July 21, 1987

Docket No. 50-341

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

Dear Mr. Sylvia:

SUBJECT: AMENDMENT NO. 9 TO FACILITY OPERATING LICENSE NO. NPF-43 (TAC NO. 64834)

The Commission has issued the enclosed Amendment No. 9 to Facility Operating License No. NPF-43 for the Fermi-2 facility. This amendment consists of changes to the Plant Technical Specifications in response to your letter (VP-NO-87-0005) dated March 9, 1987.

The amendment revises Technical Specification 3/4.2.2 to change the average power range monitor (APRM) setpoint action statement extending the action time limit for control rod withdrawal from two to six hours before setdown action is required in order to: (1) establish target patterns; (2) achieve a reasonable power distribution at full power with equilibrium xenon; and (3) ensure that no combination of the Maximum Fraction of Limiting Power Density, and Fraction of Rated Thermal Power would result in a Linear Heat Generation Ratio transient peaking factor beyond the one percent plastic strain limit. The amendment also changes the control rod block instrumentation, Table 3.3.6-2 of the Technical Specifications, to delete the asterisks in the TRIP SETPOINT and ALLOWABLE VALUE columns for Item 1.a to correct a typographical error (the asterisk does not apply to Item 1.a), and to add "APRM" to the same footnote to clarify the intent of the specification.

A copy of the Safety Evaluation supporting this amendment is enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

Original signed by

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

Enclosures:
1. Amendment No. 9 to License No. NPF-43
2. Safety Evaluation

cc w/enclosure:
See next page

PD31:LA	PD31:PM	PD31:D	OGC
RIngram	JStefano:lt	MVirgilio	
9/4/87	9/6/87	9/14/87	9/9/87

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Mr. B. Ralph Sylvia
Detroit Edison Company

Fermi-2 Facility

cc:
Mr. Harry H. Voigt, Esq.
LeBoeuf, Lamb, Leiby & MacRae
1333 New Hampshire Avenue, N. W.
Washington, D. C. 20036

John Flynn, Esq.
Senior Attorney
Detroit Edison Company
2000 Second Avenue
Detroit, Michigan 48226

Mr. Dennis R. Hahn, Chief
Nuclear Facilities and Environmental
Monitoring Section Office
Division of Radiological Health
P. O. Box 30035
Lansing, Michigan 48909

Mr. Steve Frost
Supervisor-Licensing
Detroit Edison Company
Fermi Unit 2
6400 No. Dixie Highway
Newport, Michigan 48166

Mr. Walt Rogers
U. S. Nuclear Regulatory Commission
Resident Inspector's Office
6450 W. Dixie Highway
Newport, Michigan 48166

Monroe County Office of Civil
Preparedness
963 South Raisinville
Monroe, Michigan 48161

Mr. Robert J. Norwood
Frenchtown Charter Township
2744 Vivian Road
Monroe, Michigan 48161

Special Assistant to the Governor
Room 1 - State Capitol
Lansing, Michigan 48909

Attorney General
Department of Attorney General
525 West Ottawa Street
Lansing, Michigan 48913

Ronald C. Callen
Adv. Planning Review Section
Michigan Public Service Commission
6545 Mercantile Way
P. O. Box 30221
Lansing, Michigan 48909

Regional Administrator, Region III
U. S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

EIS Review Coordinator
EPA Region V
230 S. Dearborn Street
Chicago, Illinois 60604

AMENDMENT NO. 9 TO FACILITY OPERATING LICENSE NO. NPF-43 - FERMI, UNIT 2

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

DETROIT EDISON COMPANY

WOLVERINE POWER SUPPLY COOPERATIVE, INCORPORATED

DOCKET NO. 50-341

FERMI-2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 9
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 9, 1987, 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 the 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. 9 , 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 amendment is effective as of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Martin J. Virgilio, Acting Director
Project Directorate III-1
Division of Reactor Projects - III, IV, V
& Special Projects

Attachment:
Changes to the Technical
Specifications

Date of Issuance: July 21, 1987

ATTACHMENT TO LICENSE AMENDMENT NO. 9

FACILITY OPERATING LICENSE NO. NPF-43

DOCKET NO. 50-341

Replace the following pages of the Appendix "A" Technical Specifications with the enclosed pages. The revised pages are identified by Amendment number and contain a vertical line indicating the area of change. The corresponding overleaf pages are also provided to maintain document completeness.

