

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

June 2, 1998

SUBJECT: FERMI 2 - ISSUANCE OF EXEMPTION FROM THE REQUIREMENTS OF
 10 CFR 70.24 (TAC NO. MA1645)

Dear Mr. Gipson:

By letter dated April 27, 1998, the Detroit Edison Company requested an exemption from certain requirements of 10 CFR 70.24 concerning criticality monitors.

Based on the information provided, a criticality accident involving calibration sources or in-core monitors that are not in use is not possible. Also, there is reasonable assurance that irradiated and unirradiated fuel will remain subcritical. Furthermore, you maintain criticality accident monitors in accordance with 10 CFR 70.24 on the refuel floor with administrative controls to prevent inadvertent criticality in other areas in which unirradiated fuel is handled. The low probability of a criticality together with your administrative controls and criticality monitors constitutes good cause for granting an exemption from 10 CFR 70.24(a).

The U.S. Nuclear Regulatory Commission, pursuant to 10 CFR 70.14, has issued the enclosed exemption for Fermi 2. A copy of the exemption is being forwarded to the Office of Federal Register for publication.

Sincerely,

ORIGINAL SIGNED BY

Andrew J. Kugler, Project Manager
 Project Directorate III-1
 Division of Reactor Projects - III/IV
 Office of Nuclear Reactor Regulation

Docket No. 50-341
 Enclosure: Exemption
 cc w/encl: See next page

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Detroit Edison Company

Fermi 2

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of)
)
DETROIT EDISON COMPANY) Docket No. 50-341
)
(Fermi 2))

EXEMPTION

I.

The Detroit Edison Company (the licensee) is the holder of Facility Operating License No. NPF-43, which authorizes operation of Fermi 2. The license provides, among other things, that the licensee is subject to all rules, regulations, and orders of the Commission now or hereafter in effect.

The facility consists of a boiling-water reactor at the licensee's site located in Monroe County, Michigan.

II.

Section 70.24 of Title 10 of the CODE OF FEDERAL REGULATIONS, "Criticality accident requirements," requires that each licensee authorized to possess special nuclear material (SNM) shall maintain a criticality accident monitoring system in each area where such material is handled, used, or stored. Subsections (a)(1) and (a)(2) of 10 CFR 70.24 specify detection and sensitivity requirements that these monitors must meet. Subsection (a)(1) also specifies that all areas subject to criticality accident monitoring must be covered by two detectors.

Paragraph (a) of 10 CFR 70.14 states that the Commission may, upon application of any interested person, grant such exemptions from the requirements of the regulations in 10 CFR Part 70 as it determines are authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest.

III.

The SNM that could be assembled into a critical mass at Fermi 2 is in the form of nuclear fuel; the quantity of SNM other than fuel that is stored on site in any given location is small enough to preclude achieving a critical mass. The Commission has evaluated the possibility of an inadvertent criticality of the nuclear fuel at Fermi 2 and has determined that it is extremely unlikely for such an accident to occur if the licensee meets the following seven criteria:

1. Only three new fuel assemblies are allowed out of a shipping cask or storage rack at one time.
2. The k-effective does not exceed 0.95, at a 95% probability, 95% confidence level in the event that the fresh fuel storage racks are filled with fuel of the maximum permissible U-235 enrichment and flooded with pure water.
3. If optimum moderation occurs at low moderator density, then the k-effective does not exceed 0.98, at a 95% probability, 95% confidence level in the event that the fresh fuel storage racks are filled with fuel of the maximum permissible U-235 enrichment and flooded with a moderator at the density corresponding to optimum moderation.

4. The k-effective does not exceed 0.95, at a 95% probability, 95% confidence level in the event that the spent fuel storage racks are filled with fuel of the maximum permissible U-235 enrichment and flooded with pure water.
5. The quantity of forms of SNM, other than nuclear fuel, that are stored on site in any given area is less than the quantity necessary for a critical mass.
6. Radiation monitors, as required by General Design Criterion 63, are provided in fuel storage and handling areas to detect excessive radiation levels and to initiate appropriate safety actions.
7. The maximum nominal U-235 enrichment is limited to 5.0 weight percent.

By letter dated April 27, 1998, the licensee requested an exemption from 10 CFR 70.24. In this request the licensee addressed the seven criteria given above. The Commission has reviewed the licensee's submittal and has determined that Fermi 2 meets the applicable criteria. Criteria 2 and 3 are not applicable to Fermi 2 because plant procedures preclude the use of the fresh fuel storage racks. Therefore, the staff has determined that it is extremely unlikely for an inadvertent criticality to occur in SNM handling or storage areas at Fermi 2.

The purpose of the criticality monitors required by 10 CFR 70.24 is to ensure that if a criticality were to occur during the handling of SNM, personnel would be alerted to that fact and would take appropriate action. The staff has determined that it is extremely unlikely that such an accident could occur; furthermore, the licensee has criticality accident monitors conforming to 10 CFR 70.24 in the areas in which fuel is handled outside the inner metal shipping cask and administrative controls over the handling of the casks in other areas. The low probability of an inadvertent criticality, together with the licensee's criticality accident monitors and administrative controls, constitutes good cause for granting an exemption to the requirements of 10 CFR 70.24(a).

IV.

The Commission has determined that, pursuant to 10 CFR 70.14, this exemption is authorized by law, will not endanger life or property or the common defense and security, and is otherwise in the public interest. Therefore, the Commission hereby grants the Detroit Edison Company, an exemption from the requirements of 10 CFR 70.24(a) for Fermi 2.

Pursuant to 10 CFR 51.32, the Commission has determined that the granting of this exemption will have no significant impact on the quality of the human environment (63 FR 29256).

This exemption is effective upon issuance.

Dated at Rockville, Maryland, this 2nd day of June 1998.

FOR THE NUCLEAR REGULATORY COMMISSION

Original signed by
Samuel J. Collins

Samuel J. Collins, Director
Office of Nuclear Reactor Regulation

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