

October 2, 2002

Mr. William T. O'Connor, Jr.
Vice President - Nuclear Generation
Detroit Edison Company
6400 North Dixie Highway
Newport, MI 48166

SUBJECT: FERMI 2 - ISSUANCE OF AMENDMENT RE: RESPONSE TIME TESTING
REQUIREMENTS FOR THE REACTOR PROTECTION SYSTEM AND PRIMARY
CONTAINMENT ISOLATION INSTRUMENTATION (TAC NO. MB5173)

Dear Mr. O'Connor:

The Commission has issued the enclosed Amendment No. 151 to Facility Operating License No. NPF-43 for the Fermi 2 facility. The amendment consists of changes to the Technical Specifications (TSs) in response to your application dated May 23, 2002, as supplemented July 16, 2002.

The amendment eliminates the requirement to perform response time testing for two reactor protection system functions and two primary containment isolation functions.

A copy of our safety evaluation is also enclosed. The Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

/RA/

Tae Kim, Senior Project Manager, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-341

Enclosures: 1. Amendment No. 151 to NPF-43
2. Safety Evaluation

cc w/encls: See next page

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PDIII-1 Reading ACRS
LRaghavan WBeckner
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*Provided SE input by memo
**Previously Concurred

ADAMS Accession No. ML022490062

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Fermi 2

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March 2002

DETROIT EDISON COMPANY

DOCKET NO. 50-341

FERMI 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 151
License No. NPF-43

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by the Detroit Edison Company (the licensee) dated May 23, 2002, as supplemented July 16, 2002, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. NPF-43 is hereby amended to read as follows:

Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 151 , and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. DECo shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented within 60 days.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

L. Raghavan, Chief, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: October 2, 2002

ATTACHMENT TO LICENSE AMENDMENT NO. 151

FACILITY OPERATING LICENSE NO. NPF-43

DOCKET NO. 50-341

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE

3.3-7
3.3-9
3.3-53
3.3-54
3.3-55

INSERT

3.3-7
3.3-9
3.3-53
3.3-54
3.3-55

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 151 FACILITY OPERATING LICENSE NO. NPF-43

DETROIT EDISON COMPANY

FERMI 2

DOCKET NO. 50-341

1.0 INTRODUCTION

By application dated May 23, 2002, as supplemented July 16, 2002, the Detroit Edison Company (the licensee), requested changes to the Technical Specifications (TSs) for Fermi 2. The proposed changes would eliminate the requirement to perform response time testing (RTT) for two reactor protection system (RPS) functions. Specifically, the proposed changes would remove references to Surveillance Requirement (SR) 3.3.1.1.17 from Table 3.3.1.1-1, Functions 3 and 4, thereby eliminating the requirement to perform RTT for the reactor vessel steam dome pressure-high and reactor vessel water level-low, level 3, RPS functions. The proposed changes would delete note 2 from SR 3.3.1.1.17, removing a statement that will no longer apply if the proposed changes are implemented. In addition, the proposed changes would remove references to SR 3.6.1.7 from Table 3.3.6.1-1, Functions 1.a and 1.c, thereby eliminating the requirement to perform RTT for the primary containment isolation instrumentation main steamline flow-high and reactor vessel water level-low low low, level 1.

The July 16, 2002, supplemental letter provided additional clarifying information that was within the scope of the original application and did not change the Nuclear Regulatory Commission (NRC) staff's initial proposed no significant hazards consideration determination.

2.0 BACKGROUND

The current standard TSs require nuclear power plants to periodically perform RTT for instrument channels in the RPS, emergency core cooling system (ECCS), and isolation actuation system (IAS). The intent of these tests is to ensure that changes in instrumentation response time beyond the limits assumed in the plants's safety analyses are detected and combined with instrument calibrations to ensure that the instrumentation is operating correctly.

