



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

September 13, 2018

Mr. Keith J. Polson
Senior Vice President and
Chief Nuclear Officer
DTE Electric Company
Fermi 2 - 260 TAC
6400 North Dixie Highway
Newport, MI 48166

**SUBJECT: FERM 2 - ISSUANCE OF AMENDMENT REGARDING THE ADOPTION OF
TECHNICAL SPECIFICATION TASK FORCE TRAVELER TSTF-484, "USE OF
TS 3.10.1 FOR SCRAM TIME TESTING ACTIVITIES" (EPID L-2017-LLA-0351)**

Dear Mr. Polson:

The U.S. Nuclear Regulatory Commission has issued the enclosed Amendment No. 210 to Renewed Facility Operating License No. NPF-43 for the Fermi 2. The amendment is in response to your application dated October 9, 2017. The proposed changes would revise the technical specification (TS) requirements in TS 3.10.1, "Inservice Leak and Hydrostatic Testing Operation," by adopting Technical Specification Task Force (TSTF) Traveler TSTF-484, Revision 0, "Use of TS 3.10.1 for Scram Time Testing Activities."

Specifically, the proposed changes would revise the Limiting Condition for Operation 3.10.1 to expand its scope to include provisions for temperature excursions greater than 200 degrees Fahrenheit as a consequence of maintaining pressure for inservice leak and hydrostatic testing, and as a consequence of maintaining pressure for scram time testing initiated in conjunction with an inservice leak or hydrostatic test, while considering operational conditions to be in Mode 4.

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,

A handwritten signature in black ink, appearing to read "Sujata Goetz", is written over the typed name and title.

Sujata Goetz, Project Manager
Plant Licensing Branch III
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-341

Enclosures:

1. Amendment No. 210 to NPF-43
2. Safety Evaluation

cc: Listserv



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

DTE ELECTRIC COMPANY

DOCKET NO. 50-341

FERMI 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 210
Renewed License No. NPF-43

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by the DTE Electric Company (DTE, the licensee) dated October 9, 2017, 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.

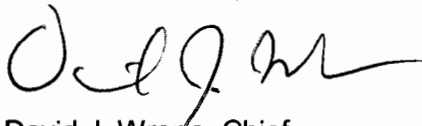
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Renewed Facility Operating License No. NPF-43 is hereby amended to read as follows:

Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 210, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated into this renewed license. DTE Electric Company shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented within 60 days.

FOR THE NUCLEAR REGULATORY COMMISSION



David J. Wrona, Chief
Plant Licensing Branch III
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Renewed Facility
Operating License and
Technical Specifications

Date of Issuance: September 13, 2018

ATTACHMENT TO LICENSE AMENDMENT NO. 210

RENEWED FACILITY OPERATING LICENSE NO. NPF-43

FERMI 2

DOCKET NO. 50-341

Replace the following pages of the Renewed Facility Operating License and Appendix A, Technical Specifications, with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Renewed Facility Operating License No. NPF-43

REMOVE

- 4 -

INSERT

- 4 -

Technical Specifications

REMOVE

3.10-1

INSERT

3.10-1

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 210, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated into this renewed license. DTE Electric Company shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

(3) Antitrust Conditions

DTE Electric Company shall abide by the agreements and interpretations between it and the Department of Justice relating to Article I, Paragraph 3 of the Electric Power Pool Agreement between DTE Electric Company and Consumers Power Company as specified in a letter from The Detroit Edison Company to the Director of Regulation, dated August 13, 1971, and the letter from Richard W. McLaren, Assistant Attorney General, Antitrust Division, U.S. Department of Justice, to Bertram H. Schur, Associate General Counsel, Atomic Energy Commission, dated August 16, 1971.

(4) Deleted

(5) Deleted

(6) Deleted

(7) Deleted

(8) Deleted

(9) Modifications for Fire Protection (Section 9.5.1, SSER #5 and SSER #6)*

DTE Electric Company shall implement and maintain in effect all provisions of the approved fire protection program as described in its Final Safety Analysis Report for the facility through Amendment 60 and as approved in the SER through Supplement No. 5, subject to the following provision:

- (a) DTE Electric Company may make changes to the approved fire protection program without prior approval of the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

* The parenthetical notation following the title of many license conditions denotes the section of the Safety Evaluation Report (SER) and/or its supplements wherein the license condition is discussed.

