

Detroit Edison



10CFR50.90

September 26, 2002
NRC-02-0072

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 License Amendment for the Revision of Control
Room Emergency Filtration System Technical Specification
Surveillance Requirements Regarding Unfiltered Inleakage

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 of surveillance SR 3.7.3.6 associated with the verification of Control Room Emergency Filtration (CREF) system duct work unfiltered inleakage. Specifically, this proposed license amendment would add a note to SR 3.7.3.6 to allow crediting the performance of an integrated Tracer Gas test of the Control Room Envelope (CRE) while in the recirculation mode to satisfy the requirements of the surveillance.

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

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. The proposed change does not significantly increase individual or cumulative

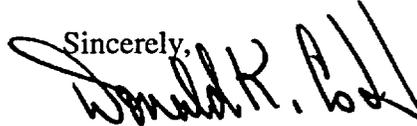
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occupational radiation exposures. Based on the foregoing, Detroit Edison concludes that the proposed change meets the criteria provided in 10 CFR 51.22 (c) (9) for a categorical exclusion from the requirements for an Environmental Impact Statement or an Environmental Assessment.

Detroit Edison requests NRC approval of this license amendment by January 24, 2003, with an implementation period of within 60 days following NRC approval. The requested approval date is based on the need to plan for potential work associated with SR 3.7.3.6 during 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,

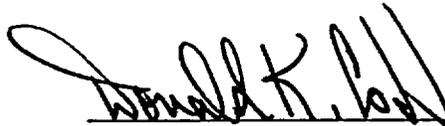


Donald K. Cobb
Director, Nuclear Production/Plant Manager

Enclosures

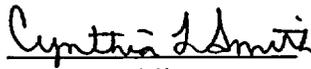
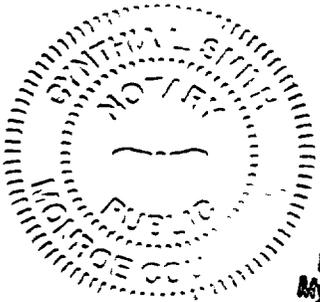
cc: T. J. Kim
M. A. Ring
NRC Resident Office
Regional Administrator, Region III
Supervisor, Electric Operators,
Michigan Public Service Commission

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-02-0072
ENCLOSURE 1**

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

**REQUEST TO REVISE CONTROL ROOM EMERGENCY
FILTRATION SYSTEM TECHNICAL SPECIFICATION
SURVEILLANCE REQUIREMENTS FOR THE
VERIFICATION OF UNFILTERED INLEAKAGE**

**DESCRIPTION AND EVALUATION
OF THE PROPOSED CHANGE**

DESCRIPTION AND EVALUATION OF THE PROPOSED CHANGE

DESCRIPTION:

Fermi 2 Technical Specification (TS) 3.7.3, "Control Room Emergency Filtration (CREF) System," includes surveillance SR 3.7.3.6 which requires verifying that unfiltered leakage from CREF system duct work outside the Control Room Envelope (CRE), that is at negative pressure during accident conditions, is within limits.

This surveillance verifies that the accident analysis assumptions concerning unfiltered inleakage through the CREF system duct work outside the CRE, that would be under negative pressure during accident conditions, are maintained. The CREF system provides a radiologically controlled environment from which the plant can be safely operated following a radiological accident. Upon sensing conditions that could result in radiation exposure to control room personnel, the system automatically switches to the recirculation mode of operation to prevent infiltration of contaminated air into the control room.

Section 3.7.2 of the Technical Requirements Manual (TRM) includes additional details regarding the requirement of TS SR 3.7.3.6. TRM Table TR 3.7.2-2 specifies four sections of control room duct work outside the CRE which are required to be tested under this surveillance. The Table further provides the acceptance criteria for the cumulative total inleakage for all four ducts under two scenarios correlating to the limiting design basis accident analysis. The first scenario is for testing under maximum negative pressure expected for each specific duct during operation in the recirculation mode with no damper failure and the second scenario assumes a single damper failure. The acceptance criteria provided for the two test scenarios are 11 Standard Cubic Feet per Minute (SCFM) and 34 SCFM, respectively. The 11 and 34 SCFM values are derived from the inleakage assumed in the control room dose analysis for the Loss of Coolant Accident (LOCA). The specified test method is in accordance with the American Society of Mechanical Engineers (ASME) standard N510-1989.

