September 30, 1997

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: TEST EXCEPTION FOR HYDROSTATIC OR INSERVICE LEAK TESTING (TAC NO. M99501)

Dear Mr. Gipson:

The Commission has issued the enclosed Amendment No. 114 to Facility Operating License No. NPF-43 for the Fermi 2 facility. The amendment consists of changes to the Technical Specifications (TS) in response to your application dated September 5, 1997 (NRC-97-0107).

The amendment revises the TS by adding a special test exception to allow reactor coolant temperatures up to 212 degrees F during hydrostatic or inservice leak testing while in Operational Condition 4 without entering Operational Condition 3.

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. 114 to NPF-43
2. Safety Evaluation

cc w/encl: See next page

DISTRIBUTION: See attached page

DOCUMENT NAME: G:\WPDOCS\FERMI\FE99501.AMD *SEE PREVIOUS CONCURRENCE

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DATED: September 30, 1997

AMENDMENT NO. 114 TO FACILITY OPERATING LICENSE NO. NPF-43-FERMI-2

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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. 114
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 September 5, 1997, 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.

ATTACHMENT TO LICENSE AMENDMENT NO. 114

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
x	x
xvi	xvi
1-9	1-9*
1-10	1-10
–	3/4 10-7
B 3/4 5-3	B 3/4 5-3
B 3/4 10-1	B 3/4 10-1

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

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.114 , 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 45 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: September 30, 1997

LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

BASES

TABLE 1.1

SURVEILLANCE FREQUENCY NOTATION

NOTATION	FREQUENCY
S	At least once per 12 hours.
D	At least once per 24 hours.
W	At least once per 7 days.
M	At least once per 31 days.
Q	At least once per 92 days.
SA	At least once per 184 days.
A	At least once per 366 days.
R	At least once per 18 months (550 days).
S/U	Prior to each reactor startup.
P	Prior to each radioactive release.
NA	Not applicable.

TABLE 1.2

OPERATIONAL CONDITIONS

CONDITION	MODE SWITCH POSITION	AVERAGE REACTOR COOLANT TEMPERATURE
1. POWER OPERATION	Run	Any temperature
2. STARTUP	Startup/Hot Standby	Any temperature
3. HOT SHUTDOWN	Shutdown#,***	> 200° F
4. COLD SHUTDOWN	Shutdown#,##,***	≤ 200° F****
5. REFUELING*	Shutdown or Refuel**,#	≤ 140° F

#The reactor mode switch may be placed in the Run, Startup/Hot Standby, or Refuel position to test the switch interlock functions and related instrumentation provided that the control rods are verified to remain fully inserted by a second licensed operator or other technically qualified member of the unit technical staff.

##The reactor mode switch may be placed in the Refuel position while a single control rod drive is being removed from the reactor pressure vessel per Specification 3.9.10.1.

*Fuel in the reactor vessel with the vessel head closure bolts less than fully tensioned or with the head removed.

**See Special Test Exceptions 3.10.1 and 3.10.3.

***The reactor mode switch may be placed in the Refuel position while a single control rod is being recoupled or withdrawn provided that the one-rod-out interlock is OPERABLE.

****See Special Test Exception 3.10.7.

SPECIAL TEST EXCEPTIONS

3/4.10.7 INSERVICE LEAK AND HYDROSTATIC TESTING

LIMITING CONDITION FOR OPERATION

3.10.7 When conducting inservice leak or hydrostatic testing, the average reactor coolant temperature specified in Table 1.2 for OPERATIONAL CONDITION 4 may be increased to 212°F, and operation considered not to be in OPERATIONAL CONDITION 3, to allow performance of an inservice leak or hydrostatic test provided the following OPERATIONAL CONDITION 3 Specifications are met:

a. 3.3.2, ISOLATION ACTUATION INSTRUMENTATION, Functions 6.a, 6.b, 6.c, and 6.d of Table 3.3.2-1;

b. 3.6.5.1, SECONDARY CONTAINMENT INTEGRITY;

c. 3.6.5.2, SECONDARY CONTAINMENT AUTOMATIC ISOLATION DAMPERS; and

d. 3.6.5.3, STANDBY GAS TREATMENT SYSTEM.

