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Detroit Edison



A DTE Energy Company

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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 Administrative Letter 95-05, Revision 2,
"Revisions to Staff Guidance for Implementing
NRC Policy on Notices of Enforcement Discretion,
dated, July 27, 1999
 - 3) NRC Inspection Manual, Part 9900, Technical Guidance,
Operations – Notice of Enforcement Discretion,
dated December 12, 2000

Subject: Request for Enforcement Discretion with respect to
the Technical Specification Limiting Condition for
Operation Related to Emergency Diesel Generator 14

The purpose of this letter is to document Detroit Edison's request for Enforcement Discretion with respect to the Completion Time requirements contained in the Technical Specification (TS) Limiting Condition for Operation (LCO) 3.8.1 "AC Sources – Operating," Action A.6, for a single Emergency Diesel Generator (EDG) in one division inoperable. The 7 day Completion Time specified for restoring the inoperable EDG 14 to an Operable status, will not be met because of the extensive work necessary to complete the replacement of a failed generator bearing. This will require the Fermi plant to shutdown and to be in MODE 3 within 12 hours after March 28, 2001 at 0940 hours (EST). As further explained below, enforcement

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discretion is required to support restoring the EDG-14 to an Operable status without unnecessarily placing the plant in a shutdown condition.

EDG 14 is an opposed piston, 2 stroke diesel engine with 12 cylinders. The engine is coupled to the air cooled generator. The generator rotor is supported by two spherical roller bearings, one on the inboard side (engine side), and one on the outboard side. The outboard bearing failed suddenly and catastrophically during an endurance run recently when operated to fulfill periodic TS surveillance requirements. Prior to the most current EDG 14 run, there was no indication of bearing degradation.

EDG-14 was started and loaded for the purpose of performing the 24-hour endurance surveillance testing per TS Surveillance Requirement (SR) 3.8.1.13, on March 21, 2001 at 1011 hours. At 2206 hours, a generator trouble alarm was received. It was noted that the EDG 14 generator outboard bearing temperature was 228 degrees F and rising rapidly. The EDG 14 output breaker was opened, and EDG 14 was manually tripped. One minute later, the operator reported a fire on the EDG 14 generator outboard bearing housing. The fire was extinguished by the operator within the next minute using a hand held carbon dioxide fire extinguisher.

LCO 3.8.1, Condition A for the inoperable EDG 14 was entered at 0940 hours on March 21, 2001, upon taking EDG 14 out of service to perform SR 3.8.1.13. Hence, the required 7 day Completion Time for Required Action A.6 will expire at 0940 hours on March 28, 2001. Due to the extensive nature of the work required to replace the affected bearing (i.e., partially dismantling the generator, removing the failed bearing, manufacturing and installing a sleeve, installing a new bearing and bearing housing, reassembling the generator bell end and recoupling it to the diesel engine, and performing the post-maintenance testing which includes a 24 hour endurance run), this work will extend beyond the current required Completion Time of 7 days. Therefore, Detroit Edison requests that the required Completion Time in LCO 3.8.1, Action A.6, be extended from 7 days to 14 days on a one-time basis.

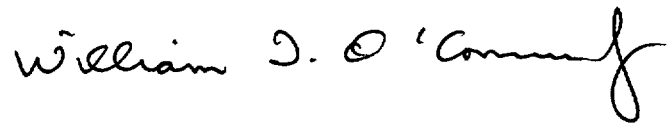
Detroit Edison requests that the proposed request for enforcement discretion be reviewed and approved on an expedited basis. This request for enforcement discretion was unavoidable due to the sudden, rapid degradation of the affected EDG 14 bearing, approximately 12 hours into the 24 hour endurance run, and was not created by a failure to make a timely application for a license amendment.

If granted, we understand that the enforcement discretion will be in effect until EDG 14 is returned to an Operable status or until the requested 14 day Completion Time expires, whichever occurs first.

Attachment 1 to this letter contains the details and information required to support Detroit Edison's request for enforcement discretion, consistent with NRC Administrative Letter 95-05, Revision 2, "Revisions to Staff Guidance for Implementing NRC Policy on Notices of Enforcement Discretion" (Reference 2), including a discussion as to why this request does not involve a significant hazards consideration and does not involve adverse consequences to the environment. Reference 3 was also used in the development of this request.

Should you have any questions or require additional information, please contact Mr. Peter W. Smith of my staff at (734) 586-4271.

Sincerely,

A handwritten signature in black ink, reading "William J. O'Connell". The signature is written in a cursive style with a large, stylized "W" and "O".

