William T. O'Connor, Jr.
Vice President, Nuclear Generation

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Detroit Edison

A DTE Energy Company

10CFR50.90

May 23, 2002
NRC-02-0034

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) NRC Letter to Detroit Edison, "Fermi 2 – Issuance of Amendment Re: Reevaluation of Fuel Handling Accident, Selective Implementation of 10 CFR Part 50.67 (TAC No. MB0956)," dated September 28, 2001

Subject: Proposed License Amendment for the Revision of Control Room Emergency Filtration System Technical Specification Requirements During Movement of Recently Irradiated Fuel

Pursuant to 10 CFR 50.90, Detroit Edison hereby proposes to amend the Fermi 2 Plant Operating License, Appendix A, Technical Specifications (TS) to revise the requirements for system operability during movement of recently irradiated fuel assemblies in the secondary containment. Specifically, the Applicability of TS Nos. 3.3.7.1, "Control Room Emergency Filtration (CREF) System Instrumentation," 3.7.3, "CREF System" and 3.7.4, "Control Center Air Conditioning (AC) System" during movement of recently irradiated fuel assemblies is proposed to be deleted.

Enclosure 1 provides a description and an evaluation of the proposed changes. Enclosure 2 provides an analysis of the issue of significant hazards consideration using the standards of 10 CFR 50.92. Enclosure 3 provides marked up pages of the existing TS to show the proposed changes and a typed version of the affected TS pages with the proposed changes incorporated. Enclosure 4 provides marked up pages of the existing TS Bases showing the proposed changes (for information only).

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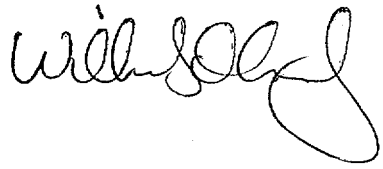
Detroit Edison has reviewed the proposed changes against the criteria of 10 CFR 51.22 for environmental considerations. The proposed changes do not involve a significant hazards consideration, nor do they significantly change the types or significantly increase the amounts of effluents that may be released offsite. The proposed changes do not significantly increase individual or cumulative occupational radiation exposures. Based on the foregoing, Detroit Edison concludes that the proposed changes meet 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 requests the NRC approval of this license amendment by January 17, 2003, with an implementation period of within 60 days following NRC approval. The requested approval date is based on the plan to implement this amendment before the upcoming ninth refueling outage, scheduled to start on March 28, 2003.

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 23rd day of May, 2002 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

NRC-02-0034
ENCLOSURE 1

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

REQUEST TO REVISE CONTROL ROOM EMERGENCY FILTRATION SYSTEM TECHNICAL SPECIFICATION REQUIREMENTS DURING MOVEMENT OF RECENTLY IRRADIATED FUEL

DESCRIPTION AND EVALUATION OF THE PROPOSED CHANGES

DESCRIPTION AND EVALUATION OF THE PROPOSED CHANGES

DESCRIPTION:

Fermi 2 Technical Specification (TS) 3.7.3, "Control Room Emergency Filtration (CREF) System," and TS 3.7.4, "Control Center Air Conditioning (AC) System," currently include the following Applicability statement:

> 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).

The Applicability of TS 3.3.7.1, "Control Room Emergency Filtration (CREF) System Instrumentation," is in accordance with TS Table 3.3.7.1-1. This table includes Applicability conditions for the different Functions of the CREF system instrumentation. Functions 3 and 4 are for the "Fuel Pool Ventilation Exhaust Radiation – High" and the "Control Center Normal Makeup Air Radiation – High." These two functions are required to be operable during the same Modes and conditions specified for TS 3.7.3 and TS 3.7.4.

The CREF system provides a radiologically controlled environment to ensure the habitability of the control room and the protection of control room operators from radiation exposure resulting from a radiological accident. Upon receipt of an initiation signal, indicative of conditions that could result in radiation exposure to control room personnel, the CREF system automatically switches to the recirculation mode of operation to prevent infiltration of contaminated air into the control room.

The control center AC system provides temperature control for the control room during normal operation and following isolation of the control room, to ensure equipment operability. The system is designed to remove heat loads from the control center and includes consideration of equipment heat loads and personnel occupancy requirements. The control center AC system ensures that the control room temperature will not exceed equipment operability limits following control room isolation. In Modes 4 and 5, the control center AC system is only required during activities under which significant radioactive releases can be postulated (e.g. OPDRVs).

The CREF system instrumentation automatically initiates action to pressurize, recirculate and filter the main control room air to minimize airborne radioactivity in the control room environment. CREF system operation ensures that the radiation exposure of control room personnel does not exceed the limits in Title 10 of the Code of Federal Regulations. The operability of the CREF system instrumentation is dependent upon the operability of the individual functions in TS Table 3.3.7.1-1. The CREF system instrumentation has two trip systems, either of which can initiate both CREF subsystems. Each trip system receives input

from each of the four functions in Table 3.3.7.1-1. When the setpoint associated with one of the functions is exceeded, a signal automatically starts the CREF system in the recirculation mode, to ensure that control room personnel are protected from a potential radiological accident.