Appendix 15A of the Updated Final Safety Analysis Report (UFSAR) "Dose Calculation Models and Specific Calculational Values" includes an evaluation of control room operator dose following a LOCA. Section 15A.2.2, "Control Room Model" indicates that control room unfiltered inleakage is assumed to be 35 SCFM for the first 30 minutes of the accident and 12 SCFM thereafter for the remaining duration of the accident. The higher inleakage rate during the first 30 minutes is associated with a postulated damper failure. The design basis assumes that operators would detect the damper failure and shift to the other division of the CREF system within the first 30 minutes of the accident. The acceptance criteria in Section TR 3.7.2 of the TRM described above was established by assuming a 1.0 SCFM average control room inleakage from the doors due to normal ingress and egress activity. The Fermi 2 control room has vestibules installed in the doorways which are used for normal ingress and egress. Although other doors penetrate the CRE, they would not normally be used under accident conditions.

This proposed License Amendment requests NRC approval of a change to the surveillance requirements of SR 3.7.3.6. Specifically, this proposed change would add a note to SR 3.7.3.6 stating that the requirements of this surveillance would be met by performing Tracer Gas testing of the CRE using test methods described in American Society for Testing and Materials (ASTM) standard E741 while operating in the recirculation mode. Based on the result of the test, operability of the CRE would be evaluated and compensatory measures would be implemented, as necessary, to comply with 10 CFR 50, Appendix A, General Design Criterion (GDC)-19. Tracer Gas testing would provide a measurement of the CRE leakage from all potential sources and not just the four sections of ducting tested per SR 3.7.3.6.

SR 3.7.3.6 was last performed on April 27, 2000; therefore, based on the 36-month frequency, it would normally become due on April 27, 2003. However, when the provisions of SR 3.0.2 are used, the surveillance requirements would be met if performed no later than January 27, 2004. Tracer Gas testing does not require the plant to be in cold shutdown or refueling mode and may be performed during normal plant operation. Pending approval of this proposed license amendment, tentative plans are currently being made to schedule the performance of a Tracer Gas test.

Industry experience has shown that it is likely for CRE leakage measurement using a Tracer Gas test methodology to exceed the leakage value assumed in design basis analyses. However, all plants that have performed Tracer Gas testing were able to successfully demonstrate compliance with GDC-19 using Alternative Source Term (AST) analysis of the limiting design basis accident or through the implementation of interim compensatory measures. Detroit Edison will use the corrective action program, as necessary, to address the results of the Tracer Gas test in accordance with the applicable regulatory and industry guidance and to demonstrate compliance with GDC-19.

In preparation for submitting a separate License Amendment request for a full scope implementation of AST, calculations have been performed demonstrating that GDC-19 can be met with unfiltered CRE leakage significantly higher than the current design basis leakage. It is anticipated that these calculations would provide adequate basis for the justification of CRE operability concerns that may be revealed by the Tracer Gas test pending a permanent change to the plant's licensing basis to adopt AST.

EVALUATION OF THE PROPOSED CHANGE:

The provision for control room duct inleakage testing (SR 3.7.3.6) was introduced into the TS by license amendment No. 88, issued on October 15, 1992. This amendment also deleted license condition 2.C.(7) which was included in the Fermi 2 operating license during the original licensing of the plant. This license condition resulted from NRC concerns regarding the use of silicone sealant material as part of the joints on the CREF duct work outside the control room. A periodic visual inspection of silicone sealant on accessible portions of CREF system ductwork outside the control room that are at negative pressure during accident conditions (SR 3.7.3.3) was also added by amendment No. 88. In addition to the two surveillances described above (3.7.3.3 and 3.7.3.6), SR 3.7.3.5 requires verifying that each CREF subsystem can maintain a positive pressure of greater or equal 0.125 inches water gauge relative to the outside atmosphere during the recirculation mode of operation at a makeup flow rate of less or equal to 1800 CFM.