Attachment

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

Request for Enforcement Discretion with respect to the Technical Specification Limiting Condition for Operation Related to Emergency Diesel Generator 14

1. TECHNICAL SPECIFICATION (TS) or LICENSE CONDITION THAT WOULD BE VIOLATED:

Technical Specification(TS) Limiting Condition for Operation (LCO) 3.8.1, "AC Sources – Operating," requires two emergency diesel generators (EDGs) per division (two divisions) to be OPERABLE during MODES 1 (Power Operation), 2 (Startup), and 3 (Hot Shutdown). With one or both EDGs in one division inoperable, Condition A applies and Required Action A.6 requires restoring the inoperable EDG(s) to OPERABLE status within 7 days. Otherwise, Condition C is entered which requires that the plant be in MODE 3 within 12 hours per Required Action C.1, and in MODE 4 within 36 hours per Required Action C.2.

With EDG 14 inoperable for greater than 7 days, a violation of TS LCO 3.8.1 would occur if action were not taken to initiate a plant shutdown. Thus, a notice of enforcement discretion (NOED) is needed to allow continued plant operation, utilizing an extension of the 7 day Completion Time specified for one inoperable EDG per Required Action A.6 of TS LCO 3.8.1.

2. CIRCUMSTANCES SURROUNDING THE SITUATION, INCLUDING APPARENT ROOT CAUSES, NEED FOR PROMPT ACTION AND RELEVANT HISTORICAL EVENTS:

EDG-14 was removed from service at 0940 hours on March 21, 2001, and subsequently started and loaded for the purposes of performing the 24-hour endurance surveillance test run per TS Surveillance Requirement (SR) 3.8.1.13, on March 21, 2001 at 1011 hours. At 2206 hours (EST), approximately 12 hours into the run, a generator trouble alarm was received. It was noted that the EDG 14 generator outboard bearing temperature was 228 degrees F and rising rapidly. The EDG 14 output breaker was opened, and EDG 14 was manually tripped at 2210 hours. Approximately one minute later, the operator reported a fire on the EDG 14 generator outboard bearing housing. The fire was extinguished by the operator immediately using a hand held carbon dioxide fire extinguisher. Subsequently, an Alert was declared and terminated, and appropriate notifications were made (see Event Notification 37855, dated March 21, 2001). LCO 3.8.1, Condition A for the inoperable EDG 14 was entered at 0940 hours on March 21, 2001, when EDG 14 was removed from

service for testing. The required 7 day completion time for Condition A.6 will expire at 0940 hours on March 28, 2001.

The root cause has been determined to be a lower than adequate oil level in the bearing housing. The oil level was below the vendor recommended minimum value of six inches below the centerline of the generator shaft. The estimated actual oil level at the time of the event was at 6 7/8 inches below the centerline of the generator shaft, 7/8 inch below the recommended minimum.

The bearing is an SKF spherical roller bearing. A service representative from SKF inspected the bearing after the bearing cover was removed and indicated that the failure was caused by metal to metal contact indicative of inadequate lubrication. Recent EDG 14 runs did not give any indication of bearing problems.

Historical Events that preceded the failure are as follows:

- 1984 A stiffener plate was added to the outboard end of the generator housing to reduce axial vibration on EDG 14 only. This led to a modification of the oil sight glass piping. It is believed that the oil level sight glass was incorrectly lowered at that time, thus indicating higher by approximately 0.9 inches than the actual oil level in the bearing.
- 1997 A nonconformance report (DER) was issued questioning the proper oil levels for the EDG generator bearings. The DER established the proper oil levels of 5.62 inches + 1/8 to -3/8 inches below the centerline of the shaft (5.5 to 6.0 inches). Prior to this time it was standard practice to keep oil above the sight glass mark of 5.62 in. Operator rounds sheets and the maintenance procedure were revised with the new oil level tolerances.
- 1999 A site wide program for improving oil level indication installed oil level "green bands" on all EDG generator bearings. The green band on EDG 14 was erroneously placed too low, using the tick mark that had existed since 1984, resulting in a higher apparent indication (approximately 0.9 inches) than what actually existed. Maintaining oil in the green band could result in the oil level being too low.
- 1999 EDG 14 underwent a satisfactory 24 hour endurance run on October 22, 1999. Oil level remained in the green band, apparently high enough in the green band to preclude failure.
- 2001 EDG 14 generator outboard bearing failed during the 24 hour endurance run. The oil level "green band", installed under the 1999 program was found at approximately 6 7/16" to 6 14/16" below the centerline of the shaft. The operator indicated that the

oil level was at the bottom of the "green band". Due to the error in the placement of the "green band", the bearing oil level was 7/8" too low.