The TS Bases include the following description of "recently irradiated fuel":

> "Recently irradiated fuel" is fuel that has occupied part of a critical reactor core within the previous four days, provided that it is verified that the limits in Footnote 11 of Regulatory Guide 1.183 are not exceeded. Otherwise, "recently irradiated fuel" is fuel that has occupied part of a critical reactor core within the previous 34 days. Handling new (non-irradiated) fuel bundles over the open reactor core or the spent fuel pool is subject to the same requirements of handling recently irradiated fuel, as long as any fuel in the core or fuel pool is recently irradiated.

The term "recently irradiated fuel" and the associated TS Bases definition were added in the TS per License Amendment No. 144 implemented on October 12, 2001.

Footnote 11 of Regulatory Guide (RG) 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Plants," states that the non-LOCA gap fractions provided in the RG are acceptable for use for peak fuel burnup up to 62 MWD/MTU provided that the maximum linear heat generation rate does not exceed 6.3 kw/ft peak rod average power for burnup exceeding 54 MWD/MTU.

For a fuel cycle where fuel parameters in the Fermi 2 core exceed the limits stated in RG 1.183 at the end of the cycle, the potential for an FHA involving recently irradiated fuel exists for the first 34 days of the refueling outage. The current TS requires that secondary containment, standby gas treatment system and the CREF system be maintained operable during handling recently irradiated fuel. With surveillance and maintenance activities scheduled on the CREF system, including the non-redundant portion of the system, this would require suspending refueling activities until the CREF system is returned to service, which would affect the flexibility in scheduling work and potentially increase outage duration.

This proposed License Amendment requests the revision of TS 3.3.7.1, TS 3.7.3 and TS 3.7.4 to delete the phrase "during movement of recently irradiated fuel assemblies in the secondary containment" from the respective Applicability statements and make other consistent changes to the associated TS Conditions and Actions.

EVALUATION OF THE PROPOSED CHANGES:

Section 15.7.4 of the Fermi 2 UFSAR (Revision 11) describes the evaluation of the Fuel Handling Accident. Two separate scenarios are analyzed. The first one is for an FHA involving recently irradiated fuel assemblies 24 hours after shutdown, and the second scenario involves fuel assemblies that are no longer recently irradiated. This first scenario evaluates the radiological consequences under the proposed TS requirements described in this License Amendment (i.e. with no credit for the CREF system). The analysis demonstrates that the offsite and control room dose consequences associated with the postulated FHA meet the regulatory acceptance criteria.

Section 9.1.4.3.2 of the Updated Final Safety Analysis Report (UFSAR) states that the reactor shall be determined to have been subcritical for at least 24 hours prior to movement of irradiated fuel in the reactor pressure vessel. Therefore, evaluation of the proposed TS changes was performed by postulating a FHA 24 hours after shutdown.

The extent of compliance with the limits in Footnote 11 of RG 1.183 is determined at the end of each fuel cycle. If all fuel in the core was found to comply with the limits, fuel in the core is considered recently irradiated for the first four days after shutdown and the Alternative Source Term (AST) methodology and acceptance criteria in RG 1.183 are applicable to the FHA analysis. However, if the limits of the footnote are exceeded, the fuel is recently irradiated for 34 days after shutdown and the methodology and acceptance criteria in RG 1.25 and NUREG/CR-5009 apply. The use of these methodologies and acceptance criteria have been established in Reference 2.

For the case where the conditions in Footnote 11 of RG 1.183 are satisfied, the GE14 fuel is used in the FHA analysis. GE14 fuel is not currently loaded into the reactor core but is under consideration for use in future cycles. The approved parameters for the GE14 fuel meet the RG 1.183 limitations on fuel burnup; therefore, it is analyzed using the AST as defined in 10CFR50.67 and guidance given in RG 1.183. For the same burnup limitations in Footnote 11 of the RG, it has been verified that the FHA dose consequences involving GE14 fuel are more limiting than those involving GE11 fuel.

For the other case where the conditions in Footnote 11 are not satisfied, since the GE14 fuel meet the RG 1.183 burnup limitations, the GE11 fuel is used in the analysis. The FHA radiological analysis is performed using the guidance in RG 1.25 with NUREG/CR-5009, dose acceptance criteria and guidance in NUREG-0800, section 15.7.4, and the regulatory dose limits in 10CFR100 and 10CFR50, Appendix A, General Design Criteria (GDC) 19.

The FHA analyses for both recently irradiated fuel cases assume no mitigation or credit for the CREF system; however, secondary containment integrity and SGT system are credited. These assumptions were used in the original licensing basis analysis of the FHA. Therefore, the analyses utilized an atmospheric dispersion factor (χ/Q) representing a release from the SGT stack. The ARCON96 computer code was used to calculate the limiting χ/Q value considering

the height of the stack and the horizontal diagonal distance to the control room intake. The χ/Q values were conservatively calculated assuming zero-velocity vent releases.

Table 1 provides other input and assumptions used in the FHA analyses. Table 2 lists the core radionuclide inventory used in the FHA analysis. Table 3 provides the dose consequences resulting from the analyses (Reference UFSAR Table 15.7.4-3) with a comparison to the applicable acceptance criteria for each case.

