February 8, 1999

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: VOLUME AND LEVEL REQUIREMENTS FOR THE CONDENSATE STORAGE TANK (TAC NO. MA1416)

Dear Mr. Gipson:

The Commission has issued the enclosed Amendment No. 131 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 March 27, 1998 (NRC-98-0033).

The amendment revises TSs 3.5.2 and 3.5.3 and the associated Bases, raising the minimum water level for the core spray system in the condensate storage tank (CST). The amendment also removes incorrect information from TS 3.5.3 regarding water inventory in the CST reserved for the high pressure coolant injection and reactor core isolation cooling systems.

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,

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

Enclosures: 1. Amendment No. 131 to NPF-43
2. Safety Evaluation

cc w/encl: See next page
DISTRIBUTION: See attached page

DOCUMENT NAME: G:\WPDOCS\FERMI\FE-A1416.AMD *See previous concurrence
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DATED: February 8, 1999

AMENDMENT NO. 131 TO FACILITY OPERATING LICENSE NO. NPF-43 - FERMI 2

Docket File (50-341)
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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. 131
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 March 27, 1998, 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. 131 , 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 the date of its issuance with full implementation within 90 days.

FOR THE NUCLEAR REGULATORY COMMISSION

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

Attachment: Changes to the Technical Specifications

Date of Issuance: February 8, 1999

ATTACHMENT TO LICENSE AMENDMENT NO. 131

FACILITY OPERATING LICENSE NO. NPF-43

DOCKET NO. 50-341

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

REMOVE	INSERT
3/4 5-5	3/4 5-5*
3/4 5-6	3/4 5-6
3/4 5-7	3/4 5-7*
3/4 5-8	3/4 5-8
B 3/4 5-1	B 3/4 5-1
B 3/4 5-2	B 3/4 5-2
B 3/4 5-3	B 3/4 5-3

*Overleaf pages provided to maintain document completeness. No changes contained on these pages.

SURVEILLANCE REQUIREMENTS (Continued)

d. For the ADS:

1. At least once per 31 days, performing a CHANNEL FUNCTIONAL TEST of the primary containment pneumatic supply system low pressure alarm system.

2. At least once per 18 months:

a) Performing a system functional test which includes simulated automatic actuation of the system throughout its emergency operating sequence, but excluding actual valve actuation.

b) Manually opening each ADS valve when the reactor steam dome pressure is greater than or equal to 150 psig* and observing that either:

1) The control valve or bypass valve position responds accordingly, or

2) There is a corresponding change in the measured steam flow.

c) Performing a CHANNEL CALIBRATION of the primary containment pneumatic supply system low pressure alarm system and verifying an alarm setpoint of 80 ± 5 psi on decreasing pressure.

*The provisions of Specification 4.0.4 are not applicable provided the surveillance is performed within 12 hours after reactor steam pressure is adequate to perform the test.

LIMITING CONDITION FOR OPERATION

3.5.2 At least two of the following subsystems shall be OPERABLE:

a. Core spray system (CSS) subsystems with a subsystem comprised of:

1. At least two OPERABLE CSS pumps, and

2. An OPERABLE flow path capable of taking suction from at least one of the following water sources and transferring the water through the spray sparger to the reactor vessel:

a) From the suppression chamber, or

b) When the suppression chamber water level is less than the limit required in Specification 3.5.3 or is drained, from the condensate storage tank with an indicated level of at least 19 ft.

b. Low pressure coolant injection (LPCI) system subsystems with a subsystem comprised of:

1. At least two OPERABLE LPCI (RHR) pumps, and

2. An OPERABLE flow path capable of taking suction from the suppression chamber and transferring the water to the reactor vessel**.

APPLICABILITY: OPERATIONAL CONDITION 4 and 5*.

ACTION:

a. With one of the above required subsystem(s) inoperable, restore at least two subsystem(s) to OPERABLE status within 4 hours or suspend all operations with a potential for draining the reactor vessel.

b. With both of the above required subsystem(s) inoperable, suspend CORE ALTERATIONS and all operations with a potential for draining the reactor vessel. Restore at least one subsystem to OPERABLE status within 4 hours or establish SECONDARY CONTAINMENT INTEGRITY within the next 8 hours.

