May 9, 2000

Mr. Douglas R. Gipson
Senior Vice President
Nuclear Generation
Detroit Edison Company
6400 North Dixie Highway
Newport, MI 48166

SUBJECT: FERMI 2 - ISSUANCE OF AMENDMENT RE: EMERGENCY DIESEL GENERATOR FULL-LOAD REJECT OVERVOLTAGE LIMIT (TAC NO. MA8881)

Dear Mr. Gipson:

The Commission has issued the enclosed Amendment No. 140 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 8, 2000. This request was treated as an emergency amendment in accordance with 10 CFR 50.91(a)(5).

The amendment revises TS Surveillance Requirement 3.8.1.9 to increase the limit for the peak transient voltage measured following a full-load rejection by the emergency diesel generator that is being tested.

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/

Andrew J. Kugler, 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. 140 to NPF-43
2. Safety Evaluation

cc w/encls: See next page

DISTRIBUTION

PUBLIC	OGC
PDIII-1 Reading	ACRS
CCraig	WBeckner
AKugler	GHill(2)
RBouling	MRing, RGN-III
OChopra	

*Previously Concurred

OFFICE	PDIII-1/PM	PDIII-1/LA	EEIB/C*	OGC*	PDIII-1/SC
NAME	AKugler	RBouling	JCalvo	SUttal	CCraig
DATE	05/9/00	05/9/00	05/09/00	05/09/00	05/9/00

DOCUMENT NAME: G:\PDIII-1\FERMI\AMD-A8881.wpd
OFFICIAL RECORD COPY

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

May 9, 2000

Mr. Douglas R. Gipson
Senior Vice President
Nuclear Generation
Detroit Edison Company
6400 North Dixie Highway
Newport, MI 48166

SUBJECT: FERMI 2 - ISSUANCE OF AMENDMENT RE: EMERGENCY DIESEL GENERATOR FULL-LOAD REJECT OVERVOLTAGE LIMIT (TAC NO. MA8881)

Dear Mr. Gipson:

The Commission has issued the enclosed Amendment No. 140 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 8, 2000. This request was treated as an emergency amendment in accordance with 10 CFR 50.91(a)(5).

The amendment revises TS Surveillance Requirement 3.8.1.9 to increase the limit for the peak transient voltage measured following a full-load rejection by the emergency diesel generator that is being tested.

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,

Andrew J. Kugler, 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. 140 to NPF-43
2. Safety Evaluation

cc w/encls: See next page

cc:

John Flynn, Esquire
Senior Attorney
Detroit Edison Company
2000 Second Avenue
Detroit, MI 48226

Drinking Water and Radiological
Protection Division
Michigan Department of
Environmental Quality
3423 N. Martin Luther King Jr Blvd
P. O. Box 30630 CPH Mailroom
Lansing, MI 48909-8130

U.S. Nuclear Regulatory Commission
Resident Inspector's Office
6450 W. Dixie Highway
Newport, MI 48166

Monroe County Emergency Management
Division
963 South Raisinville
Monroe, MI 48161

Regional Administrator, Region III
U.S. Nuclear Regulatory Commission
801 Warrenville Road
Lisle, IL 60532-4351

Norman K. Peterson
Director, Nuclear Licensing
Detroit Edison Company
Fermi 2 - 280 TAC
6400 North Dixie Highway
Newport, MI 48166

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

DETROIT EDISON COMPANY

DOCKET NO. 50-341

FERMI 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 140
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 8, 2000, 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. 140, 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 2 days.

FOR THE NUCLEAR REGULATORY COMMISSION

for Claudia M. Craig, 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: May 9, 2000

ATTACHMENT TO LICENSE AMENDMENT NO. 140

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	INSERT
3.8-5	3.8-5

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.8.1.9	Verify each EDG does not trip and voltage is maintained ≤ 5267 V during and following a load rejection of ≥ 2850 kW.	18 months
SR 3.8.1.10	----------NOTE---------- All EDG starts may be preceded by an engine prelube period. ----------	
	Verify on simulated loss of offsite power signal: a. De-energization of emergency buses; b. Load shedding from emergency buses; and c. EDG auto-starts and: 1. energizes permanently connected loads in ≤ 10 seconds, 2. energizes auto-connected shutdown loads through load sequencer, 3. maintains steady state voltage ≥ 3740 V and ≤ 4580 V, 4. maintains steady state frequency ≥ 58.8 Hz and ≤ 61.2 Hz, and 5. supplies permanently connected and auto-connected shutdown loads for ≥ 5 minutes.	18 months

(continued)

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 140 FACILITY OPERATING LICENSE NO. NPF-43

DETROIT EDISON COMPANY

FERMI 2

DOCKET NO. 50-341

1.0 INTRODUCTION

By application dated May 8, 2000, the Detroit Edison Company (DECo or the licensee) requested changes to the Technical Specifications (TSs) for Fermi 2. The proposed changes would revise TS Surveillance Requirement (SR) 3.8.1.9 to increase the limit for the peak transient voltage measured following a full-load rejection by the emergency diesel generator (EDG) that is being tested. The licensee requested that the proposed amendment be treated as an emergency amendment as discussed in Section 3.0 of this safety evaluation.