In summary, the proposed TS changes are acceptable because they are consistent with the existing assumptions from the FHA analyses described in the UFSAR and the dose consequences resulting from a worst-case FHA are bounded by the governing regulatory acceptance criteria in 10CFR50.67 or 10CFR100 and 10CFR50, Appendix A, GDC 19.

Table 1
Key Inputs for the FHA Analysis
(Recently Irradiated Fuel)

Description	Value		Notes
	RG 1.25	AST	
Radial Peaking Factor	1.5	1.7	
Fuel Rods Damaged	140	172	Irradiated fuel bundle dropped over RPV
Total Rods In Core	56,536	66,720	
Gap Fractions: • Iodine 131 • Other Halogens • Kr-85 • Noble Gases (excluding Kr-85)	 12% 10% 30% 10%	 8% 5% 10% 5%	For analysis based on RG 1.25 (GE11 fuel), 12% gap fraction is assigned to all the iodine source term and not just I-131.
Iodine Release Chemical Form • Elemental • Organic • Aerosol	 99.75% 0.25% 0.0%	 4.85% 0.15% 95%	In accordance with Regulatory Guide 1.183, the 95% aerosol component for the AST analysis (GE14 fuel) is assumed to be in the form of cesium iodine (CsI) which instantaneously dissociates in the water. The iodine is then assumed to instantaneously re-evolve in the elemental form.
Overall Effective Iodine Decontamination Factor	100	200	
Reactor Power Level	3499 MWt		Includes 2% uncertainty per RG 1.183
Core Radionuclide Inventory	See UFSAR Table 15.7.4-2		Current Fermi 2 core inventory assumed for both AST and RG1.25 analyses. Also, decay and daughtering is credited.
χ/Q: Control Room EAB LPZ	 3.65E-3 sec/m^3 1.23E-4 sec/m^3 1.39E-5 sec/m^3		 Bounding χ/Q represents transport from the SGT stack to the north Control Room air intake. Original UFSAR value Original UFSAR value
Control Room Volume	2.53E5 ft^3		Ventilated Volume
Control Room Fresh Air Makeup Rate	4,000 cfm		Maximum expected rate from normal (south) air intake.
Refuel Floor Volume	950,000 ft^3		5th Floor Reactor Building
Refuel Floor Ventilation Rate	95,000 cfm		95,000 cfm is conservatively assumed to ensure the source term is released within 2 hours. Normal 5th Floor ventilation rate is 33,000 cfm. 95,000 cfm effectively releases the source term within one-hour.

Table 2
FHA Core Radionuclide Inventory

Nuclide	Shutdown Activity (Ci/MWt)	24 hour Activity (Ci/MWt)
Xe-131m	158	165
Xe-133	55280	53212
Xe-133m	2305	1971
Xe-135	7149	12302
Xe-135m	10420	748
Kr-83m	3137	0
Kr-85	302	302
Kr-85m	6734	164
Kr-87	12920	0
Kr-88	18300	52
I-131	26310	24320
I-132	38450	32040
I-133	55020	24727
I-134	60560	0
I-135	51950	4194
Te-131m	3730	2142
Te-132	37900	30637

Table 3
FHA Dose Consequences
(Reference: UFSAR Table 15.7.4-3)

Analysis	Time from Shutdown	EAB Dose (rem)			LPZ Dose (rem)			Control Room Dose (rem)		
		WB	TH	TEDE	WB	TH	TEDE	WB	TH	TEDE
AST (GE14)	24 hours	N/A	N/A	0.091	N/A	N/A	0.010	N/A	N/A	0.172
RG 1.25 (GE11)	24 hours	0.152	0.207	N/A	0.017	0.023	N/A	0.198	4.977	N/A
Acceptance Criteria		6	75	6.3	6	75	6.3	5	30	5

WB: Whole Body
TH: Thyroid
TEDE: Total Effective Dose Equivalent

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ENCLOSURE 2

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

REQUEST TO REVISE CONTROL ROOM EMERGENCY FILTRATION SYSTEM TECHNICAL SPECIFICATION REQUIREMENTS DURING MOVEMENT OF RECENTLY IRRADIATED FUEL

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 deletion of the requirement to maintain the Control Room Emergency Filtration (CREF) system during movement of recently irradiated fuel assemblies 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.

   This License Amendment involves changes in the requirements for the operability of the CREF system, CREF system instrumentation, and Control Center Air Conditioning (AC) system. The functions of these systems provide configurations for mitigating the consequences of radiological accidents; however, they do not involve the initiation of any previously analyzed accident. Therefore, the proposed changes cannot increase the probability of any previously evaluated accident.

   The analysis of the Fuel Handling Accident (FHA) concludes that radiological consequences are within the regulatory acceptance criteria. The FHA analysis includes evaluations of the radiological consequences resulting from a limiting drop of a fuel assembly, using the Alternative Source Term (AST) and the Regulatory Guide 1.25 methodologies, over the reactor core. The radiological consequences associated with this scenario, assuming no mitigation credit for the CREF System, have been shown to satisfy the regulatory acceptance criteria. Therefore, the proposed changes do not significantly increase the radiological consequences of any previously evaluated accident.

