

June 23, 1988

Docket No. 50-341

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

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Dear Mr. Sylvia:

SUBJECT: AMENDMENT NO. 20 TO FACILITY OPERATING LICENSE NO. NPF-43: DRYWELL AIR TEMPERATURE LIMIT (TAC NO. 65174)

The Commission has issued the enclosed Amendment No. 20 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 dated April 27, 1987 (VP-NO-87-0035), as supplemented August 14, 1987 (NRC-87-0108).

The amendment revises the Fermi-2 Technical Specifications to change the drywell air temperature limit from 135°F to 145°F to ensure plant operation during the summer months without the need to derate plant operations.

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

Sincerely,

original signed by

Theodore R. Quay, Project Manager
Project Directorate III-1
Division of Reactor Projects - III, IV, V
& Special Projects

Enclosures:

1. Amendment No. 20 to NPF-43
2. Safety Evaluation

cc w/enclosures:
See next page

LA/PD31: DRSP
RIngram
6/22/88

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MArgilio
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J. J. CRAIG
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J. G. Idberg
OGC
6/23/88
what to noted change



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

June 23, 1988

Docket No. 50-341

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

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AIR TEMPERATURE LIMIT (TAC NO. 65174)

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Sincerely,

A handwritten signature in cursive script that reads "Theodore R. Quay".

Theodore R. Quay, Project Manager
Project Directorate III-1
Division of Reactor Projects - III, IV, V
& Special Projects

Enclosures:

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2. Safety Evaluation

cc w/enclosures:
See next page

Mr. B. Ralph Sylvia
Group Vice President - Nuclear
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Detroit Edison Company
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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. 20
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 April 27, 1987, as supplemented August 14, 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 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. 20, 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.

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3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in cursive script, appearing to read "Daniel R. Muller".

Daniel R. Muller, Acting Director
Project Directorate III-1
Division of Reactor Projects - III, IV, V
& Special Projects

Attachment:
Changes to the Technical
Specifications

Date of Issuance: June 23, 1988

ATTACHMENT TO LICENSE AMENDMENT NO. 20

FACILITY OPERATING LICENSE NO. NPF-43

DOCKET NO. 50-341

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

REMOVE

3/4 6-13

INSERT

3/4 6-13

CONTAINMENT SYSTEMS

DRYWELL AVERAGE AIR TEMPERATURE

LIMITING CONDITION FOR OPERATION

3.6.1.7 Drywell average air temperature shall not exceed 145°F.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3.

ACTION:

With the drywell average air temperature greater than 145°F, reduce the average air temperature to within the limit within 8 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

SURVEILLANCE REQUIREMENTS

4.6.1.7 The drywell average air temperature shall be the volumetric average of the temperatures at the following locations and shall be determined to be within the limit at least once per 24 hours:

| <u>Elevation</u> | <u>Azimuth (At least one at each elevation)</u> |
|------------------|---|
| a. 590'0" | 90°, 135°, 270° or 316° |
| b. 597'0" | 35°, 75°, 93°, 135°, 175°, 200°, 246°, 272°, 306° or 345° |
| c. 621'8" | 0°, 90°, 180° or 270° |
| d. 648'6" | 45°, 135°, 225° or 315° |
| e. 662'0" | 0°, 90°, 180° or 285° |
| f. 665'6" | 0° or 180° |

CONTAINMENT SYSTEMS

DRYWELL AND SUPPRESSION CHAMBER PURGE SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.1.8 The drywell and suppression chamber purge system (6-inch, 10-inch, 20-inch, and 24-inch valves) may be in operation with the supply and exhaust isolation valves in one supply line and one exhaust line open for inerting, deinerting or pressure control.* Purge/vent operations through the SGTS shall be limited to 90 hours each 365 days.

APPLICABILITY: OPERATIONAL CONDITIONS 1, 2, and 3.

ACTION:

- a. With a drywell and suppression chamber purge system supply and/or exhaust isolation valve open, except as permitted above, close the valve(s) or otherwise isolate the penetration(s) within 4 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.
- b. With a drywell and suppression chamber purge system supply and/or exhaust isolation valve(s) with resilient material seals having a measured leakage rate exceeding the limit of Specification 4.6.1.8.2, restore the inoperable valve(s) to OPERABLE status within 24 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

SURVEILLANCE REQUIREMENTS

4.6.1.8.1 Before being opened for purge/vent operation through SGTS, the drywell and suppression chamber purge supply and exhaust butterfly isolation valves shall be verified not to have been open for purge/vent operation through SGTS for more than 90 hours in the previous 365 days.*

4.6.1.8.2 At least once per 92 days each penetration for each 6-inch, each 10-inch, each 20-inch, and each 24-inch drywell and suppression chamber purge supply and exhaust isolation valve with resilient material seals shall be demonstrated OPERABLE by verifying that the measured leakage rate is less than or equal to $0.05 L_a$ when pressurized to P_a .

*Valves open for pressure control are not subject to the 90 hour per 365 day limit provided the 6-inch bypass line is being utilized.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
SUPPORTING AMENDMENT NO. 20 TO FACILITY OPERATING LICENSE NO. NPF-43

DETROIT EDISON COMPANY

WOLVERINE POWER SUPPLY COOPERATIVE, INCORPORATED

FERMI-2

DOCKET NO. 50-341

1.0 INTRODUCTION

By letter dated April 27, 1987, as supplemented August 14, 1987, the Detroit Edison Company (DECo or the licensee) requested amendment to the Technical Specifications (TSs) appended to Facility Operating License No. NPF-43 for Fermi-2. The proposed amendment would increase the TS maximum allowable drywell bulk average air temperature from the existing 135°F to 145°F. This requested increase in allowed operating air temperature is due to a higher than expected heat load on the drywell coolers. During the summer high temperature conditions, the licensee has estimated that although running at capacity, the non-safety-related drywell coolers will be unable to maintain the Technical Specification limit of 135°F. Therefore, to permit continuous operation of Fermi-2 during the summer months without any derating, the licensee requested that this limit be increased to 145°F.