2.0 EVALUATION

2.1 Background

Current TS SR 3.8.1.9 requires the licensee to verify that each EDG does not trip and voltage is maintained less than or equal to 4784 volts (V) during and following a load rejection of greater than or equal to 2850 kiloWatts (kW). This SR demonstrates that the EDG can reject a full load without tripping on overspeed or exceeding predetermined voltage limits. The acceptance criteria are intended to protect the EDG from damage.

During the current refueling outage, the licensee replaced the voltage regulator for EDG 13, one of the two Division II EDGs. This modification was made because spare parts for the old voltage regulator are no longer readily available. The new voltage regulator would resolve this obsolescence issue. The voltage regulators for the remaining three EDGs will be replaced in the future.

During the performance of SR 3.8.1.9 following the modification, the licensee observed peak voltages in excess of the TS limit of 4784 V. During the final test, the peak voltage was 4830 V. The voltage exceeded the TS limit for a duration of approximately 6 cycles or 0.1 seconds. The licensee did not expect this result based on computer modeling performed before the modification was installed.

2.2 Proposed Change and Licensee Bases

The licensee proposes to increase the maximum full-load rejection limit specified in SR 3.8.1.9 from its current value of 4784 V to 5267 V. This change is required to resolve the unanticipated test result observed during post-modification testing for the replacement exciter-voltage regulator installed on EDG 13. The licensee determined that the higher voltages observed during the load rejection test with the new exciter-voltage regulator were the result of inherent design characteristics of the new exciter-regulator and were not the result of any equipment deficiency.

The licensee also noted that the EDG output voltage at the beginning of the test was 4265 V, which is 105 V higher than the nominal EDG output voltage of 4160 V. Starting from a higher voltage will result in a higher peak voltage. At the beginning of the full-load reject test, the EDG is operated in parallel with the offsite power source. The output voltage of the EDG must be adjusted to match that of the offsite power source, which may be operating at a voltage higher than the nominal EDG output voltage of 4160 V. At the start of this particular performance of SR 3.8.1.9, the offsite power source (and thus the EDG output voltage) was 4265 V.

The licensee reviewed the following guidance documents pertinent to this issue: (1) Regulatory Guide (RG) 1.108, Revision 1, dated August 1977, "Periodic Testing of Diesel Generator Units Used As Onsite Electric Power Systems at Nuclear Power Plants;" (2) RG 1.9, Revision 2, dated December 1979, "Selection, Design, and Qualification of Diesel-Generator Units Used as Standby (Onsite) Electric Power Systems at Nuclear Power Plants;" and (3) Institute of Electrical and Electronics Engineers (IEEE) Standard 387-1977, "IEEE Standard Criteria for Diesel-Generator Units Applied as Standby Power Supplies for Nuclear Power Generating Stations." The licensee found that none of the documents provided numerical criteria, but that the IEEE standard provided qualitative criteria for load rejection tests in Section 6.4.5, stating, "Load rejection tests shall demonstrate the capability of rejecting the maximum rated load without exceeding speeds or voltages which will cause tripping, mechanical damage, or harmful overstresses." With no numerical overvoltage criteria established in the guidance documents, the licensee determined that the overvoltage limit was assigned based on overvoltage limits provided in the Standard Technical Specifications (STS) that were in effect during the initial licensing of the Fermi 2 plant. The STS specified typical values which were 115 percent of the nominal bus voltage (i.e. 4784 V). This value was adopted for Fermi 2 without modification and presented no problem until the installation of the new exciter-voltage regulator. However, based on review of the regulatory guidance and industry standards, the licensee concluded that the effective acceptance criteria for this value appears to be that the overvoltage resulting from full-load rejection would not result in equipment damage preventing subsequent use of the affected diesel generator.

The licensee is proposing a new limit of 5267 V. This voltage represents 115 percent of 4580 V. The licensee selected 4580 V because it is the upper steady state voltage permitted by SRs 3.8.1.7, 3.8.1.10, 3.8.1.11, 3.8.1.14, and 3.8.1.17, following starting and/or loading of an EDG. The use of 115 percent is consistent with typical values used in the previous STS and the current Fermi 2 TS.