   Based on the above, the proposed changes do not significantly increase the probability or consequences of any 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 changes do not alter the design function or operation of the systems involved. The CREF system will still provide protection to control room occupants in the case of a significant radioactive release. The revised Technical Specification (TS) requirements are supported by the FHA analysis. The radiological consequences of a FHA under the proposed TS requirements are well below the regulatory limits. The proposed changes do not introduce any new modes of plant operation and do not involve physical modifications to the plant. The original Licensing Basis for the FHA took no credit for CREF system mitigation. Therefore, the proposed changes do not create the potential for 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 proposed changes to the Fermi 2 TS requirements are supported by the design basis analysis and are established such that the radiological consequences are below the regulatory guidelines. Safety margins and analytical conservatisms are retained to ensure that the analysis adequately bounds all postulated event scenarios. The proposed TS requirements continue to ensure that the radiological consequences at both the control room and the exclusion area and low population zone boundaries are below the corresponding regulatory guidelines; therefore, the proposed changes will not result in a significant reduction in the margin of safety.

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

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ENCLOSURE 3

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

REQUEST TO REVISE CONTROL ROOM EMERGENCY FILTRATION SYSTEM TECHNICAL SPECIFICATION REQUIREMENTS DURING MOVEMENT OF RECENTLY IRRADIATED FUEL

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

NRC-02-0034
ENCLOSURE 3
PART 1

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

PROPOSED TS MARKED UP PAGES

INCLUDED PAGES:

3.3-70,
3.7-6, 3.7-7, 3.7-8,
3.7-11, 3.7-12, and 3.7-13

Table 3.3.7.1-1 (page 1 of 1)
Control Room Emergency Filtration System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Reactor Vessel Water Level – Low Low, Level 2	1.2.3.(a)	2	B	SR 3.3.7.1.1 SR 3.3.7.1.3 SR 3.3.7.1.4 SR 3.3.7.1.5 SR 3.3.7.1.6	≥ 103.8 inches
2. Drywell Pressure – High	1.2.3	2	B	SR 3.3.7.1.1 SR 3.3.7.1.3 SR 3.3.7.1.4 SR 3.3.7.1.5 SR 3.3.7.1.6	≤ 1.88 psig
3. Fuel Pool Ventilation Exhaust Radiation – High	1.2.3. (a) ~~(b)~~	2	B	SR 3.3.7.1.1 SR 3.3.7.1.3 SR 3.3.7.1.5 SR 3.3.7.1.6	≤ 6 mR/hr
4. Control Center Normal Makeup Air Radiation – High	1.2.3. (a) ~~(b)~~	1	C	SR 3.3.7.1.1 SR 3.3.7.1.2 SR 3.3.7.1.5	≤ 5 mR/hr

(a) During operations with a potential for draining the reactor vessel.

~~(b) During movement of recently irradiated fuel assemblies in the secondary containment.~~

3.7 PLANT SYSTEMS

3.7.3 Control Room Emergency Filtration (CREF) System

LCO 3.7.3 The CREF System shall be OPERABLE.

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. Required Action and associated Completion Time of Condition A not met in MODE 1, 2, or 3.	B.1	Be in MODE 3.	12 hours
	AND		
	B.2	Be in MODE 4.	36 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition A not met during ~~movement of recently irradiated fuel assemblies in the secondary containment or during~~ OPDRVs.	~~NOTE~~ ~~LCO 3.0.3 is not applicable.~~	
	C.1 Place OPERABLE CREF subsystem in recirculation mode.	Immediately
	OR	
	C.2~~.1~~ Initiate action to suspend OPDRVs.	Immediately
	~~AND~~	
	~~NOTE~~ ~~Not required for a CREF System or subsystem inoperable for performance of SR 3.7.3.6 due to failure to provide the required filtration efficiency, or due to replacement of charcoal filtration media.~~	
	~~C.2.2 Suspend movement of recently irradiated fuel assemblies in the secondary containment.~~	~~Immediately~~

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Two CREF subsystems or a non-redundant component or portion of the CREF System inoperable in MODE 1, 2, or 3.	D.1 Enter LCO 3.0.3.	Immediately
E. Two CREF subsystems or a non-redundant component or portion of the CREF System inoperable during ~~movement of recently irradiated fuel assemblies in the secondary containment or during~~ OPDRVs.	~~NOTE~~ ~~LCO 3.0.3 is not applicable.~~ E.1 Initiate action to suspend OPDRVs. ~~AND~~ ~~NOTE~~ ~~Not required for a CREF System or subsystem inoperable for performance of SR 3.7.3.6 due to failure to provide the required filtration efficiency, or due to replacement of charcoal filtration media.~~ ~~E.2 Suspend movement of recently irradiated fuel assemblies in the secondary containment.~~	Immediately ~~Immediately~~

3.7 PLANT SYSTEMS

3.7.4 Control Center Air Conditioning (AC) System

LCO 3.7.4 Two control center AC subsystems shall be OPERABLE.