REMOVE	INSERT
3/4 2-5	3/4 2-5
3/4 3-44	3/4 3-44

POWER DISTRIBUTION LIMITS

3/4.2.2 APRM SETPOINTS

LIMITING CONDITION FOR OPERATION

3.2.2 The APRM flow biased neutron flux-high scram trip setpoint (S) and flow biased neutron flux-high control rod block trip setpoint (S_{RB}) shall be established according to the following relationships:

TRIP SETPOINT	ALLOWABLE VALUE
$S \leq (0.66W + 51\%)T$	$S \leq (0.66W + 54\%)T$
$S_{RB} \leq (0.66W + 42\%)T$	$S_{RB} \leq (0.66W + 45\%)T$

where: S and S_{RB} are in percent of RATED THERMAL POWER,
W = Loop recirculation flow as a percentage of the loop recirculation flow which produces a rated core flow of 100 million lbs/hr, at 100% of RATED THERMAL POWER
T = Lowest value of the ratio of FRACTION OF RATED THERMAL POWER divided by the MAXIMUM FRACTION OF LIMITING POWER DENSITY. T is applied only if less than or equal to 1.0

APPLICABILITY: OPERATIONAL CONDITION 1, when THERMAL POWER is greater than or equal to 25% of RATED THERMAL POWER.

ACTION:

With the APRM flow biased neutron flux-high scram trip setpoint and/or the flow biased neutron flux-high control rod block trip setpoint less conservative than the value shown in the Allowable Value column for S or S_{RB}, as above determined, initiate corrective action within 15 minutes and adjust S and/or S_{RB} to be consistent with the Trip Setpoint value* within 6 hours or reduce THERMAL POWER to less than 25% of RATED THERMAL POWER within the next 4 hours.

SURVEILLANCE REQUIREMENTS

4.2.2 The FRTP and the MFLPD for each class of fuel shall be determined, the value of T calculated, and the most recent actual APRM flow biased neutron flux-high scram and flow biased neutron flux-high control rod block trip setpoints verified to be within the above limits or adjusted, or the APRM gain readings shall be verified as indicated below,* as required:

a. At least once per 24 hours,

b. Within 12 hours after completion of a THERMAL POWER increase of at least 15% of RATED THERMAL POWER, and

c. Initially and at least once per 12 hours when the reactor is operating with MFLPD greater than or equal to FRTP.

d. The provisions of Specification 4.0.4 are not applicable.

*With MFLPD greater than the FRTP during power ascension up to 90% of RATED THERMAL POWER, rather than adjusting the APRM setpoints, the APRM gain may be adjusted such that APRM readings are greater than or equal to 100% times MFLPD, provided that the adjusted APRM reading does not exceed 100% of RATED THERMAL POWER and a notice of adjustment is posted on the reactor control panel.

POWER DISTRIBUTION LIMITS

3/4.2.3 MINIMUM CRITICAL POWER RATIO

LIMITING CONDITION FOR OPERATION

3.2.3 The MINIMUM CRITICAL POWER RATIO (MCPR) shall be equal to or greater than the MCPR limit shown in Figure 3.2.3-1 times the K_f shown in Figure 3.2.3-2, with:

$$\tau = \frac{(\tau_{ave} - \tau_B)}{\tau_A - \tau_B}$$

where:

τ_A = 1.096 seconds, control rod average scram insertion time limit to notch 36 per Specification 3.1.3.3,

$$\tau_B = 0.852 + 1.65\left[\frac{N_1}{\sum_{i=1}^{n} N_i}\right]^{\frac{1}{2}} 0.06,$$

$$\tau_{ave} = \frac{\sum_{i=1}^{n} N_i \tau_i}{\sum_{i=1}^{n} N_i},$$

n = number of surveillance tests performed to date in cycle,

N_i = number of active control rods measured in the i^{th} surveillance test,

τ_i = average scram time to notch 36 of all rods measured in the i^{th} surveillance test, and

N_1 = total number of active rods measured in Specification 4.1.3.2.a.