* The ECCS is not required to be OPERABLE provided that the reactor vessel head is removed, the cavity is flooded, the spent fuel pool gates are removed, and water level is maintained within the limits of Specification 3.9.8 and 3.9.9.

** LPCI subsystem(s) may be considered OPERABLE during alignment and operation for decay heat removal if capable of being manually realigned and not otherwise inoperable.

SURVEILLANCE REQUIREMENTS

4.5.2.1 At least the above required ECCS shall be demonstrated OPERABLE per Surveillance Requirement 4.5.1, with the exception that, for the LPCI system, the cross-tie valve may be closed to isolate a subsystem if the OPERABLE subsystem is made capable of injection to the reactor vessel.

4.5.2.2 The core spray system shall be determined OPERABLE at least once per 12 hours by verifying the condensate storage tank required volume when the condensate storage tank is required to be OPERABLE per Specification 3.5.2.a.2.b.

3/4.5.3 SUPPRESSION CHAMBER

LIMITING CONDITION FOR OPERATION

3.5.3 The suppression chamber shall be OPERABLE:

a. In OPERATIONAL CONDITIONS 1, 2, and 3 with a contained water volume of at least 121,080 ft^3, equivalent to a level of 14'4" (-2 inches indication).

b. In OPERATIONAL CONDITIONS 4 and 5* with a contained volume of at least 64,550 ft^3, equivalent to a level of 9'0" (-66 inches indication), except that the suppression chamber level may be less than the limit or may be drained provided that:

1. No operations are performed that have a potential for draining the reactor vessel,

2. The reactor mode switch is locked in the Shutdown or Refuel position,

3. The condensate storage tank water level is at least 19 ft., and

4. The core spray system is OPERABLE per Specification 3.5.2 with an OPERABLE flow path capable of taking suction from the condensate storage tank and transferring the water through the spray sparger to the reactor vessel.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, 3, 4, and 5*.

ACTION:

a. In OPERATIONAL CONDITION 1, 2, or 3 with the suppression chamber water level less than the above limit, restore the water level to within the limit within 1 hour or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

b. In OPERATIONAL CONDITION 4 or 5* with the suppression chamber water level less than the above limit or drained and the above required conditions not satisfied, suspend CORE ALTERATIONS and all operations that have a potential for draining the reactor vessel and lock the reactor mode switch in the Shutdown position. Establish SECONDARY CONTAINMENT INTEGRITY within 8 hours.

*The suppression chamber is not required to be OPERABLE provided that the reactor vessel head is removed, the cavity is flooded, or being flooded from the suppression pool, the spent fuel pool gates are removed when the cavity is flooded, and the water level is maintained within the limits of Specifications 3.9.8 and 3.9.9.

3/4.5.1 and 3/4.5.2 ECCS - OPERATING and SHUTDOWN

The core spray system (CSS), together with the LPCI mode of the RHR system, is provided to assure that the core is adequately cooled following a loss-of-coolant accident and provides adequate core cooling capacity for all break sizes up to and including the double-ended reactor recirculation line break, and for smaller breaks following depressurization by the ADS.

The CSS is a primary source of emergency core cooling after the reactor vessel is depressurized and a source for flooding of the core in case of accidental draining. In the case when the reactor is shutdown or suppression pool is unavailable as a source of water, the CSS takes suction from the condensate storage tank for core cooling. For this condition, the condensate storage tank provides at least 150,000 gallons of available water for CSS. This requires a volume of at least 300,000 gallons of water plus margin to preclude vortex formation for the CSS, equivalent to a level of at least 19 ft.

The surveillance requirements provide adequate assurance that the CSS will be OPERABLE when required. Although all active components are testable and full flow can be demonstrated by recirculation through a test loop during reactor operation, a complete functional test requires reactor shutdown. The pump discharge piping is maintained full to prevent water hammer damage to piping and to start cooling at the earliest moment.

LPCI subsystems may be considered OPERABLE during alignment and operation for decay heat removal when below the actual RHR cut in permissive pressure in OPERATIONAL CONDITIONS 3, 4, and 5, if capable of being manually realigned (remote) to the LPCI mode and not otherwise inoperable. At these low pressures and decay heat levels, a reduced complement of ECCS subsystems should provide the required core cooling, thereby allowing operation of RHR shutdown cooling when necessary.