3.10 SPECIAL OPERATIONS

3.10.1 Inservice Leak and Hydrostatic Testing Operation

LCO 3.10.1 The average reactor coolant temperature specified in Table 1.1-1 for MODE 4 may be changed to "NA," and operation considered not to be in MODE 3; and the requirements of LCO 3.4.9, "Residual Heat Removal (RHR) Shutdown Cooling System-Cold Shutdown," may be suspended to allow reactor coolant temperature > 200°F:

- For performance of an inservice leak or hydrostatic test,
- As a consequence of maintaining adequate pressure for an inservice leak or hydrostatic test, or
- As a consequence of maintaining adequate pressure for control rod scram time testing initiated in conjunction with an inservice leak or hydrostatic test,

provided the following MODE 3 LCOs are met:

- a. LCO 3.3.6.2, "Secondary Containment Isolation Instrumentation," Functions 1, 3, and 4 of Table 3.3.6.2-1;
- b. LCO 3.6.4.1, "Secondary Containment";
- c. LCO 3.6.4.2, "Secondary Containment Isolation Valves (SCIVs)"; and
- d. LCO 3.6.4.3, "Standby Gas Treatment (SGT) System."

APPLICABILITY: MODE 4 with average reactor coolant temperature > 200°F.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 210 TO

RENEWED FACILITY OPERATING LICENSE NO. NPF-43

DTE ELECTRIC COMPANY

FERMI 2

DOCKET NO. 50-341

1.0 INTRODUCTION

By application dated October 9, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17283A248), DTE Electric Company (the licensee), requested changes to the technical specifications (TSs) for Fermi 2. The proposed changes would revise requirements in TS 3.10.1, "Inservice Leak and Hydrostatic Testing Operation," by adopting Technical Specification Task Force (TSTF) Traveler, TSTF-484, Revision 0, "Use of TS 3.10.1 for Scram Time Testing Activities." The publicly available version of the staff's approval of TSTF-484 was announced on October 27, 2006 (71 FR 63051).

The proposed amendment would revise Limiting Condition of Operation (LCO) 3.10.1 to expand its scope to include provisions for temperature excursions greater than 200 degrees Fahrenheit (°F), while in Mode 4, to allow performance of inservice leak and hydrostatic testing, as a consequence of maintaining adequate pressure for an inservice leak and hydrostatic test, or as a consequence of maintaining adequate pressure for control rod scram time testing initiated in conjunction with an inservice leak or hydrostatic test.

2.0 REGULATORY EVALUATION

2.1 Description of proposed TS changes

Fermi 2 LCO 3.10.1 currently states:

The average reactor coolant temperature specified in Table 1.1-1 for Mode 4 may be changed to "NA," and operation considered not to be in MODE 3; and the requirements of LCO 3.4.9, "Residual Heat Removal (RHR) Shutdown Cooling System-Cold Shutdown," may be suspended to allow performance of an inservice leak or hydrostatic test provided the following MODE 3 LCOs are met:

- a. LCO 3.3.6.2, "Secondary Containment Isolation Instrumentation," Functions 1, 3, and 4 of Table 3.3.6.2-1;
- b. LCO 3.6.4.1, "Secondary Containment";

- c. LCO 3.6.4.2, "Secondary Containment Isolation Valves (SCIVs)"; and
- d. LCO 3.6.4.3, "Standby Gas Treatment (SGT) System."

APPLICABILITY: MODE 4 with average reactor coolant temperature > 200°F.