Generator bearing oil levels for EDGs 11, 12, and 13 were measured and found acceptable, eliminating a potential common mode problem. Additionally, all three of the remaining EDGs have recently completed their 24 hour endurance runs (within the past month) without any bearing problems noted (i.e., vibration, temperature, and oil sample analyses were within normal ranges). The sight glass green bands for the remaining three EDGs are at the appropriate levels.

The current repair plan is based on machining and sleeving the generator shaft. Mechanical repairs are expected to be completed prior to expiration of the LCO on March 28, 2001; however, post-maintenance testing, including a 24 hour endurance run are anticipated to not be complete until about 24 hours after the LCO expires. To accommodate unforeseen problems with the remaining work and post-maintenance testing, Detroit Edison requests that the required Completion Time associated with LCO 3.8.1, Action A.6, be extended from 7 days to 14 days, on this one-time basis. Prompt action with respect to this request is needed to prevent a plant shutdown on March 28, 2001.

3. **SAFETY BASIS FOR REQUEST, INCLUDING EVALUATION OF SAFETY SIGNIFICANCE AND POTENTIAL CONSEQUENCES OF THE REQUESTED ACTION.**

The extension of the allowed Completion Time from 7 days to 14 days for Required Action A.6 of LCO 3.8.1 will allow the required repairs and post-maintenance testing for EDG 14 to be completed without subjecting the plant to an unnecessary shutdown and startup cycle. Although there is a certain risk associated with the increased allowed Completion Time, most challenges to plant systems, such as an increased potential for plant transients or disturbances, occur during startup and shutdown evolutions, and not during steady state operation. By eliminating the plant shutdown and startup cycle that would be required under the current TS requirements, the plant will not be subjected to the consequent risk associated with a shutdown and startup cycle, thus offsetting the risk associated with the increased Completion Time. Therefore, extending the Completion Time will have minimal effect on the frequency of core damage events, and thus, on plant safety.

The incremental conditional core damage probability (ICCDP) and incremental conditional large early release probability (ICLERP) resulting from extending the EDG Completion Time from 7 days to 14 days were computed in accordance with the definitions in RG 1.177, "An Approach for Plant-Specific Risk-Informed Decisionmaking: Technical Specifications." These results were then compared with the risk significance guidance contained in RG 1.174, "An Approach for using Probabilistic Risk Assessment in Risk-

Informed Decisions On Plant-Specific Changes to the Licensing Basis,” for changes in the annual average core damage frequency (CDF) and large early release frequency (LERF) and in RG 1.177 for ICCDP and ICLERP. The values obtained for the ICCDP ($2.08\text{E-}07$) and ICLERP ($3.66\text{E-}8$) demonstrate that the proposed Completion Time change has only a small quantitative impact (less than $5.0\text{E-}07$ ICCDP, per RG 1.177 and $5.0\text{E-}08$ for ICLERP per RG 1.177) on plant risk. This satisfies the risk criteria for permanent as well as for temporary changes for plant maintenance configurations.

Based on this evaluation, extending the Completion Time for an inoperable EDG for up to 14 days will have minimal effect on plant risk.

4. **BASIS FOR CONCLUDING THAT NONCOMPLIANCE WILL NOT BE OF POTENTIAL DETRIMENT TO THE PUBLIC HEALTH AND SAFETY AND THAT NO SIGNIFICANT HAZARDS CONSIDERATION IS INVOLVED.**

The Fermi onsite AC power sources consist of four EDGs, two in Division 1, and two in Division 2, and one combustion turbine generator (CTG) 11-1, aligned to Division 1 for station blackout purposes. TS LCO 3.8.1 permits continued plant operation for a limited period of time with one or more EDGs inoperable. Specifically, if one or both EDGs in one division are inoperable, both EDGs must be restored to an operable status within 7 days, otherwise, a plant shutdown is required. With EDG 14 inoperable, the remaining operable EDGs (i.e., two in Division 1 and one in Division 2) are sufficient for performing the safety functions assumed in the safety analyses. CTG 11-1 is also available for station blackout considerations.

