

Douglas R. Gipson  
Senior Vice President  
Nuclear Generation

Fermi 2  
6400 North Dixie Highway  
Newport, Michigan 48166  
(313) 585-5249

March 29, 1994  
NRC-93-0151

U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, D.C. 20555

- References:
- 1) Fermi 2  
NRC Docket No. 50-341  
NRC License No. NPF-43
  - 2) Generic Letter (GL) 93-05, "Line-item Technical Specifications Improvements to Reduce Surveillance Requirements for Testing During Power Operation," dated September 27, 1993
  - 3) NUREG-1366, "Improvements to Technical Specifications Surveillance Requirements," dated December 1992

Subject: Proposed Technical Specification Change (License Amendment) Reduced Testing During Power Operation

Pursuant to 10CFR50.90, Detroit Edison Company hereby proposes to amend Operating License NPF-43 for the Fermi 2 plant by incorporating the enclosed changes into the Plant Technical Specifications (TS). The proposed changes modify the surveillance requirements for scram discharge volume vent and drain valves, isolation actuation instrumentation, and the required actions and surveillance requirements for the emergency diesel generators to reduce required testing during power operation. This modification is a line item TS improvement as described in Reference 2.

Detroit Edison has evaluated the proposed TS against the criteria of 10CFR50.92 and determined that no significant hazards consideration is involved. The Fermi 2 Onsite Review Organization has approved and the Nuclear Safety Review Group has reviewed the proposed TS and concurs with the enclosed determinations. In accordance with 10CFR50.91, Detroit Edison has provided a copy of this letter to the State of Michigan.

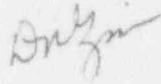
9404040062 940329  
PDR ADDCK 05000341  
P PDR

*Foot*

USNRC  
March 29, 1994  
NRC-93-0151  
Page 2

If you have any questions, please contact Mr. Glen D. Ohlemacher at  
(313) 586-4275.

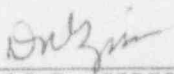
Sincerely,



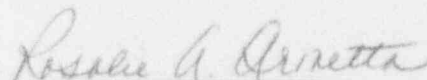
Enclosure

cc: T. G. Colburn  
J. B. Martin  
M. P. Phillips  
K. R. Riemer  
Supervisor, Electric Operators, Michigan  
Public Service Commission - J. R. Padgett

I, DOUGLAS R. GIPSON, 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.

  
\_\_\_\_\_  
DOUGLAS R. GIPSON  
Senior Vice President

On this 29th day of March, 1994, before me personally appeared Douglas R. Gipson, being first duly sworn and says that he executed the foregoing as his free act and deed.

  
\_\_\_\_\_  
Notary Public

ROSALIE A. ARMETTA  
NOTARY PUBLIC STATE OF MICHIGAN  
MONROE COUNTY  
MY COMMISSION EXP. NOV. 20, 1995

## INTRODUCTION

Change A - Technical Specification (TS) Surveillance Requirement (SR) 4.1.3.1.1.b requires that each scram discharge volume (SDV) vent and drain valves be cycled through at least one complete cycle of full travel at least once per 92 days. The proposed change would require an evaluation of the SDV system response prior to plant startup after each scram to verify that no abnormalities exist. This change is in accordance with the recommendations for changes identified in item 4.5 of Generic Letter (GL) 93-05.

SR 4.1.3.1.4 requires that at least once every 18 months each SDV vent and drain valve be tested to assure that it will close within 30 seconds after receipt of a signal for control rods to scram and will open when the scram signal is reset. This is one of the requirements from the Generic Safety Evaluation Report (GSER) issued December 1, 1980 for the BWR scram discharge system. The GSER considered the information available from the Browns Ferry Nuclear Power Station, Unit 3 partial scram failure event of June 28, 1980 and from other failures and events at other plants. The GSER technical basis for including an SDV test in conjunction with a scram test is that:

[A] total integrated system test [IST] will demonstrate that the system retains its capability to monitor the accumulation of water in the SDV and to scram the plant when required. The IST will allow operators to check for the proper operation of system components and instrumentation under operating conditions normal to a scram operation.

This test, combined with an evaluation of SDV system response after each scram to verify no abnormalities exist prior to plant startup, is considered to adequately demonstrate the operability of the SDV vent and drain valves. Further, periodic cycling of the valves during power operation appears to provide no significant additional assurance of operability since the highest potential for inoperability occurs following a scram and the valve conditions following a scram are to be evaluated. Therefore, the requirement for periodic cycling of the SDV vent and drain valves during power operation is proposed to be replaced with the requirement for evaluation of system response following a scram prior to restart.