The Institute of Electrical and Electronics Engineers (IEEE) Standard 338-1977, which is endorsed in Regulatory Guide (RG) 1.118, Revision 2, "Periodic Testing of Electric Power and Protection Systems," defines a basis for eliminating RTT. Specifically, Section 6.3.4 of the standard states, in part, the following basis:

“Response time testing of all safety-related equipment, per se, is not required if, in lieu of response time testing, the response time of the safety system equipment is verified by functional testing, calibration check, or other tests, or both. This is acceptable if it can be demonstrated that changes in response time beyond acceptable limits are accompanied by changes in performance characteristics which are detectable during routine periodic tests.”

In January 1994, the Boiling Water Reactor Owners Group (BWROG), under the auspices of the General Electric Company, issued licensing Topical Report NEDO-32291, “System Analyses for Elimination of Selected Response Time Testing Requirements.” In that report, the BWROG proposed eliminating the requirements for RTT of selected instrumentation in the RPS, ECCS, and IAS, and the NRC staff approved the topical report in a safety evaluation report (SER) dated December 28, 1994.

On March 27, 1997, Detroit Edison, the licensee for Fermi 2, submitted a license amendment request, consistent with the changes proposed in Topical Report NEDO-32291, to eliminate the requirement to perform RTT for selected sensors and specified loop instrumentation for the RPS, ECCS, and IAS. The NRC staff approved the March 27, 1997, application by License Amendment No. 111, dated April 18, 1997.

On November 4, 1997, the BWROG submitted Supplement 1 to Topical Report NEDO-32291 to expand the scope of RTT elimination. Specifically, in Supplement 1, the BWROG proposed eliminating the requirements for RTT of six groups of components in instrument loops with shorter response time requirements (i.e., between 300 and 5,000 milliseconds (mS)). The BWROG based the requested elimination on a failure modes and effects analysis (FMEA) performed on one selected component within each group, and a similarity analysis showing that the FMEA was bounding on all components within the group. The FMEA showed that any credible failure of any component would either be bounded by a bounding response time, or would be detected by other surveillances. The NRC staff approved Supplement 1 to Topical Report NEDO-32291 by a letter and safety evaluation dated June 11, 1999.

3.0 EVALUATION

The NRC staff has reviewed the licensee’s regulatory and technical analyses in support of its May 23, 2002, application. The detailed evaluation in the following subsections supports the NRC staff’s conclusions that (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation of Fermi 2 in the proposed manner, (2) such activities will be conducted in compliance with the Commission’s regulations, and (3) issuance of the amendment will not be inimical to either the common defense and security or to the health and safety of the public.

3.1 Proposed TS Changes

The proposed TS changes would eliminate the requirement from Tables 3.3.1.1-1 and 3.3.6.1-1 to perform RTT for RPS Function 3 (Table 3.3.1.1-1), "Reactor Vessel Steam Dome Pressure - High," and Function 4 (Table 3.3.1.1-1), "Reactor Vessel Water Level - Low, Level 3," Function 1.a (Table 3.3.6.1-1), "Main Steam Line Isolation - Reactor Vessel Water Level - Low Low Low, Level 1," and Function 1.c, "Main Steam Line Flow - High." This would include eliminating RTT of the logic and trip units and output relays. As noted above, the NRC staff

previously approved the elimination of RTT for the sensors by License Amendment No. 111. The elimination of RTT for the functions proposed in the current amendment request was addressed in Supplement 1 to Topical Report NEDO-32291, and was approved by the NRC staff by the letter and safety evaluation dated June 11, 2002.

The proposed changes would modify the Fermi SRs, as follows:

- (1) Delete note 2 from SR 3.3.1.1.17 on page 3.3-7. This note currently reads:
"2. For Functions 3 and 4, channel sensor response times are not required to be measured."

This note was required when the sensors were not included in the RTT, but will no longer apply if the proposed changes are implemented. The entire system, rather than just the sensors would no longer be subject to RTT under the requested amendment. Note 3 would be renumbered as note 2.

