

November 13, 1987

Docket No. 50-341

Mr. B. Ralph Sylvia
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Nuclear Operations
Detroit Edison Company
6400 North Dixie Highway
Newport, Michigan 48166

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Dear Mr. Sylvia:

SUBJECT: EXEMPTION TO GENERAL DESIGN CRITERION 56 OF APPENDIX A
TO 10 CFR PART 50 (TAC NO. 66467)

The U.S. Nuclear Regulatory Commission has issued the enclosed Exemption from a provision of General Design Criterion (GDC) 56 of Appendix A to 10 CFR Part 50 for the Fermi-2 facility located in Monroe County, Michigan. This Exemption for the Fermi-2 facility has been issued in response to your request dated October 27, 1987, as supplemented by your letters dated October 29, 1987, and November 2, 1987.

The Exemption permits postponement of full compliance with GDC 56 for the Primary Containment Radiation Monitor isolation until startup following planned local leak rate testing in March 1988.

Our safety evaluation of your request is incorporated into Section III of the Exemption. On November 5, 1987, we sent you our Environmental Assessment and Finding of No Significant Impact which was published in the Federal Register on November 10, 1987 (52 FR 43258).

A copy of the Exemption is being forwarded to the Office of the Federal Register for publication.

Sincerely,

Original signed by

John J. Stefano, Project Manager
Project Directorate III-1
Division of Reactor Projects - III, IV, V
& Special Projects

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Enclosure:
Exemption from GDC 56

cc w/enclosure:
See next page

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Mr. B. Ralph Sylvia
Detroit Edison Company

Fermi-2 Facility

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of)
)
DETROIT EDISON COMPANY)
WOLVERINE POWER SUPPLY COOPERATIVE,)
INCORPORATED)
)
(Fermi-2))

Docket No. 50-341

EXEMPTION

I.

Detroit Edison Company (DECo) and the Wolverine Power Supply Cooperative, Incorporated (the licensees) are the holders of Facility Operating License No. NPF-43 which authorizes the operation of the Fermi-2 facility at steady-state power levels not in excess of 3292 megawatts thermal. The license provides, among other things, that the facility is subject to all rules, regulations and Orders of the Nuclear Regulatory Commission (the Commission) now or hereafter in effect.

The facility is a boiling water reactor (BWR) located at the licensee's site in Monroe County, Michigan.

II.

The Fermi-2 Containment Leakage Detection System includes a Primary Containment Radiation Monitor (PCRM) configured in parallel with the Drywell Hydrogen/Oxygen Sampling System panel. Both systems normally operate during reactor operation and sample the drywell atmosphere from five zones through containment penetrations. The initial isolation design for the PCRM and the Drywell Hydrogen/Oxygen Sampling System is described in Section 6.2.4 of the Fermi-2 Final Safety Analysis Report. Containment isolation requirements of 10 CFR Part 50, Appendix A, General Design Criterion (GDC) 56, were achieved

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using a single remote manual isolation valve and a closed piping system outside the containment, instead of one automatic isolation valve inside and one automatic isolation valve outside containment. As stated in Section 6.2.4 of the Commission's Safety Evaluation Report for Fermi-2 (NUREG-0798), this design is acceptable. The design intent was that the PCRM would operate following a loss-of-coolant accident (LOCA) and that the PCRM would be in compliance with the closed system requirements approved as an alternative to GDC 56.

In January 1984, DECo determined that the PCRM did not meet the closed system design requirements for a containment design pressure of 56 psig. Seismic and material certifications provided by the PCRM vendor also were found to be deficient. Two actions were taken by DECo as a result of these findings: (1) the PCRM was reclassified as nonessential following a LOCA and, as such, should be isolated automatically upon receipt of a LOCA signal (the Drywell Hydrogen/Oxygen Sampling panel retained its essential classification); and (2) one automatic isolation valve and one local manual valve were added to each of two branch lines to the PCRM to provide isolation of the reclassified nonessential PCRM. The automatic isolation valve was designed to close on a high drywell pressure signal from the Reactor Protection System.

Following this modification, the configuration provided two barriers in the event of a LOCA, one barrier consisting of the automatic isolation valve and the second barrier was the remote manual isolation valve. DECo later discovered that the use of a remote manual isolation valve as a barrier for a nonessential system (such as the current PCRM design) is not an acceptable alternative to the requirements of GDC 56. By letter dated October 27, 1987, as supplemented by letters dated October 29 and November 2, 1987, DECo requested

a temporary exemption from the requirements of GDC 56 of Appendix A to 10 CFR Part 50 until such time as it can complete modifications to the PCRM by providing two barriers, each consisting of two sets of automatic containment isolation valves to meet fully GDC 56 requirements (currently scheduled to be complete prior to startup from a planned local leak rate test in March 1988).

The PCRM is one of three Containment Leakage Detection Systems in the plant. The plant Technical Specifications (Section 3.4.3.1) require that all three detection systems be operable, and that with only two of the three systems operable, the inoperable system must be restored to operable status within 30 days; otherwise the plant must be shut down following the 30-day period. The plant is currently operating within this 30-day Action as a Limiting Condition for Operation with the nonessential system isolated. The requested exemption would permit DECo to return to service the now isolated PCRM utilizing the existing isolation design configuration while DECo designs, procures, and installs necessary isolation features to achieve full compliance with the provisions of GDC 56.