GL 93-05 also addresses that SR 4.1.3.4 should not be required to be performed at a greater than 50% rod density but should be done during shutdown conditions. The greater than 50% rod density requirement was eliminated from the Fermi 2 Operating License with the issuance of the Full Power Operating License (Reference: Fermi 2 Safety Evaluation Report Supplement 6, Appendix S). The intent and practice has been to perform this SR during outages. However, in accordance with NRC Generic Letter 91-04 and Amendment 95 to the Fermi 2 TS, the specification of the shutdown condition to perform these tests is unnecessary. To maintain consistency, the current wording of SR 4.1.3.1.4 is being retained.

Performance of the Fermi 2 SDV vent and drain valves has been acceptable and supports the proposed changes in the surveillance frequency.

The proposed TS page change is attached. It is written in accordance with the guidance in Reference 2.

**Change B** - TS SR 4.1.3.1.2.b requires that, when above the preset power level of the RWM, all withdrawn control rods not required to have their directional control valves disarmed electrically or hydraulically be demonstrated OPERABLE by moving each control rod at least one notch at least once per 24 hours when any control rod is immovable as a result of excessive friction or mechanical interference. The proposed change would require that the control rod be moved only once within 24 hours. This change is in accordance with the recommendations for changes identified in item 4.2.2 of GL 93-05.

SR 4.1.3.1.2.a requires that, when above the preset power level of the RWM, all withdrawn control rods not required to have their directional control valves disarmed electrically or hydraulically be demonstrated OPERABLE by moving each control rod at least one notch at least once per 7 days. The purpose of this test is to verify that the control rods are movable in response to a scram signal. A generic review of the history of this SR (Reference 3) indicated that typical problems detected during this surveillance included hydraulic control unit directional control valves sticking in the open position and failures of the rod manual control system electronics. However, these failures are not related to the scram capability of the control rod. A search using the Nuclear Plant Reliability Data System (NPRDS) found 212 cases of control rod drive failures between 1980 and the end of March 1988. Of these, only 8 were found during testing and of these 8, no failures were found that would have affected the ability to scram.

Additionally, if any control rod is immovable as a result of excessive friction or mechanical interference, SR 4.1.3.1.2.b requires testing of all withdrawn control rods every 24 hours. This is very resource intensive, and since additional immovable control rods are almost never identified from this testing, this test is proposed to be reduced to once within 24 hours of determining any control rod to be immovable as a result of excessive friction or mechanical interference. One test will confirm that other control rods are not also affected and will allow a return to the normal 7 day frequency for testing.

The operation of the Fermi 2 control rods and control rod drive systems has been acceptable and supports the proposed change in surveillance frequency.

The proposed TS page change is attached. It is written in accordance with the guidance in Reference 2.

**Change C** - TS SR 4.3.2.3 requires the isolation system response time of each isolation trip function shown in Table 3.3.2-3 to be demonstrated, for each trip function, to be within its limit at least once per 18 months. The proposed change would remove those limits that correspond to the diesel generator start and sequencing times. The diesel generator start and sequencing of loads is tested in accordance with SRs 4.8.1.1.2.a.4 and 4.8.1.1.2.e.11. This change is in accordance with the recommendations for changes identified in item 5.9 of GL 93-05.

Safety analyses assume that instrument channel actuation for non-MSIV channels occurs simultaneously with diesel start and sequencing. Therefore, the chance is remote that a channel's response time (that is typically less than a second) would degrade to the point where it exceeds the 13 second diesel start time without a failure that would be noticeable in other ways. The TS "Bases" section states that the only purpose for checking these response times is "to enhance overall system reliability and to monitor instrument channel response time trends."

This testing increases the risk of plant trips and equipment damage due to the large number of lifted leads, jumpers, and pulled fuses required to simulate the necessary system conditions. These conditions create a significant increase in the potential for errors. Additionally, extensive staff-hours are expended during each refueling satisfying the non-MSIV isolation system response time testing requirements. This staff time could be more effectively spent on other work.

Industry research has determined that failures and degradation which could affect response time in these systems are normally detected through calibrations, functional tests, logic system functional tests, and channel checks. Therefore, Detroit Edison proposes to eliminate response time testing of isolation actuation instrumentation where the required response time corresponds to the diesel start and sequencing time.

The proposed TS page change is attached. It is written in accordance with the guidance in Reference 2. In addition, a necessary change to the TS Bases is included to maintain consistency between the TS and the TS Bases.

**Change D** - TS 3.8.1.1 Action a requires testing of the operable diesel generators (DGs) within 24 hours when an offsite circuit is determined to be inoperable. The proposed change would eliminate this testing requirement. This change is in accordance with the recommendations for changes identified in item 10.1 of GL 93-05.