Technical Specification Completion Times are limited because of the inability to meet single-failure criteria during the period of time that required equipment is not available. The current 7 day Completion Time for restoring both EDGs in one division to Operable status is based upon a consideration of the capacity and capability of the remaining AC power sources, as well as the additional reliability afforded by the availability of CTG 11-1, and the low probability of a design basis accident (DBA) occurring during this period.

Given these considerations, supported by the results of the risk evaluation described in the discussion for Criterion 3 above, Detroit Edison has concluded that extending the LCO 3.8.1 Required Action A.6 Completion Time from 7 days to 14 days will not result in a significant increase in plant risk.

Basis for No Significant Hazards Consideration

A proposed deviation from the Operating License (Technical Specifications) in accordance with Reference 2 involves no significant hazards consideration if operation of the facility in

accordance with the proposed change 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 than previously evaluated, or (3) involve a significant reduction in a margin of safety. The proposed change, i.e., the request for enforcement discretion to extend the Completion Time specified in TS LCO 3.8.1, Required Action A.6 from 7 days to 14 days for EDG 14 is evaluated against each of these criteria as follows.

- (1) The proposed change does not involve a significant increase in the probability or the consequences of any accident previously evaluated.

The proposed change affects the Completion Time for TS LCO 3.8.1, Required Action A.6. The proposed change allows a one-time extension of the current Completion Time for the inoperable EDG 14 from 7 days to 14 days.

The proposed change does not affect the design of the EDGs, the operational characteristics or function of the EDGs, the interfaces between the EDGs and other plant systems, or the reliability of the EDGs. Required Actions and their associated Completion Times are not considered initiating conditions for any accident previously evaluated, nor are the EDGs considered initiators of any previously evaluated accidents. The EDGs are provided to mitigate the consequences of previously evaluated accidents, including a loss of offsite power. The consequences of previously evaluated accidents will not be significantly affected by the extended EDG Completion Time because a sufficient number of onsite AC power sources will continue to remain available to perform the accident mitigation functions associated with the EDGs, as assumed in the accident analyses. Thus the consequences of accidents previously evaluated are not affected by the proposed change in Completion Time

To fully evaluate the effect of the proposed EDG Completion Time extension, Probabilistic Risk Assessment (PRA) methods and a deterministic analysis were utilized. The results of the analysis show no significant increase in Core Damage Frequency (CDF) or Large Early Release Frequency (LERF). Therefore, the proposed change does not involve a significant increase in the probability or the consequences of any accident previously evaluated.

- (2) The proposed change would not create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed change does not involve a change in the design, configuration, or method of operation of the plant. The proposed change will not alter the manner in which equipment operation is initiated, nor will the functional demands on credited equipment be changed. The changes do not alter assumptions made in the safety

analysis. No alteration in the procedures, which ensure that the plant remains within analyzed limits, is being proposed, and no changes are being made to the procedures relied upon to respond to an off-normal event. As such, no new failure modes are being introduced. Therefore, these proposed changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

- (3) The proposed change will not involve a significant reduction in the margin of safety.

The proposed change does not alter the plant design, nor does it affect the assumptions contained in the safety analyses. Specifically, there are no changes being made to the EDG design, including instrument setpoints. The proposed changes have been evaluated both deterministically, and using risk-informed methods. Based upon these evaluations, margins of safety ascribed to EDG availability and to plant risk have been determined to be not significantly reduced. The evaluation has concluded the following with respect to the proposed changes:

Applicable regulatory requirements will continue to be met, adequate defense-in-depth will be maintained, sufficient safety margins will be maintained, and any increases in CDF and LERF are small and consistent with the NRC Safety Goal Policy Statement (Federal Register, Vol.51, p. 30028 (51 FR 30028), August 4, 1986, as interpreted by NRC Regulatory Guides 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," and 1.177, "An Approach for Plant-Specific Risk-Informed Decisionmaking: Technical Specifications"). Furthermore, increases in risk posed by potential combinations of equipment out of service during the proposed extended EDG Completion Time will be managed under a configuration risk management program consistent with 10CFR50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," paragraph (a)(4), and as required by Technical Requirements Manual TR 5.1.2.

The availability of offsite power coupled with the availability of the other EDGs and the use of on-line risk assessment tools provide adequate compensation for the potential small incremental increase in plant risk associated with the extended EDG Completion Time. The proposed extended EDG Completion Time in conjunction with the availability of the other EDGs, continues to provide adequate assurance of the capability to provide power to the engineered safety features (ESF) buses. Therefore, implementation of the proposed changes will not involve a significant reduction in the margin of safety.