The proposed revised LCO 3.10.1 would state:

The average reactor coolant temperature specified in Table 1.1-1 for Mode 4 may be changed to "NA," and operation considered not to be in Mode 3; and the requirements of LCO 3.4.9, "Residual Heat Removal (RHR) Shutdown Cooling System-Cold Shutdown," may be suspended to allow reactor coolant temperature > 200 °F:

- For performance of an inservice leak or hydrostatic test,
- As a consequence of maintaining adequate pressure for an inservice leak or hydrostatic test, or
- As a consequence of maintaining adequate pressure for control rod scram time testing initiated in conjunction with an inservice leak or hydrostatic test,

provided the following Mode 3 LCOs are met:

- a. LCO 3.3.6.2, "Secondary Containment Isolation Instrumentation," Functions 1, 3, and 4 of Table 3.3.6.2-1;
- b. LCO 3.6.4.1, "Secondary Containment ";
- c. LCO 3.6.4.2, "Secondary Containment Isolation Valves (SCIVs)"; and
- d. LCO 3.6.4.3, "Standby Gas Treatment (SGT) System."

APPLICABILITY: MODE 4 with average reactor coolant temperature > 200°F.

2.2 Applicable Regulations and Guidance

In Section 50.36 of Title 10 of the *Code of Federal Regulations* (10 CFR), "Technical Specifications," the U.S. Nuclear Regulatory Commission (NRC or Commission) established its regulatory requirements related to the content of TSs. Pursuant to 10 CFR 50.36, TSs are required to include items in the following five specific categories related to station operation: (1) safety limits, limiting safety system settings, and limiting control settings, (2) Limiting conditions for operation, (3) Surveillance requirements (SRs), (4) Design features, and (5) Administrative controls. The rule does not specify the particular requirements to be included in a plant's TS. As stated in 10 CFR 50.36(c)(2)(i), the "Limiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility."

The regulation in 10 CFR 50.36(a)(1) states, in part, "A summary statement of the bases or reasons for such specifications other than those covering administrative controls shall also be included in the application, but shall not become part of the technical specifications."

The Fermi 2 TSs are similar to the Standard Technical Specifications in NUREG-1433, "Standard Technical Specifications, General Electric Plants, BWR/4, Revision 4.0" Volume 1 and Volume 2 (ADAMS Accession Nos. ML12104A192 and ML12104A193).

2.3 Background

2.3.1 Inservice Leak and Hydrostatic Testing and Control Rod Scram Time Testing

The reactor coolant system (RCS) serves as a pressure boundary and also serves to provide a flow path for the circulation of coolant past the fuel. In order to maintain RCS integrity, Section XI of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) requires periodic hydrostatic and leakage testing. Hydrostatic tests are required to be performed once every 10 years and leakage tests are required to be performed each refueling outage. Appendix G to 10 CFR Part 50 states that pressure tests and leak tests of the reactor vessel that are required by Section XI of the ASME Code must be completed before the core is critical.

This proposed modification to LCO 3.10.1 does not alter current requirements for hydrostatic and leakage testing as required by Appendix G to 10 CFR Part 50.

2.3.2 Control Rod Scram Time Testing

Control rods function to regulate reactor power level and to provide adequate excess negative reactivity to shut down the reactor from any normal operating or accident condition at any time during core life. The reactor is scrammed by using hydraulic pressure exerted by the control rod drive system. The scram reactivity used in design basis accidents and transient analyses is based on an assumed control rod scram time.

2.3.3 TS Requirements

Table 1.1-1 (page 1 of 1)
MODES

MODE	TITLE	REACTOR MODE SWITCH POSITION	AVERAGE REACTOR COOLANT TEMPERATURE (°F)
1	Power Operation	Run	NA
2	Startup	Refuel ^(a) or Startup/Hot Standby	NA
3	Hot Shutdown ^(a)	Shutdown	> 200
4	Cold Shutdown ^(a)	Shutdown	≤ 200
5	Refueling ^(b)	Shutdown or Refuel	NA

(a) All reactor vessel head closure bolts fully tensioned.

(b) One or more reactor vessel head closure bolts less than fully tensioned.

As shown above, Table 1.1-1 of the Fermi 2 TS defines the operational Modes. The reactor is considered to be in Mode 3, "Hot Shutdown," when all reactor vessel head closure bolts are fully tensioned, the reactor mode switch is in the shutdown position and the average reactor coolant temperature is $> 200^{\circ}\text{F}$. The reactor is considered to be in Mode 4, "Cold Shutdown," when all reactor vessel head closure bolts are fully tensioned, the reactor mode switch is in the shutdown position and the average reactor coolant temperature is $\leq 200^{\circ}\text{F}$.