The required frequency for performing surveillance SR 3.7.3.6 is 36 months. Since the test requires both divisions of CREF to be out of service, it is conducted during refueling or other plant outages when the plant is in Mode 4 or 5. Since this surveillance was last performed during the seventh refueling outage in April 2000, it would normally be performed during the upcoming ninth refueling outage, RFO9, scheduled to start on March 28, 2003. The results of the previous two tests are tabulated below:

Test Date or Acceptance Criteria	Leak Rate (SCFM) No Damper Failure	Leak Rate (SCFM) Single Damper Failure
October 1997	6.49	13.56
April 2000	5.82	13.43
<i>Acceptance Criteria</i>	<i>11.00</i>	<i>34.00</i>

Since 1998, NRC and the industry have been working to develop guidance to address Control Room Habitability (CRH) concerns including testing methods used to demonstrate the ability of control room designs to meet GDC-19. During this time, industry and the Nuclear Energy Institute (NEI) have developed a guidance document, NEI 99-03, "Control Room Habitability Assessment Guidance," which was issued in June 2000. The NRC did not endorse the June 2000 version of the NEI document in its entirety. Instead, the staff developed separate draft regulatory guides to provide guidance on control room envelope habitability (DG-1114), testing (DG-1115), atmospheric dispersion (DG-1111), and radiological dose (DG-1113). The staff has also developed a proposed Generic Letter (GL) on CRH, which was released to the public for comment on May 9, 2002.

In issuing these documents for comment, NRC has indicated its position that positive pressure testing (such as Fermi 2 SR 3.7.3.5) is not sufficient to demonstrate operability of the CRE. NRC further indicated that Tracer Gas testing, using test methods described in ASTM standard E741, is able to account for leakage into the CRE via negative pressure ducting outside the CRE.

Detroit Edison is planning to submit a separate license amendment in the near future requesting NRC approval of a full scope implementation of AST methodology and its incorporation in the Fermi 2 licensing basis. The analyses supporting AST include revised assumptions for CRE inleakage. The current Fermi 2 licensing basis assumes CRE inleakage at 35 SCFM for the first 30 minutes of the design basis accident and 12 SCFM thereafter. The revised AST analyses demonstrate compliance with GDC-19 assuming CRE inleakage at least one order of magnitude higher than the currently assumed values. It is expected that measured inleakage from Tracer Gas testing would be acceptable under the AST assumptions. However, Detroit Edison will assess the results of Tracer Gas testing in accordance with applicable NRC and industry guidance and demonstrate compliance with GDC-19.

The proposed Tracer Gas testing as an alternate to performing SR 3.7.3.6 provides an opportunity to demonstrate the CRE integrity using a methodology that has been accepted by both the NRC and the industry. It is expected that a long term position regarding SR 3.7.3.6 would be developed before the next time SR 3.7.3.6 becomes due. The NRC and industry are currently in the process of finalizing a resolution plan for CRH concerns. However, it would be premature to predict the resolution of some of the critical issues involved such as TS requirements; therefore, Detroit Edison is proposing this alternate testing option to meet the requirements of SR 3.7.3.6 while allowing Fermi 2 to address some of NRC generic CRH concerns. It is anticipated that once the NRC has published the final guidance on the resolution of CRH concerns, other TS changes may be warranted.

In summary, the proposed TS change is acceptable because it will provide adequate assurance of CRE integrity using a test approach that has been accepted by both the NRC and industry. The proposed Tracer Gas test as an alternate to the component testing in SR 3.7.3.6 will provide a measurement of the overall CRE inleakage compared with inleakage from four specific sections of control room ducting tested per SR 3.7.3.6. The results of the Tracer Gas testing will be assessed in accordance with the NRC and industry guidance on degraded or nonconforming conditions, if necessary, and compliance with GDC-19 will be demonstrated.