APPLICABILITY:

OPERATIONAL CONDITION 1, when THERMAL POWER is greater than or equal to 25% of RATED THERMAL POWER.

ACTION

a. With MCPR less than the applicable MCPR limit shown in Figures 3.2.3-1 and 3.2.3-2, initiate corrective action within 15 minutes and restore MCPR to within the required limit within 2 hours or reduce THERMAL POWER to less than 25% of RATED THERMAL POWER within the next 4 hours.

b. With the main turbine bypass system inoperable per Specification 3.7.9, operation may continue and the provisions of Specification 3.0.4 are not applicable provided that, within one hour, MCPR is determined to be equal to or greater than the MCPR limit as shown in Figure 3.2.3-1 by the main turbine bypass inoperable curve times the applicable K_f shown in Figure 3.2.3-2.

TABLE 3.3.6-1 (Continued)

CONTROL ROD BLOCK INSTRUMENTATION

ACTION STATEMENTS

ACTION 60 - Declare the RBM inoperable and take the ACTION required by Specification 3.1.4.3.

ACTION 61 - With the number of OPERABLE Channels:

a. One less than required by the Minimum OPERABLE Channels per Trip Function requirement, restore the inoperable channel to OPERABLE status within 7 days or place the inoperable channel in the tripped condition within the next hour.

b. Two or more less than required by the Minimum OPERABLE Channels per Trip Function requirement, place at least one inoperable channel in the tripped condition within 1 hour.

ACTION 62 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement, place the inoperable channel in the tripped condition within 1 hour.

ACTION 63 - With the number of OPERABLE channels less than required by the Minimum OPERABLE Channels per Trip Function requirement, initiate a rod block.

TABLE NOTATIONS

* With THERMAL POWER $\geq$ 30% of RATED THERMAL POWER.

** With more than one control rod withdrawn. Not applicable to control rods removed per Specification 3.9.10.1 or 3.9.10.2.

(a) The RBM shall be automatically bypassed when a peripheral control rod is selected or the reference APRM channel indicates less than 30% of RATED THERMAL POWER.

(b) This function shall be automatically bypassed if detector count rate is $\geq$ 100 cps or the IRM channels are on range 3 or higher.

(c) This function shall be automatically bypassed when the associated IRM channels are on range 8 or higher.

(d) This function shall be automatically bypassed when the IRM channels are on range 3 or higher.

(e) This function shall be automatically bypassed when the IRM channels are on range 1.

(f) These two Source Range Monitors shall be OPERABLE as required by Specification 3.9.2.