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 control center AC subsystem inoperable.	A.1 Restore control center AC subsystem to OPERABLE status.	30 days
B. Required Action and associated Completion Time of Condition A not met in MODE 1, 2, or 3.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition A not met during ~~movement of recently irradiated fuel assemblies in the secondary containment or during~~ OPDRVs.	~~NOTE~~ ~~LCO 3.0.3 is not applicable.~~ C.1 Place OPERABLE control center AC subsystem in operation. OR ~~C.2.1~~ ~~Suspend movement of recently irradiated fuel assemblies in the secondary containment.~~ ~~AND~~ C.2.2 Initiate action to suspend OPDRVs.	Immediately ~~Immediately~~ Immediately
D. Two control center AC subsystems inoperable in MODE 1, 2, or 3.	D.1 Enter LCO 3.0.3.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Two control center AC subsystems inoperable ~~during movement of recently irradiated fuel assemblies in the secondary containment or~~ during OPDRVs.	~~NOTE~~ ~~LCO 3.0.3 is not applicable.~~	
	~~E.1 Suspend movement of recently irradiated fuel assemblies in the secondary containment.~~	~~Immediately~~
	~~AND~~	
	E.~~2~~1 Initiate actions to suspend OPDRVs.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.4.1	Verify the control room air temperature is ≤ 95°F.	12 hours

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ENCLOSURE 3
PART 2

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

PROPOSED TS REVISED PAGES

INCLUDED PAGES:

3.3-70,
3.7-6, 3.7-7, 3.7-8,
3.7-11, 3.7-12, and 3.7-13

Table 3.3.7.1-1 (page 1 of 1)
Control Room Emergency Filtration System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER TRIP SYSTEM	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Reactor Vessel Water Level – Low Low, Level 2	1,2,3,(a)	2	B	SR 3.3.7.1.1 SR 3.3.7.1.3 SR 3.3.7.1.4 SR 3.3.7.1.5 SR 3.3.7.1.6	≥ 103.8 inches
2. Drywell Pressure – High	1,2,3	2	B	SR 3.3.7.1.1 SR 3.3.7.1.3 SR 3.3.7.1.4 SR 3.3.7.1.5 SR 3.3.7.1.6	≤ 1.88 psig
3. Fuel Pool Ventilation Exhaust Radiation – High	1,2,3, (a)	2	B	SR 3.3.7.1.1 SR 3.3.7.1.3 SR 3.3.7.1.5 SR 3.3.7.1.6	≤ 6 mR/hr
4. Control Center Normal Makeup Air Radiation – High	1,2,3, (a)	1	C	SR 3.3.7.1.1 SR 3.3.7.1.2 SR 3.3.7.1.5	≤ 5 mR/hr

(a) During operations with a potential for draining the reactor vessel.

3.7 PLANT SYSTEMS

3.7.3 Control Room Emergency Filtration (CREF) System

LCO 3.7.3 The CREF System shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,

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. Required Action and associated Completion Time of Condition A not met in MODE 1, 2, or 3.	B.1	Be in MODE 3.	12 hours
	AND		
	B.2	Be in MODE 4.	36 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition A not met during OPDRVs.	C.1 Place OPERABLE CREF subsystem in recirculation mode. OR C.2. Initiate action to suspend OPDRVs.	Immediately Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. Two CREF subsystems or a non-redundant component or portion of the CREF System inoperable in MODE 1, 2, or 3.	D.1 Enter LCO 3.0.3.	Immediately
E. Two CREF subsystems or a non-redundant component or portion of the CREF System inoperable during OPDRVs.	E.1 Initiate action to suspend OPDRVs.	Immediately

3.7 PLANT SYSTEMS

3.7.4 Control Center Air Conditioning (AC) System

LCO 3.7.4 Two control center AC subsystems shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,

During operations with a potential for draining the reactor vessel (OPDRVs).

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One control center AC subsystem inoperable.	A.1 Restore control center AC subsystem to OPERABLE status.	30 days
B. Required Action and associated Completion Time of Condition A not met in MODE 1, 2, or 3.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	12 hours 36 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time of Condition A not met during OPDRVs.	C.1 Place OPERABLE control center AC subsystem in operation. OR C.2 Initiate action to suspend OPDRVs.	Immediately Immediately
D. Two control center AC subsystems inoperable in MODE 1, 2, or 3.	D.1 Enter LCO 3.0.3.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Two control center AC subsystems inoperable during OPDRVs.	E.1 Initiate actions to suspend OPDRVs.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.4.1	Verify the control room air temperature is ≤ 95°F.	12 hours

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ENCLOSURE 4

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

REQUEST TO REVISE CONTROL ROOM EMERGENCY FILTRATION SYSTEM TECHNICAL SPECIFICATION REQUIREMENTS DURING MOVEMENT OF RECENTLY IRRADIATED FUEL

Attached are marked-up pages of the existing TS Bases indicating the proposed changes (For Information Only)

INCLUDED PAGES:

B 3.3.7.1-5, B 3.3.7.1-5a,
B 3.7.3-2, B 3.7.3-3, B 3.7.3-4, B 3.7.3-5, B 3.7.3-6,
B 3.7.4-2, B 3.7.4-3, B 3.7.4-4, and B 3.7.4-5

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

ventilation exhaust). Four channels of Fuel Pool Ventilation Exhaust Radiation-High Function are available (two channels per trip system) and are required to be OPERABLE to ensure that no single instrument failure can preclude CREF System initiation. The Allowable Value was selected to ensure that the Function will promptly detect high activity that could threaten exposure to control room personnel.