- (2) Delete the requirement to perform SR 3.3.1.1.17 from Table 3.3.1.1-1 on page 3.3-9 for Function 3, "Reactor Vessel Steam Dome Pressure - High," and Function 4, "Reactor Vessel Water Level - Low, Level 3." (This would be done by removing the line containing SR 3.3.1.1.17 from Functions 3 and 4.)
- (3) Remove SR 3.3.6.1.7 from page 3.3-54. This SR would no longer be needed.
- (4) Remove the requirement to perform SR 3.3.6.1.7 from Table 3.3.6.1-1 on page 3.3-55 for Function 1a, "Main Steam Line Isolation - Reactor Vessel Water Level - Low Low, Level 1." (This would be done by removing the line containing SR 3.3.6.1.7 from Functions 1a and 1c.)

Associated with the above TS changes, the licensee proposed to revise the following TS Bases:

- (1) SR Bases section SR 3.3.1.1.17 would be changed to modify the third paragraph on page B 3.3.1.1-33, which currently reads:

"In addition, Note 2 states the response time of the sensors for Functions 3 and 4 are excluded from RPS RESPONSE TIME testing. The sensors for these Functions are assumed to operate at the sensor's design response time. This allowance is supported by Reference 12, which determined that significant degradation of the sensor channel response time can be detected during performance of other Technical Specification SRs, and that the sensor response time is a small part of the overall RPS RESPONSE TIME testing."

The paragraph would be modified to read:

"The sensors and relays / logic components for Functions 3 and 4 are assumed to operate at the design response time. This allowance is supported by References 12 and 21, which determined that significant degradation of the channel response time can be detected during performance of other Technical Specification SRs."

- (2) The fourth paragraph on page B 3.3.1.1-33 would be modified to change the reference to “note 3” to read “note 2.”
- (3) A new reference would be added to page B 3.3.1.1-35 to read:
 - 21. NEDO-32291-A Supplement 1, "System Analyses for Elimination of Selected Response Time Testing Requirements," dated October, 1999.
- (4) The entire SR Bases section SR 3.3.6.1.7 on pages B 3.3.6.1-32 and 33 would be deleted.
- (5) Reference 10 on page B 3.3.6.1-33 would be removed.

The NRC staff has reviewed the licensee’s proposed TS changes and agrees that these are the appropriate changes to the TSs to eliminate the RTT requirement for the functions discussed. The TS changes are therefore approved. The NRC staff also does not object to the licensee’s proposed changes to the associated TS Bases.

3.2 Bounding Response Times

In Supplement 1 to Topical Report NEDO-32291, the BWROG proposed eliminating the requirement for RTT for six groups of components in instrument loops with short response time requirements (i.e., between 300 mS and 5,000 mS). The FMEA for these components showed that response time of a component can degrade only to a limited degree before it is identified by other surveillance tests. That limited degree of degradation is known as the “bounding response time (BRT)” of that component. Response time degradation beyond the BRT will be detected by routine surveillance tests or calibration. The following table shows Fermi 2 BRT calculation using Table C.2-1, “Component Sets and Component BRTs,” of Topical Report NEDO-32291, Supplement 1:

Reactor Vessel Water Level-Low, Level 3 Loop Type H						
Sensor	Trip Unit (TU)	TU Output Relay	Logic Relay	Output Contactor	Loop Logic BRT	Channel BRT
429 mS	24 mS	140 mS	40 mS	45 mS	249 mS	678 mS
Rosemont 1153DB	Rosemont 510DU/ 710DU	Agastat EGPB	GE 12HFA151A9	GE CR305	N/A	N/A

Reactor Vessel Steam Dome Pressure High Loop Type H						
Sensor	Trip Unit (TU)	TU Output Relay	Logic Relay	Output Contactor	Loop Logic BRT	Channel BRT
200 mS	24 mS	140 mS	40 mS	45 mS	249 mS	449 mS
Rosemont 1153GB	Rosemont 510DU/710DU	Agastat EGPB	GE 12HFA151A9	GE CR305	NA	NA