TABLE 3.3.6-2

CONTROL ROD BLOCK INSTRUMENTATION SETPOINTS

TRIP FUNCTION	TRIP SETPOINT	ALLOWABLE VALUE
1. ROD BLOCK MONITOR		
a. Upscale	$\leq$ 0.66 W + 40%	$\leq$ 0.66 W + 43%
b. Inoperative	NA	NA
c. Downscale	$\geq$ 5% of RATED THERMAL POWER	$\geq$ 3% of RATED THERMAL POWER
2. APRM		
a. Flow Biased Neutron Flux - High	$\leq$ 0.66 W + 42%*	$\leq$ 0.66 W + 45%*
b. Inoperative	NA	NA
c. Downscale	$\geq$ 5% of RATED THERMAL POWER	$\geq$ 3% of RATED THERMAL POWER
d. Neutron Flux - Upscale, Setdown	$\leq$ 12% of RATED THERMAL POWER	$\leq$ 14% of RATED THERMAL POWER
3. SOURCE RANGE MONITORS		
a. Detector not full in	NA	NA
b. Upscale	$\leq 1.0 \times 10^5$ cps	$\leq 1.6 \times 10^5$ cps
c. Inoperative	NA	NA
d. Downscale	$\geq$ 3 cps**	$\geq$ 2 cps**
4. INTERMEDIATE RANGE MONITORS		
a. Detector not full in	NA	NA
b. Upscale	$\leq$ 108/125 divisions of full scale	$\leq$ 110/125 divisions of full scale
c. Inoperative	NA	NA
d. Downscale	$\geq$ 5/125 divisions of full scale	$\geq$ 3/125 divisions of full scale
5. SCRAM DISCHARGE VOLUME		
a. Water Level-High	$\leq$ 589'11½"	$\leq$ 591'0"
b. Scram Trip Bypass	NA	NA
6. REACTOR COOLANT SYSTEM RECIRCULATION FLOW		
a. Upscale	$\leq$ 108/125% of rated flow	$\leq$ 111/125% of rated flow
b. Inoperative	NA	NA
c. Comparator	$\leq$ 10% flow deviation	$\leq$ 11% flow deviation
7. REACTOR MODE SWITCH SHUTDOWN POSITION	NA	NA

*The APRM rod block function is varied as a function of recirculation loop drive flow (W). The trip setting of this function must be maintained in accordance with Specification 3.2.2.

**The downscale rodblock setpoint count rate may be reduced to 0.3 cps prior to achieving a burnup of 2000 MWD/T on the first core provided the signal-to-noise ratio is $\geq$2. After a burnup of 2000 MWD/T on the first core, the count rate may be reduced to 0.7 cps provided the signal-to-noise ratio is $\geq$2.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 9 TO FACILITY OPERATING LICENSE NO. NPF-43

DETROIT EDISON COMPANY

AND

WOLVERINE POWER SUPPLY COOPERATIVE, INCORPORATED

FERMI-2

DOCKET NO. 50-341

1.0 INTRODUCTION

By letter dated March 9, 1987, Detroit Edison Company (the licensee) proposed two changes to the Technical Specifications (TS) for Fermi-2. The primary change proposed is to the "ACTION" in TS 3.2.2, changing the time to adjust trip setpoint values when they do not meet specified limits, from two to six hours. Also proposed is an administrative change removing a typographical error in TS Table 3.3.6-2.

2.0 EVALUATION

TS 3.2.2 provides a formulation for the average power range monitor (APRM) limiting condition for operation (LCO) setpoints for high flux scram and rod block trips. These setpoints are a function of recirculation loop flow rate and local power density peaking factor (expressed as the factor T, the ratio of the Fraction of Rated Thermal Power divided by the Maximum Fraction of Limiting Power Density). If the setpoint limits are exceeded, TS 3.2.2 action presently requires the initiation of corrective action within 15 minutes and the adjustment of the setpoints (or the APRM gain) to meet the LCO statement within two hours, or else the reduction of power to less than 25 percent within the next four hours. The licensee proposes that the two hours be increased to six hours for Fermi-2. (The required immediate (15 minutes) action would be operator determination that the peaking factor would be improved by the changing xenon and rod pattern within the time frame, as discussed below.)

The problem of exceeding the setpoint limits arises primarily during lower power operation during startup when local power density peaking factors may be larger than those permitted for full power operation. (At full power, the peaking factor is limited by the TS linear heat generation rate LCO of 13.4 kw/ft, and T must be equal to or greater than 1.0. At lower power, this LCO is still in effect but permits large peaking factors and T may be less than 1.0.) The larger peaking factor is generally the result of temporary control rod patterns which exist before achieving the target higher power patterns, and the xenon level and distribution which are not yet at equilibrium values. Allowing longer times for the setpoint change action allows progress toward the target rod pattern and provides increased xenon, both of which improve the peaking factor and tend to make the setpoint change unnecessary.

The flow biased APRM rod block and scram trips provide only additional margin to the safety analysis since the Fermi-2 (and other BWRs) relevant safety analyses (e.g., the Final Safety Analysis Report) are primarily based on the fixed (120 percent power) scram. The extension to six hours for the setdown action has been reviewed and approved for a number of operating reactors, e.g., Browns Ferry 1, 2, and 3 (Ref.2 & 3) and as initial TSs for several recently licensed reactors, e.g., Limerick 1 and Hope Creek. The primary basis for these approvals has been the secondary role played by the flow biased APRM trips (see References 2 and 3).