The Fuel Pool Ventilation Exhaust Radiation-High Function is required to be OPERABLE in MODES 1, 2, and 3 and during ~~movement of recently irradiated fuel assemblies in the secondary containment and~~ operations with a potential for draining the reactor vessel (OPDRVs), to ensure that control room personnel are protected during a LOCA, ~~fuel handling~~ event, or vessel draindown event. During MODES 4 and 5, when these specified conditions are not in progress (e.g., OPDRVs), the probability of a LOCA is low; thus, the Function is not required. ~~Also due to radioactive decay, this Function is only required to initiate the CREF system during fuel handling accidents involving handling recently irradiated fuel. "Recently irradiated fuel" is fuel that has occupied part of a critical reactor core within the previous four days, provided that it is verified that the limits in Footnote 11 of Regulatory Guide 1.183 are not exceeded. Otherwise, "recently irradiated fuel" is fuel that has occupied part of a critical reactor core within the previous 34 days. Handling new (non-irradiated) fuel bundles over the open reactor core or the spent fuel pool is subject to the same requirements of handling recently irradiated fuel, as long as any fuel in the core or fuel pool is recently irradiated.~~

4. Control Center Normal Makeup Air Radiation-High

The control center normal makeup air radiation monitors measure radiation levels before filtration in the inlet ducting of the MCR. A high radiation level may pose a threat to MCR personnel; thus, automatically initiating the CREF System.

The Control Center Normal Makeup Air Radiation-High Function consists of two independent monitors. Two channels of Control Center Normal Makeup Air Radiation-High are available and are required to be OPERABLE to ensure that no single instrument failure can preclude CREF System

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

initiation. The Allowable Value was selected to ensure protection of the control room personnel.

The Control Center Normal Makeup Air Radiation–High Function is required to be OPERABLE in MODES 1, 2, and 3 and during OPDRVs ~~and movement of recently irradiated fuel assemblies in the secondary containment~~, to ensure that control room personnel are protected during a LOCA, ~~fuel handling event,~~ or vessel draindown event. During MODES 4 and 5, when these specified conditions are not in progress (e.g., OPDRVs), the probability of a LOCA is low; thus, the Function is not required. ~~Also due to radioactive decay, this Function is only required to initiate the CREF system during fuel handling accidents involving handling recently irradiated fuel. "Recently irradiated fuel" is fuel that has occupied part of a critical reactor core within the previous four days, provided that it is verified that the limits in Footnote 11 of Regulatory Guide 1.183 are not exceeded. Otherwise, "recently irradiated fuel" is fuel that has occupied part of a critical reactor core within the previous 34 days. Handling new (non-irradiated) fuel bundles over the open reactor core or the spent fuel pool is subject to the same requirements of handling recently irradiated fuel, as long as any fuel in the core or fuel pool is recently irradiated.~~

BASES

BACKGROUND (continued)

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 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. The recirculation mode will pressurize the control room to about 0.250 ± 0.125 inches water gauge to prevent infiltration of air from surrounding buildings. CREF System operation in maintaining control room habitability is discussed in the UFSAR, Chapters 6 and 9 (Refs. 1 and 2, respectively).

APPLICABLE SAFETY ANALYSES

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 UFSAR, Chapters 6 and 15 (Refs. 1 and 3, respectively). The recirculation mode of the CREF System is assumed to operate following a loss of coolant accident, ~~fuel handling accident involving handling recently irradiated fuel~~, main steam line break, and control rod drop accident, as discussed in the UFSAR (Ref. 3). ~~"Recently irradiated fuel" is fuel that has occupied part of a critical reactor core within the previous four days, provided that it is verified that the limits in Footnote 11 of Regulatory Guide 1.183 are not exceeded. Otherwise, "recently irradiated fuel" is fuel that has occupied part of a critical reactor core within the previous 34 days. Handling new (non-irradiated) fuel bundles over the open reactor core or the spent fuel pool is subject of the same requirements of handling recently irradiated fuel, as long as any fuel in the core or fuel pool is recently irradiated.~~ The radiological doses to control room personnel as a result of the various DBAs are also summarized in Reference 3. No single active failure will cause the loss of outside or recirculated air from the control room.

The CREF System satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

BASES

LCO

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. Total system failure could result in exceeding a dose of 5 rem whole-body (or its equivalent to any part of the body) to the control room operators in the event of a DBA.

Redundant components, of which both divisions must be OPERABLE, include:

a. Emergency inlet air heater;
b. Emergency recirculation fans;
c. Return fans;
d. Supply fans;
e. Emergency air intakes; and
f. Air handling dampers needed to support the system operation.

Non-redundant components required to be OPERABLE include:

a. Emergency recirculation air filter train;
b. Emergency makeup air filter train; and
c. Ductwork and other system structures needed to form the necessary air flow paths.

In addition, the control room boundary must be maintained, including the integrity of the walls, floors, ceilings, ductwork, and access doors.

APPLICABILITY

In MODES 1, 2, and 3, the CREF System must be OPERABLE to control operator exposure during and following a DBA, since the DBA could lead to a fission product release.