To support the increase in the allowable drywell air temperature, the licensee evaluated the impact on the various containment pressure-temperature loss of coolant accident (LOCA) related loads due to an increase of the initial drywell air temperature. These loads were recomputed using the same analytical models used to establish the loads presented in the Updated Safety Analysis Report (USAR). In addition, the effect on the minimum containment pressure was also considered. Finally, a reevaluation of the Environmental Qualification (EQ) of equipment inside the drywell considering an increase of 10°F in the normal operating temperature was conducted by the licensee. The results of the staff's evaluation of these reanalyses are provided in the following evaluation.

2.0 EVALUATION

The licensee has recomputed the LOCA related loads due to an increase of 10°F in the initial drywell air temperature. With respect to the peak calculated containment pressure, there is a slight reduction in the maximum value. Although this might appear to be unexpected, in fact, when the analysis is properly done taking into account all relevant factors, this is the correct result.

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Thermal loads from the primary system remain unaffected by the air temperature increase. Therefore, the contributing factors to the calculation of the peak containment pressure are either unaffected or reduced. The net result is a lower containment peak pressure value.

The peak drywell air temperature remains unaffected by an increase in the drywell operating air temperature. As indicated in the USAR, the limiting condition is calculated to be during a steam line break event. The maximum temperature occurs when the drywell is completely purged of air and the temperature is established based on the super-heated conditions at the break exit. This results in a peak temperature near 340°F. Because the peak is independent of the initial drywell air temperature, the requested change will not affect this peak value.

Peak suppression chamber air temperature, as indicated in the USAR, is computed to occur at the same time that the peak suppression pool temperature is reached. This value is determined by the size of the Residual Heat Removal (RHR) heat exchanger and occurs several hours into the event. The air is conservatively assumed to be in infinite thermal contact with the pool. In other words, there is an infinite heat transfer coefficient assumed between the pool and the air space. Therefore, the maximum temperature value is based on the initial pool temperature, the thermal capacity of the RHR heat exchanger, and the energy profile assumed to be deposited in the pool. Because none of the parameters are affected by the initial drywell air temperature, the peak calculated air temperature is unaffected by the proposed drywell air temperature increase.

The impact on the various pool dynamic loads, however, cannot be assessed quite as easily as the previously discussed loads. Many individual loads can only be determined by test. As a result, the licensee has considered all pool dynamic loads. The approach selected by the licensee was to review all of the assumptions and methodologies employed in the development of each individual load. To perform this task, several key references were used. They were the plant specific loads reports (References 1, 2, and 3).

A review of the analyses contained in the above references shows that the detailed engineering design of all containment structures considered a range of initial drywell temperatures from 105°F to 150°F. Because the proposed change is to 145°F, it is still bounded by the original analysis and no reanalysis was necessary to support the change.

With respect to the impact on containment structures, a final series of events were reconsidered to determine the effect of initial drywell air temperature on the minimum or reverse drywell pressure. The design pressure is -2.0 psig. Three events were calculated by the licensee for negative pressure responses. They were the actuation of drywell sprays following a small steam line break in the drywell, actuation of drywell sprays following a recirculation line break, and inadvertent operation of the drywell sprays

during normal operation. The limiting case was found to be the inadvertent operation of the drywell sprays during normal operation. For an initial drywell air temperature of 135°F, the minimum pressure was calculated to be -1.41 psig. For the proposed TS change to 145°F, the calculation showed the minimum pressure to be -1.59 psig. Although the design margin was decreased, there still remains a substantial margin to the design value of -2.0 psig.

Although the design margin for the reverse drywell pressure was slightly decreased, the peak LOCA containment pressure is lowered and consequently, the safety margin is slightly enhanced.

The licensee also evaluated the impact of the increased operating drywell air temperature on the EQ of the equipment inside the drywell. This reevaluation considered both normal operation and LOCA conditions. For normal operating conditions, the licensee has revised the aging and operability assessment for equipment and components which would be exposed to the increased containment temperature. With respect to accident conditions, the previous discussions indicate that the analyses have demonstrated that the original analyses remain bounding. Therefore, the LOCA EQ profiles are still valid.

Based on the evaluation provided above, the NRC staff concludes that the licensee has reevaluated all aspects of power operation and LOCA conditions that could be affected by the increase in drywell operating air temperature. Based on the results of these reanalysis, the licensee has demonstrated that the effects are either negligible or within the bounds of the design bases of the effected components. Finally, the impacts on the EQ program have been assessed and incorporated into the overall program. Based on the above evaluation, the NRC staff finds the proposed change in the TS drywell air temperature limit to be acceptable.

3.0 ENVIRONMENTAL CONSIDERATION

This amendment involves a change in the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. We have determined that this amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents which 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 or 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.

Principal Contributors: J. Kudrick
R. Licciardo

Dated: June 23, 1988

REFERENCES

1. General Electric Company, Mark I Containment Program Plant Unique Load Definition -- Enrico Fermi Atomic Power Plant: Unit 2, NEDO-24568, Rev. 3, April 1982.
2. Nuclear Technology Incorporated, Enrico Fermi Atomic Power Plant, Unit 2, Plant Unique Analysis Report, DET-04-028-1, 2, 3, 4, 5, San Jose, California, April 1982.
3. Nuclear Technology Incorporated, Enrico Fermi Atomic Power Plant Unit 2, Plant Unique Analysis Report, DET-19-076-06, San Jose, California, June 1983.