SR 3.1.4.1 states: "Verify each control rod scram time is within the limits of Table 3.1.4-1 with reactor steam dome pressure ≥ 800 psig." FREQUENCY: "Prior to exceeding 40% rated thermal power (RTP) after each reactor shutdown > 120 days."

SR 3.1.4.4 states: "Verify each affected control rod scram time is within the limits of Table 3.1.4-1 with reactor steam dome pressure ≥ 800 psig." FREQUENCY: "Prior to exceeding 40% RTP after fuel movement within the associated core cell AND Prior to exceeding 40% RTP after work on control rod or control rod drive (CRD) system that could affect scram time."

LCO 3.4.9, "Residual Heat Removal (RHR) Shutdown Cooling System-Cold Shutdown," states: "Two RHR shutdown cooling subsystems shall be OPERABLE, and, with no recirculation pump in operation, at least one RHR shutdown cooling subsystem shall be in operation."

TSTF-484 revised LCO 3.10.1 in the Standard Technical Specifications to clarify the requirements during inservice leak and hydrostatic testing and to expand the provisions of LCO 3.10.1 to include scram time testing. As revised by TSTF-484, LCO 3.10.1 clarifies that the unit may be considered to be in Mode 4 and the requirements of LCO 3.4.9 are suspended to allow temperature to exceed 200°F for performance of an inservice leak or hydrostatic test; as a consequence of maintaining adequate pressure for an inservice leak or hydrostatic test; or as a consequence of maintaining adequate pressure for control rod scram time testing initiated in conjunction with an inservice leak or hydrostatic test.

3.0 TECHNICAL EVALUATION

The TS LCO 3.10.1 is a Special Test Exception, and allows the unit to be considered to be in Mode 4 (even though coolant temperature exceeds 200°F) and allows suspension of the requirements of LCO 3.4.9 during inservice leak and scram time testing. The existing provisions of LCO 3.10.1 allow for hydrostatic and leakage testing to be conducted while in Mode 4 with average reactor coolant temperature greater than 200°F and allows the LCO 3.4.9 requirements for the RHR system to be suspended, provided the Mode 3 LCO requirements for secondary containment and standby gas treatment are satisfied.

The MODE 3 LCOs listed in LCO 3.10.1 are:

- a. LCO 3.3.6.2, "Secondary Containment Isolation Instrumentation," Functions 1, 3, and 4 of Table 3.3.6.2-1;
- b. LCO 3.6.4.1, "Secondary Containment"
- c. LCO 3.6.4.2 "Secondary Containment Isolation Valves (SCIVs)": and
- d. LCO 3.6.4.3, "Standby Gas Treatment (SGT) System."

If any one of these requirements are not met, the Required Actions include entering the applicable conditions of the affected LCO; or suspending activities that could increase the average reactor coolant temperature or pressure or to reduce average coolant temperature to ≤ 200 °F.

Under the existing provisions, LCO 3.10.1 may be applied during hydrostatic and leakage testing. Without the revised provisions of LCO 3.10.1, the hydrostatic and leakage testing might have to be terminated if average reactor coolant temperature exceeded 200 °F during testing. In addition, without the TSTF-484 revisions of LCO 3.10.1, the unit would have to comply with all LCOs applicable during Mode 3 when average temperature exceeds 200 °F.

TSTF-484 modifies LCO 3.10.1 and allows a licensee to implement LCO 3.10.1 while hydrostatic and leakage testing is being conducted even if average reactor coolant temperature exceeds 200 °F during testing. The modification of LCO 3.10.1 will allow completion of testing without the potential for interrupting the test in order to reduce reactor vessel pressure, cool the RCS, and restart the test below 200 °F. Since the current LCO 3.10.1 allows testing to be conducted while in Mode 4, with average reactor coolant temperature greater than 200 °F, the proposed change does not introduce any new operational conditions beyond those currently allowed. Under SR 3.1.4.1 it requires scram time testing to be conducted after each reactor shutdown greater than 120 days.