This review has concluded that the proposed change to the TS 3.2.2 action time is the same as the change (or original specification) approved in previous reviews and that the secondary nature of the affected trips and improvement in peaking factor to be expected for continued operation in the startup mode provide a reasonable and acceptable basis for approval of the change.

The licensee also proposes a change to the TS Table 3.3.6-2, removing from the Rod Block Monitor upscale trip formulation two asterisks referring to a footnote. The presence of the asterisks was an error. This footnote is correctly applied to the APRM Flow Biased Neutron Flux-High trip and was not intended for the Rod Block Monitor. Its removal is acceptable. The licensee proposes to add "APRM" to the footnote to clarify the intent of the specification. This too is acceptable.

3.0 ENVIRONMENTAL CONSIDERATION

This amendment involves changes to requirements with respect to the installation or use of facility components located within the restricted area as defined in 10 CFR Part 20. We have 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 this amendment involves no significant hazards consideration and there has been no public comment on such finding. Accordingly, this 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 nor environmental assessment need be prepared in connection with the issuance of this amendment.

4.0 CONCLUSION

We have 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, and (2) such activities will be conducted in compliance with the Commission's regulations, and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

5.0 REFERENCES

1. Letter (and enclosure) from F. Agosti, DECo, to the NRC, dated March 9, 1987, "Proposed TS Change - ARPM Setpoints (3/4.2.2)..."

2. Letter (and enclosure) from T. Ippolito, NRC, to H. Parris, TVA, dated September 15, 1981, Amendment No. 76 and Safety Evaluation for Browns Ferry Unit 1.

3. Letter (and enclosure) from R. Clark, NRC, to H. Parris, TVA, dated August 17, 1984, Amendment Nos. 104 and 77 and Safety Evaluation for Browns Ferry Units 2 and 3.

Principal Contributor: H. Richings, NRR

Dated: July 21, 1987

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

July 21, 1987

MEMORANDUM FOR: Sholly Coordinator

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

SUBJECT: REQUEST FOR PUBLICATION IN BIWEEKLY FR NOTICE - NOTICE OF ISSUANCE OF AMENDMENT TO FACILITY OPERATING LICENSE (TAC NO. 64834)

Detroit Edison Company, Docket No. 50-341, Fermi-2, Monroe County, Michigan

Date of application for amendment: March 9, 1987 (VP-NO-87-0005)

Brief description of amendment: This amendment revises Fermi-2 Technical Specification 3/4.2.2 to change the average power range monitor (APRM) setpoint action statement extending the action time limit for control rod withdrawal from two to six hours before setdown action is required in order to: (1) establish target patterns; (2) achieve a reasonable power distribution at full power with equilibrium xenon; and (3) ensure that no combination of the Maximum Fraction of Limiting Power Density and Fraction of Rated Thermal Power would result in a Linear Heat Generation Ratio transient peaking factor beyond the one percent plastic strain limit. This amendment also changes the control rod block instrumentation, Table 3.3.6-2 of the Technical Specifications, to delete the asterisks in the "Trip Setpoint" and "Allowable Value" columns for Item 1.a to correct a typographical error (the asterisk does not apply to Item 1.a), and to add "APRM" to the same footnote to clarify the intent of the specification.

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Date of Issuance: July 21, 1987

Effective date: July 21, 1987

Amendment No.: 9

Facility Operating License No. NPF-43: Amendment revises the Technical Specifications.

Date of initial notice in FEDERAL REGISTER: April 8, 1987 (52 FR 11358)

The Commission's related evaluation of the amendment is contained in a Safety Evaluation dated July 21, 1987

No significant hazards consideration comments received: No.

Local Public Document Room location: Monroe County Library System, 3700 South Custer Road, Monroe, Michigan 48161.

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