**NRC-02-0072
ENCLOSURE 2**

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

**REQUEST TO REVISE CONTROL ROOM EMERGENCY
FILTRATION SYSTEM TECHNICAL SPECIFICATION
SURVEILLANCE REQUIREMENTS FOR THE
VERIFICATION OF UNFILTERED INLEAKAGE**

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 revision to allow the use of Tracer Gas testing to demonstrate the requirements of Control Room Emergency Filtration (CREF) system surveillance SR 3.7.3.6 for verifying unfiltered inleakage 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 proposes an alternative test for performing the CREF system surveillance associated with measuring the Control Room Envelope (CRE) unfiltered inleakage. The CREF system provides a configuration for mitigating radiological consequences of accidents; however, it does not involve the initiation of any previously analyzed accident. Therefore, the proposed change cannot increase the probability of any previously evaluated accident.

The CREF system provides a radiologically controlled environment from which the plant can be safely operated following a radiological accident. Design basis accident analyses conclude that radiological consequences are within the regulatory acceptance criteria. The current Technical Specifications (TS) surveillance (SR 3.7.3.6) measures inleakage from four sections of CREF system duct work outside the CRE that are at negative pressure during accident conditions. The proposed Tracer Gas test provides a measurement of CRE inleakage from all potential sources including the four sections of duct work. The use of Tracer Gas testing in accordance with the methods described in American Society for Testing and Materials (ASTM) standard E741 has been accepted by both the NRC and the industry. Measuring the CRE inleakage using Tracer Gas testing has no effect on the CREF system function. The results of Tracer Gas testing will be assessed in accordance with regulatory and industry guidance and compliance with 10 CFR 50, Appendix A, General Design Criterion (GDC)-19 will be demonstrated. Therefore, the proposed change does not significantly increase the radiological consequences of any previously evaluated accident.

Based on the above, the proposed change does 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 change does not alter the design function or operation of the system involved. The CREF system will still provide protection to control room occupants in case of a significant radioactive release. The revised TS surveillance requirements

provide an alternative test method that has been widely accepted for the measurement of CRE unfiltered inleakage. The proposed change does not introduce any new modes of plant or CREF system operation and does not involve physical modifications to the plant. Therefore, the proposed change does 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 change to the Fermi 2 TS surveillance requirements does not affect the radiological release from a design basis accident nor the postulated dose to the control room occupants as a result of the accident. The alternate surveillance test requirements provide an acceptable approach for the measurement of CRE inleakage. Safety margins and analytical conservatisms are included in the analyses to ensure that all postulated event scenarios are bounded. The proposed TS requirements continue to ensure that the radiological consequences at the control room are below the corresponding regulatory guidelines and that compliance with GDC-19 is not affected. 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 license amendment does not involve a significant hazards consideration.

**NRC-02-0072
ENCLOSURE 3**

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

**REQUEST TO REVISE CONTROL ROOM EMERGENCY
FILTRATION SYSTEM TECHNICAL SPECIFICATION
SURVEILLANCE REQUIREMENTS FOR THE
VERIFICATION OF UNFILTERED INLEAKAGE**

**Attached is a marked-up page of the existing TS indicating the proposed change (Part 1)
and a typed version incorporating the proposed change (Part 2)**

**NRC-02-0072
ENCLOSURE 3
PART 1**

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

PROPOSED TS MARKED UP PAGE

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3.7-10

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.7.3.5 Verify each CREF subsystem can maintain a positive pressure of ≥ 0.125 inches water gauge relative to the outside atmosphere during the recirculation mode of operation at a makeup flow rate of ≤ 1800 cfm.	18 months on a STAGGERED TEST BASIS
SR 3.7.3.6 Verify that unfiltered inleakage from CREF system duct work outside the Control Room envelope that is at negative pressure during accident conditions is within limits.	36 months

----- NOTE -----

Credit may be taken for performing an integrated Tracer Gas test of the Control Room envelope while in the recirculation mode using test methods described in ASTM E741 and ensuring compliance with GDC-19 to satisfy this SR.