Reactor Vessel Water Level-Low Low Low, Level 1 Loop Type E with additional auxiliary relay							
Sensor	Trip Unit (TU)	TU Output Relay	Logic Relay	Auxiliary Relay	Output Relay	Loop Logic BRT	Channel BRT
400 mS	24 mS	140 mS	40 mS	40 mS	40 mS	284 mS	684 mS
Rosemont 1153DB	Rosemont 510DU/710DU	Agastat EGPB	GE 12HFA 151A9	GE 12HFA1 51A9	GE 12HFA 151A9	NA	NA

Main Steam Line Flow-high Loop Type E with additional auxiliary relay							
Sensor	Trip Unit (TU)	TU output Relay	Logic Relay	Auxiliary Relay	Output Relay	Loop Logic BRT	Channel BRT
110 mS	24 mS	140 mS	40 mS	40 mS	40 mS	284 mS	394 mS
Rosemont 1151DP 1152DP	Rosemont 510DU/710DU	Agastat EGPB	GE 12HFA 151A9	GE 12HFA1 51A9	GE 12HFA 151A9	NA	NA

The NRC staff previously approved the elimination of RTT requirements for the sensors associated with these trip functions by License Amendment No. 111.

The following table shows the specific components (and associated BRTs) for which the current license amendment request proposes to eliminate RTT:

Component	BRT
Agastat Model EGPB Relay	140 mS
Rosemont 510DU/710DU Trip Unit	24 mS
GE Model 12HFA 151A9 Relay	40 mS
GE Model CR305 Magnetic Contactor	45 mS

The NRC staff previously approved these values in the letter and safety evaluation that approved Topical Report NEDO-32291, Supplement 1, and therefore, these values are acceptable.

3.3 Verification of Component-Specific Conditions

In approving NEDO-32291, Supplement 1, the NRC staff stipulated that licensees must address the specific conditions that were identified in the associated safety evaluation for components for which RTT is no longer required to ensure that the corresponding BRTs are valid. As previously indicated, the four components for which the licensee has proposed to eliminate RTT for Fermi 2 are the Agastat Model EGPB Relays, Rosemont 510DU/710 DU Trip Units, GE Model 12HFA 151A9 Relays, and GE Model CR305 Magnetic Contactors. The following subsections address the verification of component-specific conditions for each of these four components.

3.3.1 Agastat Model EGPB Relay

For the Agastat Model EGPB relays, the NRC-approved BRT is 140 mS based on the following requirements:

- Before installation, or following any maintenance or repair of the relays, the normally open contacts of the relays are confirmed to open in 70 mS or less after power is removed from the coil.
- The relays are within their qualified life.
- The relays are procured by the utility as “nuclear safety-related,” or are dedicated for nuclear safety-related application under a utility dedication program.

The licensee’s license amendment request responds to these requirements with the following statements:

- The calibration procedures will be revised to include a step requiring a response time test to be performed prior to returning the relay to service when repairing or replacing the relay. The normally open contacts of the relays will be confirmed to open in 70 mS or less after power is removed from the coil. The test will be required “prior to return to service” rather than “prior to installation” since it is acceptable to perform response time testing on the bench or installed.
- Relays have been verified to be within their qualified life.
- The relays are procured as “nuclear safety-related.”

The NRC staff has reviewed the licensee’s responses and has determined that they satisfy the component-specific requirements stated in the safety evaluation for Topical Report NEDO-32291, Supplement 1. Therefore, the NRC staff concludes that it is acceptable to eliminate the RTT requirements of the Agastat Model EGPB relays.

3.3.2 Rosemont 510DU/710DU Trip Unit

For the Rosemont 510DU/710DU trip units, the NRC-approved BRT was determined to be 24 mS based on the trip units being procured by the utility as “nuclear safety-related,” or dedicated for nuclear safety-related application under a utility dedication program.

The March 23, 2002, application stated that the trip units are procured as “nuclear safety-related.”