This alternate testing of a DG when the offsite circuit is unavailable, results in an increased potential for a DG to become unavailable at the time when its potential for required use is highest. An analysis of the



unavailabilities of such testing performed by Vermont Yankee (Reference 3) showed that such alternate testing produces unavailabilities of about a factor of 3 higher than the normal monthly testing of DGs. Considering this analysis and similar conclusions in NUREG-1024, Detroit Edison proposes to delete the alternate testing of DGs when an offsite circuit is determined to be inoperable for a cause that has no apparent impact on the DG operability.

The performance of the Fermi 2 EDGs has been acceptable and supports this change to the surveillance requirements.

The proposed TS page change is attached. It is written in accordance with the guidance in Reference 2.

**Change E - TS 3.8.1.1 Action b** requires testing of the remaining operable diesel generator (DG) within 24 hours when a DG is determined to be inoperable. The proposed change would eliminate this testing requirement if the inoperable DG is determined to be inoperable due to an inoperable support system, an independently testable component, or preplanned preventive maintenance or testing, or if the absence of any potential common mode failure for the remaining diesel generators is determined. This change is in accordance with the recommendations for changes identified in item 10.1 of GL 93-05 with two exceptions: 1) the current completion time of 24 hours is retained rather than the 8 hour completion time contained in GL 93-05, and 2) the absence of any potential common mode failure is proposed to be "determined" rather than "demonstrated." These exceptions are consistent with the Completion Time and Required Actions provided in the recently issued Improved Technical Specifications for this Action and the Bases provided therein. In addition the Fermi 2 design includes four DG's in total, two per division. This means that normally three DG's will require testing under this requirement. The 24 hour completion time is needed to effectively test this equipment.

This alternate testing of the redundant DG's when a DG is inoperable for a reason that does not impact the remaining operable DG's results in an increased potential for the remaining operable DG's to become unavailable at the time when their potential for required use is highest. An analysis of the unavailabilities of such testing performed by Vermont Yankee (Reference 3) showed that such alternate testing produces unavailabilities of about a factor of 3 higher than the normal monthly testing of DGs. Considering this analysis and similar conclusions in NUREG-1024, Detroit Edison proposes to delete the alternate testing of the remaining operable DG's when a DG is determined to be inoperable for a cause that has no apparent impact on the remaining DG's operability.

The proposed TS page change is attached. It is written in accordance with the guidance in Reference 2, with the exceptions discussed above.

**Change F** - TS SR 4.8.1.1.2.a.5 requires fast loading of the DG within 150 seconds. The proposed change would allow all loading of the DG to be conducted in accordance with manufacturer's recommendations (with the exception of the 18 month loss of offsite power (LOOP) tests both with and without a LOCA signal). This change is in accordance with the recommendations for changes identified in item 10.1 of GL 93-05.

Several past programs have determined that fast loading during surveillance testing is the most significant cause of accelerated degradation of a DG (Reference 3). It can cause rapid piston ring and cylinder liner wear (up to 40 times greater than normal wear). Therefore, Detroit Edison proposes to eliminate rapid loading in favor of loading in accordance with the manufacturer's recommendations, except for the 18 month LOOP tests. These tests will test the actual load sequencing that would occur in an actual emergency and are considered sufficient to demonstrate this aspect of operability.

The proposed TS page change is attached. It is written in accordance with the guidance in Reference 2.

**Change G** - TS SR 4.8.1.1.2.e.8 requires the conduct of a simulated LOOP test (SR 4.8.1.1.2.e.4.b) within 5 minutes of a 24 hour run test. The proposed change would require the test that follows the 24 hour run to be SR 4.8.1.1.2.a.4 (the DG start test). The proposed change would also require running the DG for at least two hours if the hot restart test is conducted at a time other than following the 24 hour run test. This change is in accordance with the recommendations for changes identified in item 10.1 of GL 93-05 .

SR 4.8.1.1.2.e.8 requires the conduct of a 24 hour run test. During the first 22 hours the diesel is to operate with 2500 - 2600 KW load and for the last two hours it is to operate at a 2800 - 2900 KW load. SR 4.8.1.1.2.e.8 also requires that within 5 minutes of completing the 24 hour run test, the emergency buses must be deenergized and loads shed with a subsequent fast start and full load acceptance. This latter start and load is currently required to be accomplished through the conduct of a LOOP test (SR 4.8.1.1.2.e.4.b). Scheduling these 24 hour runs during a time when all engineered safety features (ESF) are available generally dictates a minimum of 48 hours (24 hours for each division) where no other testing can be performed on the full complement of ESF necessary for these combined tests.