**NRC-02-0072
ENCLOSURE 3
PART 2**

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

PROPOSED TS REVISED PAGE

INCLUDED PAGE:

3.7-10

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.7.3.5 Verify each CREF subsystem can maintain a positive pressure of ≥ 0.125 inches water gauge relative to the outside atmosphere during the recirculation mode of operation at a makeup flow rate of ≤ 1800 cfm.</p>	<p>18 months on a STAGGERED TEST BASIS</p>
<p>SR 3.7.3.6 NOTE..... Credit may be taken for performing an integrated Tracer Gas test of the Control Room envelope while in the recirculation mode using test methods described in ASTM E741 and ensuring compliance with GDC-19 to satisfy this SR. Verify that unfiltered inleakage from CREF system duct work outside the Control Room envelope that is at negative pressure during accident conditions is within limits.</p>	<p>36 months</p>

**NRC-02-0072
ENCLOSURE 4**

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

**REQUEST TO REVISE CONTROL ROOM EMERGENCY
FILTRATION SYSTEM TECHNICAL SPECIFICATION
SURVEILLANCE REQUIREMENTS FOR THE
VERIFICATION OF UNFILTERED INLEAKAGE**

**Attached is a marked-up page of the existing TS Bases indicating the proposed change
(For Information Only)**

INCLUDED PAGE:

B 3.7.3-9

BASES

SURVEILLANCE REQUIREMENTS (continued)

outside of the control room to prevent unfiltered inleakage. The CREF System is designed to maintain this positive pressure with a makeup flow rate of ≤ 1800 cfm to the control room in the recirculation mode. The Frequency of 18 months on a STAGGERED TEST BASIS is consistent with industry practice and other filtration systems SRs.

SR 3.7.3.6

This SR verifies that the accident analysis assumptions concerning leakage in through CREF system duct work outside the control room envelope that would be under negative pressure (less than atmospheric) during accident conditions and where any inleakage would not be filtered are maintained. This test is needed since the CREF system duct work seams have had silicone sealant applied. Since the underlying welds have not been leak tested without silicone sealant and the qualities of the silicone sealant have not been demonstrated over time, a periodic program of verifying the integrity of these sections of duct is required.

Since the accident analyses assume a single damper failure, the test pressures must account for the worst case negative pressure in each duct of concern.

The SR Frequency is based upon the long-term nature of the concern and the additional assurance that the condition of the silicone is not changing provided by the annual inspection of the accessible duct work required by SR 3.7.3.3.

INSERT A →

REFERENCES

1. UFSAR, Chapter 6.
2. UFSAR, Chapter 9.
3. UFSAR, Chapter 15.
4. Regulatory Guide 1.52, Revision 2, March 1978.

INSERT B →

Insert A:

A Note has been added to this SR defining an alternate approach for meeting the requirements of the surveillance. The Note allows taking credit for the performance of an integrated Tracer Gas test using methods described in Reference 5. Tracer Gas testing of the control room envelope is performed with the CREF system in the emergency recirculation mode to simulate accident mitigation conditions. Tracer Gas testing has been widely accepted by the industry and NRC as a comprehensive method for measuring control room envelope inleakage. If the measured unfiltered inleakage exceeds the limits assumed in the design basis analyses under accident conditions, steps must be taken to demonstrate compliance with GDC-19 (Reference 6). This may be accomplished through analysis and/or the implementation of compensatory measures. Guidance is provided in Appendix F of Reference 7 regarding the use of interim compensatory measures to address nonconforming conditions in accordance with Reference 8. If compliance with GDC-19 cannot be demonstrated, appropriate LCO action must be taken.

Insert B:

5. ASTM E741-00, "Standard Test Method for Determining Air Change in a Single Zone by Means of a Tracer Gas Dilution," American Society for Testing and Materials, 2000.
6. 10 CFR 50, Appendix A, GDC 19.
7. NEI 99-03, "Control Room Habitability Assessment Guidance," Nuclear Energy Institute, June 2001.
8. NRC Generic Letter No. 91-18, "Information to Licensees Regarding NRC Inspection Manual Section on Resolution of Degraded and Nonconforming Conditions," Revision 1, October 8, 1997.