Both SR 3.1.4.1 and SR 3.1.4.4 require that control rod scram time be tested at reactor steam dome pressure greater than or equal to 800 pounds per square inch gauge and before exceeding 40 percent rated thermal power. Performance of control rod scram time testing is typically scheduled concurrent with inservice leak or hydrostatic testing while the RCS is pressurized. Because of the small number of control rods that must be tested, it is possible for the inservice leak or hydrostatic test to be completed prior to completion of the scram time test. Under existing provisions, LCO 3.10.1 could not be applied once inservice leak or hydrostatic testing is completed. As a result, scram time testing would be resumed during startup and would have to be completed prior to exceeding 40 percent rated thermal power. As modified in TSTF-484, LCO 3.10.1 allows a licensee to complete scram time testing initiated during inservice leak or hydrostatic testing. As stated previously, since the current LCO 3.10.1 allows testing to be conducted while in Mode 4 with average reactor coolant temperature greater than 200 °F, the proposed change does not introduce any new operational conditions beyond those currently allowed. Completion of scram time testing prior to reactor criticality and power operation results in a more conservative operating philosophy with attendant potential safety benefits.

This modification to LCO 3.10.1 does not alter the requirements to perform scram time testing.

Licensees may perform other testing concurrent with the inservice leak or hydrostatic test provided that this testing can be performed safely and does not interfere with the leak or hydrostatic test. However, it is not permissible to remain in TS 3.10.1 solely to complete such testing following the completion of inservice leak or hydrostatic testing and scram time testing.

During inservice leak or hydrostatic testing in Mode 4, both pressure and temperature are elevated and leaks can develop. If a leak occurs during testing, it may be necessary to replenish inventory. Small leaks from the RCS would be detected by inspections before a significant loss of inventory occurs. In the event of a large RCS leak, the reactor pressure vessel would rapidly depressurize and allow operation of the low pressure emergency core cooling system (ECCS). The TS requires that two ECCS injection/spray trains be operable.

Since the licensee applies LCO 3.10.1 at the end of a refueling outage, at low decay heat values, and near Mode 4 conditions, the stored energy in the reactor core will be very low. There is much more water in the reactor vessel than what is present during power operation and the reactor pressure vessel is nearly water solid. Therefore, the operators would have time to respond with manual actions to start any ECCS pumps and properly align valves for injection from the control room. The capability of the low pressure ECCS would be adequate to maintain the fuel covered under the low decay heat conditions during these tests.

In addition, LCO 3.10.1 requires that secondary containment and the standby gas treatment system be operable and capable of handling any airborne radioactivity or steam leaks that may occur during performance of testing.

The protection provided by Mode 4 applicable LCOs, in addition to the secondary containment requirements that must be met under LCO 3.10.1, minimize potential consequences in the event of any postulated abnormal event during testing. These include LCO 3.3.1.2, which requires operability of the source range monitor instrumentation. In addition, the requested modification to LCO 3.10.1 does not create any new modes of operation or operating conditions that are not currently allowed. Also LCO 3.5.2 requires, in part, that two ECCS injection/spray subsystem be operable in Mode 4. Based on the above, the NRC staff concludes that the proposed change is acceptable.

Consistent with 10 CFR 50.36(a)(1), the licensee submitted corresponding TS Bases changes that provide the reasons for the proposed TSs changes.

3.1 Staff Conclusion

The NRC staff reviewed the proposed changes to the Fermi 2 TSs and determined that the changes meet the standards for TSs in 10 CFR 50.36(c)(2)(i). The TS LCO 3.10.1, as revised, continues to specify the minimum performance level of equipment that is necessary to assure safe operation of the facility. Therefore, the staff finds the proposed changes acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Michigan State official was notified of the proposed issuance of the amendment on June 11, 2017. The State official had no comments.

5.0 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 or changes the SRs. 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 previously issued a proposed finding that the amendment involves no significant hazards consideration (83 FR 8509) and there has been no public comment on such finding. 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.

6.0 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) there is reasonable assurance that 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: Margaret Chernoff

Date of issuance: September 13, 2018

SUBJECT: FERMI 2 - ISSUANCE OF AMENDMENT RE: FOR ADOPTION OF TSTF TRAVELER TSTF-484, "USE OF TS 3.10.1 FOR SCRAM TIME TESTING ACTIVITIES" (EPID L-2017-LLA-0351) DATED SEPTEMBER 13, 2018

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