The NRC staff has reviewed the licensee’s responses and has determined that they satisfy the component-specific requirements stated in the safety evaluation for Topical Report NEDO-32291, Supplement 1. Therefore, the NRC staff concludes that it is acceptable to eliminate the RTT requirements of the Rosemont 510DU/710DU Trip Unit.

3.3.3 GE Model 12HFA 151A9 Relay

For the GE Model 12HFA 151A9 relays, the NRC-approved BRT was determined to be 40 mS based on the following requirements:

- The HFA manufacturer’s instructions are followed for setup and adjustment of the relay before initial operation and following any repair or maintenance.
- Before installation, or following any maintenance or repair of the relays, the normally open contacts of the relays are confirmed to open in 20 mS or less after power is removed from the coil.
- The relays are procured by the utility as “nuclear safety-related,” or are dedicated for nuclear safety-related application under a utility dedication program.

The licensee’s March 23, 2002, application, responded to these requirements with the following statements:

- These relays are used as normally open and energized in the untripped state, with power removed and contacts closed to trip.
- The manufacturer’s instructions for setup and adjustment of the relay will be proceduralized in the calibration procedures. These procedures will be performed for relays before initial operation and after any repair or maintenance.
- The normally open contacts of the relays will be confirmed to open in 20 mS or less after power is removed from the coil. The calibration procedures will be revised to include this verification before installation or after maintenance or repair of the relays.

4. The relays are procured as “nuclear safety-related.”

The NRC staff has reviewed the licensee’s responses and has determined that they satisfy the component-specific requirements stated in the safety evaluation for Topical Report NEDO-32291, Supplement 1. Therefore, the NRC staff concludes that it is acceptable to eliminate the RTT requirements of the GE Model 12HFA 151A9 relays.

3.3.4 GE Model CR305 Magnetic Contactor

For the GE Model CR305 magnetic contactors, the NRC-approved BRT was determined to be either 65 mS if the average power range monitor (APRM) upscale trip test is tested as a total loop, or 45 mS if the APRM upscale trip is tested in overlapping partial tests. In this case, the requirement was to identify which of the two postulated test methods are used, and to use the appropriate BRT for that test method.

Each Fermi 2 scram contactor and one interposing relay, which is not shared by other loops, are response time tested with an acceptance criteria of less than or equal to 50 mS for APRM two-out-of-four voter RPS function. Hence, 45 mS is used as the scram contactor BRT in the analysis as identified by Topical Report NEDO-32291, Supplement 1, Section B.7.2.2.

The NRC staff has reviewed the licensee's responses and has determined that they satisfy the component-specific requirements stated in the safety evaluation for Topical Report NEDO-32291, Supplement 1. Therefore, the NRC staff concludes that it is acceptable to eliminate the RTT requirements of the GE Model CR305 magnetic contactors

3.4 Applicability of NEDO-32291, Supplement 1

The NRC staff's safety evaluation for Topical Report NEDO-32291, Supplement 1, required that when submitting plant-specific license amendment (TS change) requests, licensees must confirm the applicability of the generic analysis of Supplement 1 to their specific plant. In Enclosure 4 to its March 23, 2002, application, the licensee made the following statement:

“NEDO-32291 Supplement 1 is applicable to Fermi 2. Fermi participated in the development of NEDO-32291 Supplement 1 as documented in Appendix A of the NEDO document.”

The NRC staff has determined that this response is acceptable.

Based upon the above, the NRC staff finds that the licensee has implemented the provisions of the generic safety evaluation for RTT elimination and has satisfied the component-specific requirements in accordance with the approved Topical Report NEDO-32291, Supplement 1. Therefore, the NRC staff concludes that the proposed Fermi 2 TS modifications are acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Michigan State official was notified of the proposed issuance of the amendment. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes surveillance requirements. The staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding

that the amendment involves no significant hazards consideration and there has been no public comment on such finding (67 FR 42818). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: P. Loeser

Date: October 2, 2002