and the ductwork breach will be closed by dedicated personnel that will be stationed specifically for this purpose. Once the breach is restored, Division 1 of the CREF System is fully operable.

## **5.0 Regulatory Safety Analysis**

In accordance with 10 CFR 50.92, Detroit Edison has made a determination that the proposed amendment involves no significant hazards consideration. The proposed one-time change to increase the Control Room Emergency Filtration (CREF) system Technical Specification 3.7.3 Required Action B Completion Time for restoring the control room boundary from 24 to 48 hours 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 CREF System is not assumed to be an initiator of any analyzed accident. Therefore, the proposed change does not affect the probability of any accident previously evaluated.

The CREF System is not modeled in the Fermi 2 Probabilistic Risk Assessment (PRA) because it does not serve a mitigating function for the prevention of core damage or large-early containment release; therefore, the PRA does not model the impact of the CREF boundary outage time. The Control Center Air conditioning (AC) and the CREF Systems are non-risk significant systems in the Maintenance Rule (based upon both qualitative and quantitative considerations).

The CREF System provides a radiologically controlled environment from which the plant can be safely operated following a Design Basis Accident. If the control room boundary is inoperable in MODE 1, 2, or 3, the CREF system cannot perform its intended function. Actions must be taken to restore an OPERABLE control room boundary within the specified time. During the period that the control room boundary is inoperable, appropriate

compensatory measures (consistent with the intent of GDC 19) are utilized to protect control room operators from potential hazards such as radioactive contamination, toxic chemicals, smoke, temperature and relative humidity, and physical security. The proposed one time 24-hour Completion Time extension to provide for Division 2 Return Air fan maintenance is reasonable based on the low probability of a design basis accident (DBA) occurring during this period, and the use of compensatory measures. The requested one time Technical Specification change to a 48-hour Completion Time provides an adequate time to repair the Division 2 Return Air Fan and to restore the control room envelope boundary.

The maintenance work plan for repairing the Division 2 Return Air Fan includes stationing dedicated personnel in the vicinity of the breach area in radio contact with the control room. If necessary, the fan shaft hole can be sealed and the common ductwork access hatches restored within 20 minutes to minimize the potential for an unfiltered inleakage into the ductwork that can affect dose to the control room occupants in the event of a design basis accident. A security watch will also be performed during the period the control center envelope is breached. Control room temperature and humidity will be controlled by the Division 1 control center air conditioning system which will be running during the maintenance evolution.

Therefore the proposed change to allow a onetime additional 24 hours to restore the inoperable control room pressure boundary to operable status to facilitate maintenance on the Division 2 Return Air Fan 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 one-time change increases the CREF system Technical Specification 3.7.3 Required Action B Completion Time for restoring the control room boundary from 24 to 48 hours.

No physical changes are being made to the installed CREF system that were not considered by the original Technical Specifications. No new or different accident scenarios are created by this change.

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

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

As discussed above the proposed onetime 24-hour Completion Time extension to provide the time required to complete the maintenance activity is reasonable based on the low probability of a DBA occurring during this period, and the use of compensatory measures.

The maintenance work plan for the repair the Division 2 Return Air Fan includes stationing dedicated personnel in the vicinity of the breach area in radio contact with the control room. If needed, the fan shaft hole can be promptly sealed and the common ductwork access hatches can be restored within 20 minutes to minimize the potential for an unfiltered inleakage into the ductwork that can affect dose to the control room occupants in the event of a design basis accident. Furthermore, the CREF system is not an accident initiator and does not serve a mitigating function for the prevention of core damage or large-early containment release.

Therefore, the proposed change does not involve a significant reduction in the margin of safety.

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

## **6.0 Environmental Considerations**

Detroit Edison has reviewed the proposed change against the criteria of 10 CFR 51.22 for environmental considerations. The proposed change does not involve a significant hazards consideration, nor does it significantly change the types or significantly increase the amounts of effluents that may be released offsite. During the system breach, compensatory measures are in place to restore the control room envelope boundary and Division 1 of the Control Room Emergency Filtration (CREF) System to operable status within 20 minutes should a Design Basis Accident (DBA) occur. Therefore, the proposed change does not significantly increase individual or cumulative occupational radiation exposures. Based on the foregoing, Detroit Edison concludes that the proposed change meets the criteria provided in 10 CFR 51.22(c)(9) for a categorical exclusion from the requirements for an Environmental Impact Statement or an Environmental Assessment.

**ENCLOSURE 2  
TO NRC-10-0047**

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

**PROPOSED EMERGENCY LICENSE AMENDMENT FOR A ONETIME  
REVISION OF THE COMPLETION TIME OF CONDITION B IN  
TECHNICAL SPECIFICATION 3.7.3 FOR THE CONTROL ROOM EMERGENCY  
FILTRATION (CREF) SYSTEM**

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Affected Page:

3.7-6

3.7 PLANT SYSTEMS

3.7.3 Control Room Emergency Filtration (CREF) System

LCO 3.7.3 The CREF System shall be OPERABLE.

-----NOTE-----

The control room boundary may be opened intermittently under administrative control.

APPLICABILITY: MODES 1, 2, and 3,  
During movement of recently irradiated fuel assemblies in  
the secondary containment,  
  
During operations with a potential for draining the reactor  
vessel (OPDRVs).

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One CREF subsystem inoperable.	A.1 Restore CREF subsystem to OPERABLE status.	7 days
B. Two CREF subsystems inoperable due to inoperable control room boundary in MODE 1, 2, or 3.	B.1 Restore control room boundary to OPERABLE status.	24 hours*
C. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, or 3.	C.1 Be in MODE 3.	12 hours
	<u>AND</u> C.2 Be in MODE 4.	36 hours

(continued)

\* The 24 hours Completion Time is extended to 48 hours to complete repairs of Division 2 Return Air Fan in May 2010.

**ENCLOSURE 3  
TO NRC-10-0047**

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

**PROPOSED EMERGENCY LICENSE AMENDMENT FOR A ONETIME  
REVISION OF THE COMPLETION TIME OF CONDITION B IN  
TECHNICAL SPECIFICATION 3.7.3 FOR THE CONTROL ROOM EMERGENCY  
FILTRATION (CREF) SYSTEM**

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New Page:

3.7-6

3.7 PLANT SYSTEMS

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A. One CREF subsystem inoperable.	A.1 Restore CREF subsystem to OPERABLE status.	7 days
B. Two CREF subsystems inoperable due to inoperable control room boundary in MODE 1, 2, or 3.	B.1 Restore control room boundary to OPERABLE status.	24 hours*
C. Required Action and associated Completion Time of Condition A or B not met in MODE 1, 2, or 3.	C.1 Be in MODE 3.	12 hours
	<u>AND</u> C.2 Be in MODE 4.	36 hours

(continued)

\* The 24 hours Completion Time is extended to 48 hours to complete repairs of Division 2 Return Air Fan in May 2010.