APPLICABILITY: OPERATIONAL CONDITION 4, with average reactor coolant temperature >200°F and ≤212°F.

ACTION:

With the requirements of the above Specifications not satisfied, immediately enter the applicable (OPERATIONAL CONDITION 3) action for the affected Specification; or immediately suspend activities that could increase the average reactor coolant temperature or pressure, and reduce the average reactor coolant temperature to ≤200°F within 24 hours.

SURVEILLANCE REQUIREMENTS

4.10.7 Verify applicable OPERATIONAL CONDITION 3 surveillances for the Specifications listed in 3.10.7 are met.

ECCS - OPERATING and SHUTDOWN (Continued)

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

3/4.10 SPECIAL TEST EXCEPTIONS

BASES

3/4.10.1 PRIMARY CONTAINMENT INTEGRITY

The requirement for PRIMARY CONTAINMENT INTEGRITY is not applicable during the period when open vessel tests are being performed during the low power PHYSICS TESTS.

3/4.10.3 SHUTDOWN MARGIN DEMONSTRATIONS

Performance of shutdown margin demonstrations with the vessel head removed requires additional restrictions in order to ensure that criticality is properly monitored and controlled. These additional restrictions are specified in this LCO.

3/4.10.4 RECIRCULATION LOOPS

This special test exception permits reactor criticality under no flow conditions and is required to perform certain startup and PHYSICS TESTS while at low THERMAL POWER levels.

3/4.10.6 TRAINING STARTUPS

This special test exception permits training startups to be performed with the reactor vessel depressurized at low THERMAL POWER and temperature while controlling RCS temperature with one RHR subsystem aligned in the shutdown cooling mode in order to minimize contaminated water discharge to the radioactive waste disposal system.

3/4.10.7 INSERVICE LEAK AND HYDROSTATIC TESTING

This special test exception allows reactor vessel inservice leak and hydrostatic testing to be performed in OPERATIONAL CONDITION 4 with reactor coolant temperatures >200°F but ≤212°F. The additionally imposed OPERATIONAL CONDITION 3 requirements for SECONDARY CONTAINMENT INTEGRITY provide conservatism in response to an operational event. This allows flexibility because temperatures approach 200°F during the testing and can drift higher due to decay and mechanical heat.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 114 TO FACILITY OPERATING LICENSE NO. NPF-43

DETROIT EDISON COMPANY

FERMI-2

DOCKET NO. 50-341

1.0 INTRODUCTION

By letter dated September 5, 1997, 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 requested changes would add Special Test Exception 3/4.10.7, "Inservice Leak and Hydrostatic Testing," that allows the performance of pressure testing at reactor coolant temperatures up to 212 °F while remaining in Operational Condition 4. This special test exception would also require that certain Operational Condition 3 specifications for secondary containment isolation, secondary containment integrity, secondary containment automatic isolation dampers, and standby gas treatment system (SGTS) operability be met. This change would also revise the Index, Table 1.2, "Operational Conditions," and the Bases to incorporate the reference to the proposed special test exception.

The licensee is planning a mid-cycle outage to replace a leaking fuel bundle, which is scheduled to commence on October 3, 1997. During preparations for the outage the licensee realized that, compared to a typical refueling outage, this outage will be shorter in duration and will not include the replacement of as much fuel. Therefore, the system leakage test will be performed with a higher decay heat load than that encountered during a normal refueling outage. In its application the licensee indicated that the anticipated decay heat levels would not allow sufficient time to conduct the system leakage test in a controlled, deliberate manner within the current TS limits governing test temperatures. Without the proposed Special Test Exception, the licensee has stated it is not confident that the system leakage test can be accomplished within the current 200 °F reactor coolant temperature limit.