The licensee evaluated the components potentially impacted by the overvoltage condition on a full-load rejection test and determined that the potential overvoltage would not cause damage to the associated equipment. The part of the voltage transient where the observed voltage

exceeded 4784 V was short in duration (approximately 6 cycles or 0.1 seconds) and the maximum observed value of 4830 V is within equipment capabilities. The EDG vendor provided the licensee with documentation stating that the generator was tested at 9,320 V and is capable of withstanding at least 6000 V (65 percent of the originally tested value) during field operation. The vendor documents dielectric testing for the exciter transformer section at 12 kV. Cables are rated for continuous operation at 5 kV and are subjected to overvoltage testing at 6 kV for one minute. In addition, the overvoltage protection for the system, which is not bypassed during the load rejection test, did not actuate during the test. The maximum allowable voltage setting for the overvoltage relay is the equivalent of 5334 V for a 150-cycle (2½-second) duration. This setting is established to protect the affected electrical equipment. As such, the maximum voltage permitted by the proposed change is bounded by the respective equipment capabilities.

2.3 Staff Evaluation

The staff has reviewed the licensee's proposal and supporting bases. The proposed peak voltage limit is within the current limits for the overvoltage protection for the EDGs. This, in conjunction with the short duration of the voltage peak, ensures that operation within the new limit will not adversely affect EDG equipment (the generators, the insulation, the EDG controls, and the instrumentation) or the capability of the EDGs to perform their intended function. Testing with the new limit will continue to meet the objective of the SR, ensuring that the EDG is not damaged by overvoltage following a full-load reject. The proposed change does not conflict with existing regulatory guidance and is consistent with previous staff actions (e.g., Amendment No. 88 to Facility Operating License No. NPF-38 for the Waterford Steam Electric Station, Unit 3, dated November 2, 1993). Therefore, the staff concludes that the change is acceptable.

3.0 EMERGENCY CIRCUMSTANCES

The Commission's regulations at 10 CFR 50.91 contain provisions for issuance of an amendment where the Commission finds that emergency circumstances exist, in that a licensee and the Commission must act quickly and that the time does not permit the Commission to publish a *Federal Register* notice allowing 30 days for prior public comment. The emergency exists in this case in that the proposed amendment is needed to allow the licensee to complete activities necessary for the restart of the unit from the current refueling outage. The staff has determined that the licensee used its best efforts to make a timely application and that the licensee could not reasonably have foreseen the problem that led to this TS change request. The problem was an unrecognized result of a design modification to upgrade the EDG voltage regulator.

Accordingly, the Commission has determined that emergency circumstances exist pursuant to 10 CFR 50.91(a)(5) and could not have been avoided, that the submittal of information was timely, and that the licensee did not create the emergency condition.

4.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATIONS DETERMINATION

The Commission's regulations at 10 CFR 50.92(c) state that the Commission may make a final determination that a license amendment involves no significant hazards consideration if operation of the facility in accordance with the proposed amendment would not (1) involve a significant increase in the probability or consequences of an accident previously evaluated,

(2) create the possibility of a new or different kind of accident from any accident previously evaluated, or (3) result in a significant reduction in the margin of safety. The NRC staff has made a final determination that no significant hazards consideration is involved for the proposed amendment and that the amendment should be issued as allowed by the criteria contained in 10 CFR 50.91. The NRC staff's final determination is presented below:

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

The proposed change revises TS SR 3.8.1.9 to provide a new voltage limit of 5267 V for a full-load rejection test of the EDGs. This increase in the voltage requirement will not result in component damage. Safety-related functions will not be affected by this change, and EDG operability and availability for accident mitigation will remain unchanged. Therefore, the EDGs will still be capable of performing required safety functions, and there will be no increase in the consequences of an accident.

The EDGs provide a safety-related source of alternating-current power to engineered safety features (ESF) and safe shutdown systems for reactor shutdown and to mitigate the consequences of design-basis accidents coincident with a loss of offsite power. However, none of the accidents evaluated in the accident analyses are initiated by the EDG system or associated subsystems. The credible failure of the EDG(s) is bounded by the evaluated accidents in Updated Final Safety Analysis Report Sections 15.2.6 (Loss of AC Power), 15.6.5 (Loss-of-Coolant Accident Inside Containment), and 15.15 (Loss of One (Redundant) Direct Current System). Since the EDGs provide accident mitigation functions and are not postulated to be the initiator of any DBA, the proposed TS change does not involve an increase in the probability of an 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.

As discussed above, the EDGs only provide accident mitigation functions and are not postulated to create an accident. Peak voltages of less than or equal to 5267 V during a full-load rejection test will not damage connected EDG generating, control, and distribution components. Because the EDG output breaker is open when the peak voltage occurs, these EDG components are the only pieces of equipment affected by the voltage peak. Therefore, the proposed change will not create the possibility of 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 does not affect the ability of the EDGs to respond to mitigate the consequences of postulated accidents nor does it affect the ability of the EDGs to respond to a full-load rejection without overspeeding or being damaged. Thus, the EDG system will continue to be a reliable standby power source to ESF systems to effect a safe shutdown should normal offsite power not be available. Therefore, the proposed TS change does not involve a significant reduction in the margin of safety.

5.0 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.

6.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a surveillance requirement. 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 made a final finding that the amendment involves no significant hazards consideration. 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.

7.0 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: A. Kugler

Date: May 9, 2000