The low pressure coolant injection (LPCI) mode of the RHR system is provided to assure that the core is adequately cooled following a loss-of-coolant accident. Two subsystems, each with two pumps, provide adequate core flooding for all break sizes up to and including the double-ended reactor recirculation line break, and for small breaks following depressurization by the ADS.

The surveillance requirements provide adequate assurance that the LPCI system will be OPERABLE when required. Although all active components are testable and full flow can be demonstrated by recirculation through a test loop during reactor operation, a complete functional test requires reactor shutdown. The pump discharge piping is maintained full to prevent water hammer damage to piping and to start cooling at the earliest moment.

ECCS - OPERATING and SHUTDOWN (Continued)

The high pressure coolant injection (HPCI) system is provided to assure that the reactor core is adequately cooled to limit fuel clad temperature in the event of a small break in the reactor coolant system and loss of coolant which does not result in rapid depressurization of the reactor vessel. The HPCI system permits the reactor to be shut down while maintaining sufficient reactor vessel water level inventory until the vessel is depressurized. The HPCI system continues to operate until reactor vessel pressure is below the pressure at which CSS system operation or LPCI mode of the RHR system operation maintains core cooling.

The capacity of the system is selected to provide the required core cooling. The HPCI pump is designed to deliver greater than or equal to 5000 gpm at differential pressures between 1120 and 150 psid. Initially, water from the condensate storage tank is used instead of injecting water from the suppression pool into the reactor, but no credit is taken in the safety analyses for the condensate storage tank water.

With the HPCI system inoperable, adequate core cooling is assured by the OPERABILITY of the redundant and diversified automatic depressurization system and both the CS and LPCI systems. In addition, the reactor core isolation cooling (RCIC) system, a system for which no credit is taken in the safety analysis, will automatically provide makeup at reactor operating pressures on a reactor low water level condition. The HPCI out-of-service period of 14 days is based on the demonstrated OPERABILITY of redundant and diversified low pressure core cooling systems and the RCIC system.

The surveillance requirements provide adequate assurance that the HPCI system will be OPERABLE when required. Although all active components are testable and full flow can be demonstrated by recirculation through a test loop during reactor operation, a complete functional test with reactor vessel injection requires reactor shutdown. The pump discharge piping is maintained full to prevent water hammer damage and to provide cooling at the earliest moment.

Upon failure of the HPCI system to function properly after a small break loss-of-coolant accident, the automatic depressurization system (ADS) automatically causes selected safety/relief valves to open, depressurizing the reactor so that flow from the low pressure core cooling systems can enter the core in time to limit fuel cladding temperature to less than 2200°F. ADS is conservatively required to be OPERABLE whenever reactor vessel pressure exceeds 150 psig. This pressure is substantially below that for which the low pressure cooling systems can provide adequate core cooling for events requiring ADS.

ECCS - OPERATING and SHUTDOWN (Continued)

ADS automatically controls five selected safety/relief valves although the safety analysis only takes credit for four valves. It is therefore appropriate to permit one valve to be out of service for up to 14 days without materially reducing system reliability.

The Emergency Equipment Cooling Water (EECW) system provides necessary support to all ECCS equipment except the ADS. When a divisional EECW subsystem is inoperable, the affected ECCS systems are all located in the same division. This situation is addressed by a footnote which makes the 72 hour ACTION time of Specification 3.7.1.2 limiting if no other equipment is inoperable. This is acceptable since the unaffected ECCS division contains sufficient capability to safely shutdown the plant. The check of opposite division equipment required by Specification 3.7.1.2 and the ACTIONS of this Specification assure that a loss of safety function does not go undetected.

3/4.5.3 SUPPRESSION CHAMBER

The suppression chamber is required to be OPERABLE as part of the ECCS to ensure that a sufficient supply of water is available to the HPCI, CS and LPCI systems in the event of a LOCA. This limit on suppression chamber minimum water volume ensures that sufficient water is available to permit recirculation cooling flow to the core. The OPERABILITY of the suppression chamber in OPERATIONAL CONDITIONS 1, 2, or 3 is also required by Specification 3.6.2.1.