2.0 EVALUATION

The Fermi-2 TS define five Operational Conditions. Operational Condition 4, Cold Shutdown, requires that the average reactor coolant temperature be less than or equal to 200 °F, and if the average coolant temperature exceeds 200 °F then Operational Condition 3 must be entered. In Operational Condition 3, primary containment integrity must be maintained and the emergency core cooling system must be totally operable. Hydrostatic and leak testing required by Section XI of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code are normally executed every 10 years and prior to the reactor going

critical after each refueling outage, respectively. It is necessary that these tests be conducted at temperatures approaching 212 °F with the vessel water solid or near water solid.

The licensee has proposed this special test exception be added to the Fermi-2 TS to permit relaxation of some of the requirements of Operational Condition 3 only for the period during which these hydrostatic and leak tests are being conducted. Specifically, the primary containment would be allowed to be opened for frequent unobstructed access to perform the inspections. In addition, outage activities on various systems would be allowed to continue while remaining consistent with Operational Condition 4 requirements that are in effect prior to and immediately following completion of the inservice leak and hydrostatic testing. The Operational Condition 3 requirements of maintaining secondary containment integrity as well as SGTS operability would also be imposed during the conduct of the testing.

The licensee stated that the stored energy in the reactor core will be very low and the potential for failed fuel and a subsequent increase in coolant activity above Specification 3/4.4.5, "Reactor Coolant System Specific Activity," limits are minimal. In addition, the secondary containment, which includes automatic isolation dampers and the SGTS, will be operable and capable of handling airborne radioactivity from leaks that could occur during the performance of hydrostatic or inservice leakage testing. Airborne activity would not be significant in the event of a leak since reactor coolant temperature is limited to 212 °F; and therefore, little or no flashing of reactor coolant would occur. Requiring the secondary containment to be operable will assure that potential airborne radiation from leaks will be filtered through SGTS that will limit radiation releases to the environment.

The licensee also stated that in the event of a large primary system leak, the reactor vessel would rapidly depressurize. The capability of the low pressure coolant injection and core spray subsystems, as required in Operational Condition 4 by Specification 3/4.5.2, "ECCS - Shutdown," would be adequate to keep the core flooded under this condition. Inspections that would detect small leaks before significant inventory loss occurred are included as part of the hydrostatic and inservice leakage test programs.

The staff agrees that permitting the average reactor coolant temperature to be increased above 200 °F and limiting the maximum reactor coolant temperature to 212 °F while performing leak or hydrostatic tests will not substantially affect the results of potential accidents that might occur with the increased average reactor coolant temperature since the leak and hydrostatic tests are performed with the reactor coolant system near water solid and with all control rods fully inserted. Therefore, the stored energy in the reactor core would be very low and the potential for causing fuel failures with a subsequent increase in coolant activity is minimal. The restrictions provided in the new proposed TS to require secondary containment integrity and operable SGTS provide the assurance that any potential releases from primary containment would be restricted from direct release to the environment and would be adequately filtered if released. In addition, since the reactor coolant temperature would be limited to 212 °F, there would be little or no flashing of coolant to steam and therefore, any releases of radioactive materials from the coolant would be minimized.

In the event of a large loss-of-coolant accident occurring during the conduct of a leak or hydrostatic test, the staff agrees with the licensee's evaluation that the reactor coolant system

would rapidly depressurize and would permit the low pressure emergency core cooling system equipment to actuate and keep the core adequately flooded. This action would then prevent the reactor fuel from overheating and releasing radioactive materials. Further, the staff agrees that the inspections would detect small leaks in the reactor coolant system before significant coolant inventory was lost.

Based on the foregoing analyses, the staff concludes that the proposed TS changes are acceptable.

3.0 EXIGENT CIRCUMSTANCES

The Commission's regulations, 10 CFR 50.91, contain provisions for issuance of amendments where the Commission finds that exigent circumstances exist, in that a licensee and the Commission must act quickly and that time does not permit the Commission to publish a Federal Register notice allowing 30 days for prior public comment. The exigency exists in this case in that the proposed amendment is needed prior to the restart of Fermi-2 and time does not permit the Commission to publish a notice allowing 30 days for prior public comment.