Detroit Edison proposes to separate these two tests (the 24 hour run and the LOOP test) in order to provide additional flexibility and prevent critical path complications during refueling outages. This separation is proposed to be accomplished by revising the hot restart test to include only starting the DG as accomplished by SR 4.8.1.1.2.a.4 and allowing SR 4.8.1.1.2.e.4.b (the LOOP test) to be conducted without consideration of the scheduling of the 24 hour run test.



Additionally, performing these tests in quick succession requires the DG to be shutdown faster than recommended by the DG shutdown procedure in order to perform the hot DG restart within 5 minutes of completing the 24 hour run test. Finally, failure to restart when hot, or extended delay in restarting, is typically only experienced with small forced air cooled diesel engines which, upon being tripped undergo a temperature rise transient. The Fermi 2 DGs are water cooled and maintained in hot standby conditions and, therefore, do not experience any significant temperature rise transients during operation or after shutdown.

A note is currently provided which allows the hot restart test to be repeated without first conducting the 24 hour run if the hot restart test is not successful. The repeated test must be preceded by running the DG at a 2500 - 2600 KW load for one hour or until the operating temperature has stabilized. Detroit Edison also proposes that the minimum run time prior to repeating the test be extended to "2 hours or until the operating temperature is stabilized." This change is consistent with the recommendations of the Fermi 2 DG manufacturer.

The proposed TS page change is attached. It is written in accordance with the guidance in Reference 2.

#### EVALUATION

This proposal removes several surveillance requirements for testing during power operation which have been determined to be compatible with Fermi 2 operating experience. These changes will improve safety, decrease equipment degradation, and eliminate an unnecessary burden on personnel resources by reducing the amount of testing that is required during power operation. For example, change A will eliminate the possibility of subjecting the plant to additional plant scrams solely for the purpose of meeting a surveillance requirement. Reference 2 encourages licensees to adopt these line-item improvements based on the recommendations of Reference 3. Improved safety will be attained through the elimination of the potential for reactor trips and engineered safety feature actuations caused by testing at power and through increased availability of the safety systems. Decreased equipment degradation will be attained and an unnecessary burden on personnel resources will be eliminated through the general reduction of the number of tests required during power operation. Therefore, this TS change produces a net benefit to safety and is acceptable.

#### SIGNIFICANT HAZARDS CONSIDERATION

In accordance with 10CFR50.92, Detroit Edison has made a determination that the proposed amendment involves no significant hazards considerations. To make this determination, Detroit Edison must establish that operation in accordance with the proposed amendment would

not: (1) involve a significant increase in the probability or consequences of an accident previously evaluated, or (2) create the possibility of a new or different kind of accident from any accident previously evaluated, or (3) involve a significant reduction in a margin of safety.

The proposed amendment modifies the surveillance requirements for scram discharge volume vent and drain valves, isolation actuation instrumentation, and the required actions and surveillance requirements for the emergency diesel generators to reduce required testing during power operation. This modification is a line item TS improvement as described in Generic Letter 93-05 (Reference 2).

1. The proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated. The proposed changes to the frequency of testing for these components will reduce the probability of failure due to wear and eliminate the possibility of initiating transients during testing of these components. Therefore, the proposed changes will result in a decrease in the probability of previously evaluated accidents. Further, the proposed changes do not alter the design, function, or operation of the components involved and therefore, do not affect the consequences of any previously evaluated accident.
2. The proposed changes do not create the possibility of a new or different kind of accident from any accident previously evaluated. As stated above, the proposed changes do not alter the design, function, or operation of the components involved and therefore, no new accident scenarios are created.
3. The proposed changes do not involve a significant reduction in a margin of safety. As developed in Reference 3 and endorsed in Reference 2, the proposed changes to the testing frequency will increase the margin of safety through reduced equipment wear and elimination of opportunities to induce transients.

#### ENVIRONMENTAL IMPACT

Detroit Edison has reviewed the proposed Technical Specification changes against the criteria of 10CFR51.22 for environmental considerations. The proposed changes do not involve a significant hazards consideration, nor significantly change the types or significantly increase the amounts of effluents that may be released offsite, nor significantly increase individual or cumulative occupational radiation exposures. Based on the foregoing, Detroit Edison concludes that the proposed Technical Specifications meet the criteria given in 10CFR51.22(c)(9) for a categorical exclusion from the requirements for an Environmental Impact Statement.

CONCLUSION

Based on the evaluations above: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (2) such activities will be conducted in compliance with the Commission's regulations, and the proposed amendment will not be inimical to the common defense and security or the health and safety of the public.

In order to allow sufficient time to make procedure changes and other program changes, Detroit Edison requests that this amendment be issued with a 45 day implementation period.