The evaluation provided above shows that the proposed changes will not significantly increase the probability or the consequences of any accident previously evaluated, create the possibility of a new or different kind of accident from any accident

previously evaluated, or involve a significant reduction in the margin of safety. Therefore, the proposed changes meets the criteria of 10CFR 50.92(c) and no significant hazard consideration is involved.

5. BASIS FOR CONCLUDING THAT THE NONCOMPLIANCE WILL NOT INVOLVE ADVERSE CONSEQUENCES TO THE ENVIRONMENT.

The proposed request for enforcement discretion will allow a one-time extension of the Completion Time for the inoperable EDG 14. It will not change any of the plant process limits or the manner in which plant systems are operated. The plant will continue to be required to be operated within the limits, conditions and provisions of the current Operating License. On that basis, the proposed request will have no impact on the plant's current licensing basis with respect to environmental impact. Thus, the proposed request involves no adverse consequences to the environment.

6. PROPOSED COMPENSATORY MEASURES

In accordance with Fermi 2 Maintenance Rule Program Manual, Chapter 12 (MR 12), "Equipment out of Service Risk Management," risk recommendations have been made. As such, the plant is currently in a "LOW" risk status, and will remain in this category for the extended period. The following equipment protections will be in effect until EDG 14 is restored to an Operable status.

- a) No elective maintenance will be performed on EDGs 11, 12, and 13 during the extended EDG Completion Time.
- b) No elective maintenance will be performed on CTG 11-1, which can be used to supply power to the Division 1 busses, during the extended EDG Completion Time.
- c) No elective maintenance will be scheduled within the 120 and 345 KV switchyards that would challenge the offsite power connection or offsite power availability during the extended EDG Completion Time.
- d) No elective work will be performed on protected equipment or opposite train emergency core cooling system (ECCS) equipment during the extended EDG Completion Time.

While in the extended EDG Completion Time period, overall plant risk will be managed by the existing Configuration Risk Management Program in accordance with the Fermi 2 Technical Requirements Manual. The CRMP program evaluates increases in risk posed by potential combinations of equipment out-of-service and potential increases in initiating events (e.g., offsite power supply stability, including potential weather-related

affects, and switchyard work) and requires risk recommendations be implemented as appropriate for the configuration.

7. JUSTIFICATION FOR THE DURATION OF THE NONCOMPLIANCE

It is requested that the LCO 3.8.1, Required Action A.6 Completion Time for EDG 14 be extended 7 days. This will allow time for completion of the replacement of the EDG 14 generator outboard bearing. The extension of the Completion Time to a total of 14 days is sufficient to complete all of the necessary repairs and post-maintenance testing that is required prior to returning EDG 14 to an operable status. Plant risk remains low during this extended period as documented in Sections 3 and 4 above.

8. FACILITY REVIEW GROUP REVIEW

The Fermi 2 Onsite Review Organization (OSRO) has reviewed and approved this request for enforcement discretion as of 1500 hours on March 26, 2001.

9. NOED CRITERIA SATISFIED FOR THE CURRENT PLANT CONDITIONS

As of the date of this letter formally requesting enforcement discretion, the plant continues to operate in Mode 1, at or near full power. Approval of this request is appropriate and necessary to avoid the undesirable transients of shutdown and startup that would result from forced compliance with the Actions for a Limiting Condition for Operation, thus, minimizing potential adverse safety consequences and operational risks (Criterion 2.1.1.a of Reference 3).

10. IF A FOLLOW-UP LICENSE AMENDMENT IS REQUESTED, THE NOED REQUEST MUST INCLUDE MARKED-UP TS PAGES SHOWING THE PROPOSED TS CHANGES AND A COMMITMENT TO SUBMIT THE ACTUAL LICENSE AMENDMENT REQUEST WITHIN 48 HOURS.

A follow-up License Amendment is not being requested in relation to this enforcement discretion request.

11. **EVENTS, THE LICENSEE'S REQUEST MUST BE SUFFICIENTLY DETAILED FOR THE STAFF TO EVALUATE THE LIKELIHOOD THAT THE EVENT COULD AFFECT THE PLANT, THE CAPABILITY OF THE ULTIMATE HEAT SINK, ON-SITE AND OFF-SITE EMERGENCY PREPAREDNESS STATUS, ACCESS TO AND FROM THE PLANT, ACCEPTABILITY OF ANY INCREASED RADIOLOGICAL RISK TO THE PUBLIC AND THE OVERALL PUBLIC BENEFIT.**

This criterion is not applicable to this request.