

July 12, 2001

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: REVISION OF FISSION PRODUCT  
RELEASE TIMING FOR DESIGN-BASIS ACCIDENTS DESCRIBED IN FERMI 2  
UPDATED FINAL SAFETY ANALYSIS REPORT (TAC NO. MB0597)

Dear Mr. O'Connor:

The Commission has issued the enclosed Amendment No. 143 to Facility Operating License No. NPF-43 for the Fermi 2 facility. The amendment consists of changes to the Updated Final Safety Analysis Report in response to your application dated November 21, 2000.

The amendment approves a change to the licensing basis to allow a 121-second delay in the timing of the release of fission products following design-basis accidents.

A copy of our related 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. 143 to NPF-43  
2. Safety Evaluation

cc w/encls: See next page

Fermi 2

cc:

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May 2001

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Detroit Edison Company  
6400 North Dixie Highway  
Newport, MI 48166

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ACCESSION NO. ML011790560

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DETROIT EDISON COMPANY

DOCKET NO. 50-341

FERMI 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 143

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 November 21, 2001, 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, by Amendment No. 143, Facility Operating License No. NPF-43 is hereby amended to authorize a change in the licensing basis to allow a 121-second delay in the timing of the release of fission products following design-basis accidents, as set forth in the license amendment application dated November 21, 2000, and evaluated in the associated safety evaluation by the Commission's Office of Nuclear Reactor Regulation. The licensee shall update the Updated Final Safety Analysis Report as authorized by this amendment and in accordance with 10 CFR 50.71(e).

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/*

Claudia M. Craig, Chief, Section 1  
Project Directorate III  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Date of Issuance: July 12, 2001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 143 FACILITY OPERATING LICENSE NO. NPF-43

DETROIT EDISON COMPANY

FERMI 2

DOCKET NO. 50-341

1.0 INTRODUCTION

By application dated November 21, 2000, the Detroit Edison Company (DECo or the licensee) requested a change to the Fermi 2 Updated Final Safety Analysis Report (UFSAR). The proposed amendment would approve a change to the licensing basis to allow a 121-second delay in the timing of the release of fission products following design-basis accidents. The licensee submitted this request as a limited-scope implementation of the alternative source term as described in Regulatory Guide 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors," dated July 2000.

The proposed changes include revisions to Section 15.6.5.5.1, "Fission Product Release From Fuel," Section 15.6.5.5.2, "Fission Product Transport to the Environment," and Section 15.6.5.5.3, "Results," of the Fermi 2 UFSAR. In addition, the changes also clarify that the current values provided in UFSAR Tables 15.6.5-2 and 15.6.5-3 are those airborne fission products in the containment that are conservatively assumed to be released from the damaged core to the drywell at accident time zero. The licensee has not requested to change the values in these tables.

2.0 EVALUATION

The current radiological consequence analysis for a postulated loss-of-coolant accident (LOCA) is provided in Fermi 2 UFSAR Section 15.6.5. The current analysis assumes an instantaneous release of fission products from the reactor core into the primary containment following the postulated LOCA based on a source term described in Technical Information Document (TID)-14844. The proposed 121-second delay in fuel gap activity release is based on analyses sponsored by the Boiling Water Reactor Owners Group (BWROG) and is documented in General Electric (GE) Company Report, "Prediction of the Onset of Fission Gas Release From Fuel in Generic BWR," dated July 1996. The BWROG/GE report documents the results of an analysis performed to determine the minimum time to the onset of fission product release from perforated fuel rods following a postulated design-basis LOCA. GE calculated the minimum time to the onset of fission product release from perforated fuel rods to be less than 121 seconds using a bounding boiling-water reactor (BWR) plant configuration, fuel design, and fuel burnup. This calculation is intended to be generic for all currently operating BWR plants.

This BWROG/GE report has been previously reviewed and accepted by the NRC staff in a letter dated September 9, 1999, to Entergy Operations, "Acceptance of BWROG Report - Prediction of the Onset of Fission Gas Release From Fuel in Generic BWR." The staff concluded in its acceptance of the BWROG/GE report that the 121-second delay in fuel gap activity release from damaged core into the containment is acceptable for referencing in future license amendment applications for all currently operating BWRs. The staff's conclusion was based on independent confirmatory analyses by the staff and findings in the Technical Evaluation Letter Report entitled, "Evaluation of Fuel Pin Failure Timing in Boiling Water Reactors (July 1999)," which was prepared by its technical assistance contractor, Idaho National Engineering and Environmental Laboratory. Subsequent to the NRC's acceptance of the BWROG/GE report, GE published this report as NEDC-32963A, "Prediction of the Onset of Fission Gas Release From Fuel in Generic BWR," in March 2000.

The licensee proposes to add the following paragraph to UFSAR Section 15.6.5.5.1:  
*For primary containment isolation purposes, the activity from the damaged core is assumed to be released into the containment at 121 seconds following the accident. This timing assumption recognizes conclusions derived from the source term studies described in NUREG-1465, Regulatory Guide 1.183 and Reference 4. The results in this Table conservatively assume activity released from the core enters the drywell at accident time zero.*

The licensee proposes to add the following sentence to UFSAR Section 15.6.5.5.2:  
*The results in this Table conservatively assume activity released from the core enters the drywell at accident time zero.*

The licensee proposes to add the following sentence to UFSAR Section 15.6.5.5.3:  
*Dose associated with coolant activity release in the first 121 seconds of the accident is not included in this Table. Its contribution to the accident dose is insignificant (on the order of 2 rem thyroid at the Exclusion Area Boundary).*

On the basis of the staff's acceptance of the BWROG/GE report and the guidance provided in Regulatory Guide 1.183, the staff concludes that the requested change to the Fermi 2 licensing basis to allow a 121-second delay in fuel gap activity release from damaged core into the containment from an instantaneous release following a postulated design-basis LOCA and the proposed additions to the UFSAR to reflect this change are acceptable.

### 3.0 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.

### 4.0 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. 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

(65 FR 81914). 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.

## 5.0 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: J. Lee

Date: July 12, 2001