In MODES 4 and 5, the probability and consequences of a DBA are reduced because of the pressure and temperature limitations in these MODES. Therefore, maintaining the CREF System OPERABLE is not required in MODE 4 or 5, except ~~for the following situations~~ under which significant radioactive releases can be postulated:

~~a. During operations with potential for draining the reactor vessel (OPDRVs); and~~

during operations with potential for draining the reactor Vessel (OPDRVs),

BASES

~~APPLICABILITY (Continued)~~

~~b. During movement of recently irradiated fuel assemblies in the secondary containment. Due to radioactive decay, the CREF System is only required to be OPERABLE during fuel handling involving handling recently irradiated fuel. "Recently irradiated fuel" is fuel that has occupied part of a critical reactor core within the previous four days, provided that it is verified that the limits in Footnote 11 of Regulatory Guide 1.183 are not exceeded. Otherwise, "recently irradiated fuel" is fuel that has occupied part of a critical reactor core within the previous 34 days. Handling new (non-irradiated) fuel bundles over the open reactor core or the spent fuel pool is subject to the same requirements of handling recently irradiated fuel, as long as any fuel in the core or fuel pool is recently irradiated.~~

ACTIONS

A.1

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.

B.1 and B.2

In MODE 1, 2, or 3, if the inoperable CREF subsystem cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE that minimizes risk. To achieve this status, the unit must be placed in at least MODE 3 within 12 hours and in MODE 4 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

BASES

ACTIONS (continued)

C.1, ~~C.2.1~~ and C.2.~~2~~

~~The Required Actions of Condition C are modified by a Note indicating that LCO 3.0.3 does not apply. If moving recently irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Therefore, inability to suspend movement of recently irradiated fuel assemblies is not sufficient reason to require a reactor shutdown.~~

During ~~movement of recently irradiated fuel assemblies in the secondary containment or during~~ OPDRVs, if the inoperable CREF subsystem cannot be restored to OPERABLE status within the required Completion Time, the OPERABLE CREF subsystem may be placed in the recirculation mode. This action ensures that this remaining subsystem is OPERABLE, that no failures that would prevent automatic actuation will occur, and that any active failure will be readily detected.

An alternative to Required Action C.1 is to immediately suspend activities that present a potential for releasing radioactivity that might require isolation of the control room. This places the unit in a condition that minimizes risk.

If applicable, ~~movement of recently irradiated fuel assemblies in the secondary containment must be suspended immediately. Suspension of these activities shall not preclude completion of movement of a component to a safe position. Also, if applicable,~~ actions must be initiated immediately to suspend OPDRVs to minimize the probability of a vessel draindown and the subsequent potential for fission product release. Actions must continue until the OPDRVs are suspended.

~~A Note is applied to Required Action C.2.2. This Note allows these Required Actions to not be required when the inoperability is due to CREF system duct work testing required by SR 3.7.3.6 or when the system charcoal filter train filter media cannot provide the required efficiency or is being replaced. Dose calculations have shown that the CREF system is not needed during the activities that would otherwise be suspended by these Required Actions.~~

BASES

ACTIONS (continued)

D.1

If both CREF subsystems or a non-redundant component or portion of the CREF System are inoperable in MODE 1, 2, or 3, the CREF System may not be capable of performing the intended function and the unit is in a condition outside the accident analyses. Therefore, LCO 3.0.3 must be entered immediately.

E.1 ~~and E.2~~

~~The Required Actions of Condition E are modified by a Note indicating that LCO 3.0.3 does not apply. If moving recently irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Therefore, inability to suspend movement of recently irradiated fuel assemblies is not sufficient reason to require a reactor shutdown.~~

During ~~movement of recently irradiated fuel assemblies in the secondary containment or during~~ OPDRVs, with two CREF subsystems or a non-redundant component or portion of the CREF System inoperable, action must be taken immediately to suspend activities that present a potential for releasing radioactivity that might require isolation of the control room. This places the unit in a condition that minimizes risk.

If applicable, ~~movement of recently irradiated fuel assemblies in the secondary containment must be suspended immediately. Suspension of these activities shall not preclude completion of movement of a component to a safe position. If applicable,~~ actions must be initiated immediately to suspend OPDRVs to minimize the probability of a vessel draindown and subsequent potential for fission product release. Actions must continue until the OPDRVs are suspended.

~~A Note is applied to Required Action E.2. This Note allows these Required Actions to not be required when the inoperability is due to CREF system duct work testing required by SR 3.7.3.6 or when the system charcoal filter train filter media cannot provide the required efficiency or is being replaced. Dose calculations have shown that the CREF system is not needed during the activities that would otherwise be suspended by these Required Actions.~~

BASES

APPLICABLE SAFETY ANALYSES (continued)

equipment heat loads and personnel occupancy requirements to ensure equipment OPERABILITY.

The Control Center AC System satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

LCO

Two independent and redundant subsystems of the Control Center AC System are required to be OPERABLE to ensure that at least one is available, assuming a single active failure disables the other subsystem. Total system failure could result in the equipment operating temperature exceeding limits.

High air temperatures and humidity caused by loss of or degradation of the Control Center AC system can also impact control room operator performance. Compensatory measures to address this concern are contained in Technical Requirements Manual (TRM).

The Control Center AC System is considered OPERABLE when the individual components necessary to maintain the control center temperature are OPERABLE in both subsystems. These components include the cooling coils, fans, chiller, heating coils, ductwork, dampers, and associated instrumentation and controls. The non-redundant ductwork that supplies recirculated air to air-conditioning units and returns the cooled air to the control room is part of the Control Room Emergency Filtration System (LCO 3.7.3).