During May of 1997, the licensee identified a small fuel leak based on increasing offgas radiation levels. As a result, the licensee began making plans for an outage to identify and replace the leaking fuel. This outage is scheduled to begin on October 3, 1997. A reactor coolant system inservice leak test (System Leakage Test) must be performed prior to startup from this outage. Compared to a typical refueling outage, this outage will be shorter in duration and will not include the replacement of as much fuel. Therefore, the System Leakage Test will be performed with a higher decay heat load than that encountered during a normal refueling outage. The licensee recently recognized that the anticipated decay heat levels would not allow sufficient time to conduct the System Leakage Test in a controlled, deliberate manner within the TS limits governing test temperatures. Without the proposed Special Test Exception, the licensee has stated it is not confident that the System Leakage Test can be accomplished within the 200 °F reactor coolant temperature limit. The licensee has also stated that the circumstances requiring exigent treatment of the amendment request could not be avoided, and that once the need for the amendment was recognized, the license amendment request was prepared and reviewed in an expeditious manner. The staff has reviewed the circumstances related to this proposed amendment and determined that the licensee used its best efforts to make a timely application and that the failure to process this amendment request in a timely manner would result in the prevention of resumption of the operation of Fermi 2.

Accordingly, the Commission has determined that exigent circumstances exist pursuant to 10 CFR 50.91(a)(6), the submittal of information was timely and the exigency could not have been avoided, and that the licensee did not create the exigency.

4.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATIONS DETERMINATION

The Commission's regulations in 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 changes would not involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed changes would allow inservice leak and hydrostatic testing to be performed at temperatures greater than 200 °F but less than or equal to 212 °F while remaining in Operational Condition 4 provided Operational Condition 3 requirements related to secondary containment integrity and SGTS are met. The tests are performed at or near water-solid conditions in the reactor vessel with all control rods fully inserted. Therefore, the stored energy in the reactor core and the coolant will be very low compared to analyzed accidents and the potential for fuel failures with a subsequent increase in reactor coolant activity is minimal. Because the coolant temperature is limited to 212 °F, reactor coolant leakage would not be expected to flash to steam, minimizing the release of radioactive materials. In addition, the requirements related to secondary containment integrity and SGTS ensure that any releases that do occur will be restricted from direct release to the environment and will be filtered by the SGTS. Small systems leaks would be detected by the leakage inspections that are an integral part of the tests being performed before any significant inventory loss could occur. A large leak would rapidly depressurize the reactor vessel, allowing the low-pressure ECCS to operate, injecting adequate water to maintain the core flooded. Therefore, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

(2) The proposed changes would not create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed changes would allow inservice leak and hydrostatic testing to be performed at temperatures greater than 200 °F but less than or equal to 212 °F while remaining in Operational Condition 4 provided Operational Condition 3 requirements related to secondary containment integrity and SGTS are met. There are no other significant changes in the methods used for these tests. The 12 °F increase in the temperature allowed during the test does not significantly increase the amount of stored energy in the reactor coolant and the core. These conditions are bounded by the existing analyses for events such as the main steam line break outside containment which is analyzed in Section 15.6.4 of the updated final safety analysis report. Therefore, these changes do not create the possibility of a new or different kind of accident from any accident previously evaluated.

(3) The proposed changes would not result in a significant reduction in the margin of safety.

The proposed changes would allow inservice leak and hydrostatic testing to be performed at temperatures greater than 200 °F but less than or equal to 212 °F while remaining in Operational Condition 4 provided Operational Condition 3 requirements related to secondary containment integrity and SGTS are met. There are no other significant changes in the methods used for these tests. The 12 °F increase in the temperature allowed during the test does not significantly increase the amount of stored energy in the reactor coolant and the core. These conditions are bounded by the existing analyses for events such as the main steam line break outside containment which is analyzed in Section 15.6.4 of the updated final safety analysis report. In addition, the requirements related to the emergency core cooling system (Operational Condition 4) and secondary containment integrity and SGTS (Operational Condition 3) ensure that appropriate systems are available to respond to any events that might occur during the test. Therefore, these changes do not result in 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 requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC 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 this 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: September 30, 1997