Repair work might require making the suppression chamber inoperable. This specification will permit those repairs to be made and at the same time give assurance that the irradiated fuel has an adequate cooling water supply when the suppression chamber must be made inoperable, including draining, in OPERATIONAL CONDITION 4 or 5.

In OPERATIONAL CONDITION 4 and 5 the suppression chamber minimum required water volume is reduced because the reactor coolant is maintained at or below 200°F*, since pressure suppression is not required below 212°F. The minimum water volume is based on NPSH, recirculation volume and vortex prevention plus a 2.4' safety margin for conservatism.

*See Special Test Exception 3.10.7

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 131 FACILITY OPERATING LICENSE NO. NPF-43

DETROIT EDISON COMPANY

FERMI 2

DOCKET NO. 50-341

1.0 INTRODUCTION

By letter dated March 27, 1998, the Detroit Edison Company (DECo or the licensee) requested an amendment to the Technical Specifications (TS) appended to Facility Operating License No. NPF-43 for Fermi 2. The proposed amendment would revise TSs 3.5.2 and 3.5.3 and the associated Bases, raising the minimum water level for the core spray system (CSS) in the condensate storage tank (CST). The amendment would also remove incorrect information from TS 3.5.3 regarding water inventory in the CST reserved for the high pressure coolant injection (HPCI) and reactor core isolation cooling (RCIC) systems.

2.0 EVALUATION

The licensee proposed to revise TS Sections 3.5.2.a.2.b and 3.5.3.b.3 and TS Bases Section 3/4.5.1 and 3/4.5.2 to: 1) increase the required water level within the CST to assure an adequate water supply for the CSS, 2) relocate plant system design details such as CST level to volume relationships expressed in units of gallons from TS Sections to the TS Bases Section, and 3) eliminate the HPCI/RCIC volume description in the "**" footnote to TS Section 3.5.3.b.3. The following sections evaluate each of these changes.

2.1 Increase in Required CST Water Level

Current TS 3.5.2.a.2.b requires that:

> When the suppression chamber water level is less than the limit required in Specification 3.5.3 or is drained, from the condensate storage tank containing at least 150,000 available gallons of water, equivalent to a level of 18 feet.

The proposed TS 3.5.2.a.2.b would read:

> When the suppression chamber water level is less than the limit required in Specification 3.5.3 or is drained, from the condensate storage tank with an indicated level of at least 19 ft.

The CSS takes suction from the CST through a standpipe. The standpipe height is 8 feet 10 3/8 inches and the additional tank height corresponding to 150,000 gallons is also 8 feet 10 3/8 inches. The licensee has indicated that the level above the CSS standpipe necessary to avoid vortexing and air entrainment is 1 foot 2 inches. The tank level to provide 150,000 usable gallons for core spray is the sum of these, totaling 18 feet 10 3/4 inches, which is rounded to 18 feet 11 inches. Therefore, the licensee has proposed to increase the required CST water level for CSS to 19 feet. The change to TS 3.5.2.a.2.b would also delete a specific reference to the volume of water available to the CSS to which the required level corresponds. This design detail would be relocated to the Bases. Similar changes are proposed for TS 3.5.3.b.3.

The staff has reviewed the licensee's proposed change to the required CST level in TS 3.5.2 and 3.5.3 and finds that it will assure that the assumed volume of water is available for the CSS. Therefore, this change is acceptable. In addition, the staff finds that the removal of the CST volume information from the TS is acceptable because the requirement to maintain a minimum CST level is retained in the TS. The licensee has indicated it will add the CST volume information (a design detail) to the Bases.

2.2 Removal of CST Level Reference for HPCI/RCIC

The licensee also proposed to delete the "**" footnote to current TS 3.5.3.b.3 that references a volume of water retained in the CST for the HPCI and RCIC systems. Current TS 3.5.3.b is applicable only in Operational Conditions 4 (Cold Shutdown) and 5 (Refueling). The HPCI and RCIC systems are not required to be operable in these conditions and references to a volume of water retained in the CST for these systems is not consistent with the plant's design bases and is, therefore, not appropriate. Therefore, the staff finds this change 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 (63 *FR* 19967). 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: Andrew Kugler

Date: February 8, 1999