APPLICABILITY

In MODE 1, 2, or 3, the Control Center AC System must be OPERABLE to ensure that the control room temperature will not exceed equipment OPERABILITY limits following control room isolation.

In MODES 4 and 5, the probability and consequences of a Design Basis Accident are reduced due to the pressure and temperature limitations in these MODES. Therefore, maintaining the Control Center AC System OPERABLE is not required in MODE 4 or 5, except ~~for the following situations~~ during operations with potential for draining the reactor vessel (OPDRVs), under which significant radioactive releases can be postulated.

BASES

~~APPLICABILITY (continued)~~

~~a. During operations with a potential for draining the reactor vessel (OPDRVs); and~~

~~b. During movement of recently irradiated fuel assemblies in the secondary containment. Due to radioactive decay, the Control Room AC System is only required to be OPERABLE during fuel handling involving handling recently irradiated fuel. "Recently irradiated fuel" is fuel that has occupied part of a critical reactor core within the previous four days, provided that it is verified that the limits in Footnote 11 of Regulatory Guide 1.183 are not exceeded. Otherwise, "recently irradiated fuel" is fuel that has occupied part of a critical reactor core within the previous 34 days. Handling new (non-irradiated) fuel bundles over the open reactor core or the spent fuel pool is subject to the same requirements of handling recently irradiated fuel, as long as any fuel in the core or fuel pool is recently irradiated.~~

ACTIONS

A.1

With one control center AC subsystem inoperable, the inoperable control center AC subsystem must be restored to OPERABLE status within 30 days. With the unit in this condition, the remaining OPERABLE control center AC subsystem is adequate to perform the control center air conditioning function. However, the overall reliability is reduced because a single failure in the OPERABLE subsystem could result in loss of the control center air conditioning function. The 30 day Completion Time is based on the low probability of an event occurring requiring control room isolation, the consideration that the remaining subsystem can provide the required protection, and the availability of alternate safety and nonsafety cooling methods.

B.1 and B.2

In MODE 1, 2, or 3, if the inoperable control center AC subsystem cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE that minimizes risk. To achieve this status, the unit must be placed in at least MODE 3 within 12 hours and in MODE 4 within 36 hours. The allowed Completion Times are

BASES

ACTIONS (continued)

reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

C.1 ~~C.2.1~~ and C.2~~.2~~

~~The Required Actions of Condition C are modified by a Note indicating that LCO 3.0.3 does not apply. If moving recently irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Therefore, inability to suspend movement of recently irradiated fuel assemblies is not sufficient reason to require a reactor shutdown.~~

During ~~movement of recently irradiated fuel assemblies in the secondary containment or during~~ OPDRVs, if Required Action A.1 cannot be completed within the required Completion Time, the OPERABLE control center AC subsystem may be placed immediately in operation. This action ensures that the remaining subsystem is OPERABLE, that no failures that would prevent actuation will occur, and that any active failure will be readily detected.

An alternative to Required Action C.1 is to immediately suspend activities that present a potential for releasing radioactivity that might require isolation of the control room. This places the unit in a condition that minimizes risk.

If applicable, ~~movement of recently irradiated fuel assemblies in the secondary containment must be suspended immediately. Suspension of these activities shall not preclude completion of movement of a component to a safe position. Also, if applicable,~~ actions must be initiated immediately to suspend OPDRVs to minimize the probability of a vessel draindown and subsequent potential for fission product release. Actions must continue until the OPDRVs are suspended.

D.1

If both control center AC subsystems are inoperable in MODE 1, 2, or 3, the Control Center AC System may not be capable of performing the intended function. Therefore, LCO 3.0.3 must be entered immediately.

BASES

ACTIONS (continued)

E.1 ~~and E.2~~

~~The Required Actions of Condition E are modified by a Note indicating that LCO 3.0.3 does not apply. If moving recently irradiated fuel assemblies while in MODE 1, 2, or 3, the fuel movement is independent of reactor operations. Therefore, inability to suspend movement of recently irradiated fuel assemblies is not a sufficient reason to require a reactor shutdown.~~

During ~~movement of recently irradiated fuel assemblies in the secondary containment or during~~ OPDRVs, with two control center AC subsystems inoperable, action must be taken immediately to suspend activities that present a potential for releasing radioactivity that might require isolation of the control room. This places the unit in a condition that minimizes risk.

If applicable, ~~handling of recently irradiated fuel in the secondary containment must be suspended immediately. Suspension of these activities shall not preclude completion of movement of a component to a safe position. Also, if applicable,~~ actions must be initiated immediately to suspend OPDRVs to minimize the probability of a vessel draindown and subsequent potential for fission product release. Actions must continue until the OPDRVs are suspended.

SURVEILLANCE REQUIREMENTS

SR 3.7.4.1

This SR verifies that the heat removal capability of the system is sufficient to remove the control room heat load. The SR consists of a verification of the control room temperature. The 12 hour Frequency is appropriate since significant degradation of the Control Center AC System is not expected over this time period.

REFERENCES

1. UFSAR, Section 6.4.
2. UFSAR, Section 9.4.1.