III.

During an October 1987 maintenance servicing of the PCRM, valves T50-F450 and T50-F451 were used to isolate the inlet and return lines of the system from the primary containment. This isolation procedure was reviewed by Fermi-2 operations personnel and questioned since these valves were not indicated as containment isolation valves in either the plant procedures or Technical Specifications. The PCRM uses the penetration of the essential Drywell

Hydrogen/Oxygen Sample panel by tapping off between the inboard remote isolation valve. The valves used to isolate the PCRM are located in these tap-off lines.

In response to the questions raised by the operations personnel, DECo submitted a Technical Specification (TS) change request to add the above two valves into the table of containment isolation valves (Table 3.6.3-1 of the Technical Specifications). At this point in time, DECo concluded that the design did satisfy the provisions of GDC 56. The supporting documentation showed that the isolation barriers for the inlet and return line of the PCRM were the remote manual inboard isolation valve and automatic isolation valve.

Initial Commission staff review of the Technical Specification change request determined that the PCRM was a nonessential system. It was also recognized that a remote manual valve cannot be considered as one of the isolation barriers for a nonessential system. In addition, the newly added valves had only high drywell pressure as the isolation signal. This does not satisfy the diversity requirement for isolation. Subsequent discussions between DECo and the Commission's staff determined that additional automatic isolation valves with proper signal diversity would be required to satisfy GDC 56. Also, signal diversity would be necessary on the existing set of automatic valves.

To support operation with the above arrangement, while the requested exemption is in effect, DECo has proposed a program consisting of a series of additional actions intended to upgrade the effectiveness of the isolation scheme. This includes the incorporation of both the local manual and the automatic system isolation valves, as well as the safety-related automatic isolation valves, into the surveillance program for containment isolation valves. This

surveillance program includes various operability tests including leak rate and functional tests. The leak rate testing will be conducted monthly to ensure leak tight integrity. The additional testing is intended to add confidence that if and when isolation is needed, these valves will establish a leak tight boundary.

Also included as interim compensatory actions are emergency operating procedure revisions and enhanced operator training. A training program will be implemented to instruct the operators to isolate manually the PCRM when there is an upset condition that could require containment isolation. Upset conditions that will initiate operator action include low reactor vessel water level (level 2) or the drywell pressure-high alarm setpoint (1.5 psig). Additionally, DECo will conduct daily visual inspections of the valves and associated piping for evidence of leakage, piping deformation, or any other abnormality.

Based on the compensatory measures proposed by DECo, as summarized above, the Commission's staff concludes that adequate safety margins will be maintained during the operating period while the limited exemption is in effect. DECo has shown that both manual and automatic valves are available for containment isolation. These valves will be treated as containment isolation valves and will receive frequent (monthly) leak rate testing. While this system does not satisfy GDC 56, revised emergency operating procedures, operator training, and daily visual inspections provide adequate assurance that isolation would be available if needed. In view of this defense in depth, the Commission's staff finds the proposed limited exemption from the requirements of GDC 56 of Appendix A to 10 CFR Part 50 to be acceptable.

IV.

Accordingly, the Commission has determined that, pursuant to 10 CFR 50.12, this exemption is authorized by law, will not present an undue risk to the public health and safety, and is consistent with the common defense and security. The Commission further determines that special circumstances, as provided in 10 CFR 50.12(a)(2)(v), are present justifying the exemption, namely that the exemption would provide only temporary relief from the applicable regulation, and DECo has made a good faith effort to comply with the regulation. The good faith effort by DECo is demonstrated by its relatively prompt response following DECo's discovery that it misinterpreted earlier established requirements. This discovery occurred during an October 16, 1987, maintenance outage. This discovery was documented in the DECo's letters of October 27, October 29 and November 2, 1987.

Based on this prompt response and DECo's commitment to implement the long-term resolution at the earliest practical opportunity (i.e., the March 1988 leak rate test outage), the Commission concludes that DECo has made a good faith effort to come into compliance with the requirements of GDC 56. Therefore, the Commission hereby approves the following exemption:

With respect to the requirement in General Design Criterion 56 to provide each line that connects directly to the containment atmosphere and penetrates primary reactor containment, with two containment isolation valves, one inside and one outside containment, exemption is granted from this requirement for penetrations X-48 (a) through (e), X-215 and X-230 for a limited period not extending beyond startup from the March 1988 leak rate test outage.

Pursuant to 10 CFR 51.32, the Commission has determined that granting this Exemption will have no significant impact on the environment (52 FR 43258).

For further details with respect to this action, see DECo's request dated October 27, 1987, as supplemented by letters dated October 29 and November 2, 1987, which are available for public inspection at the Commission's Public Document Room, 1717 H Street, N.W., Washington, D.C. 20555 and at the Monroe County Library System, 3700 South Custer Road, Monroe, Michigan 48161.

This Exemption is effective upon issuance.

FOR THE NUCLEAR REGULATORY COMMISSION


Dennis M. Crutchfield, Director
Division of Reactor Projects - III,
IV, V & Special Projects
Office of Nuclear Reactor Regulation

Dated at Bethesda, Maryland,
this 13th day of November 1987