



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

June 26, 2023

Mr. Peter Dietrich
Senior Vice President
and Chief Nuclear Officer
DTE Electric Company
Fermi 2 – 260 NOC
6400 North Dixie Highway
Newport, MI 48166

SUBJECT: FERM UNIT 2 - ISSUANCE OF AMENDMENT NO. 223 REGARDING
REVISION OF TECHNICAL SPECIFICATIONS TO ADOPT TSTF-582,
“REACTOR PRESSURE VESSEL WATER INVENTORY CONTROL (RPV WIC)
ENHANCEMENTS” (EPID L-2022-LLA-0109)

Dear Mr. Dietrich:

The U.S. Nuclear Regulatory Commission (NRC, the Commission) has issued the enclosed Amendment No. 223 to Renewed Facility Operating License No. NPF-43, for Fermi Unit 2. The amendment consists of changes to the technical specifications (TSs) in response to your application dated August 4, 2022 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML22216A151).

The amendment adopts Technical Specification Task Force (TSTF) Traveler TSTF-582, Revision 0, “Reactor Pressure Vessel Water Inventory Control (RPV WIC) Enhancements.” This amendment revises the TS related to RPV WIC and corrects errors and omissions in TSTF-542, Revision 2, “Reactor Pressure Vessel Water Inventory Control.”

A copy of the related Safety Evaluation is also enclosed. A Notice of Issuance will be included in the Commission's monthly *Federal Register* notice.

Sincerely,

/RA/

Surinder S. Arora, Project Manager
Plant Licensing Branch III
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-341

Enclosures:

1. Amendment No. 223 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. 223
Renewed License No. NPF-43

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by DTE Electric Company dated June 5, 2020, 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:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 223, 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 90 days of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

V. Sreenivas, Acting 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: June 26, 2023

ATTACHMENT TO LICENSE AMENDMENT NO. 223

FERMI 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

DOCKET NO. 50-341

Renewed Facility Operating License No. NPF-43

Replace the following page of the Renewed Facility Operating Licenses No. NPF-43 with the attached revised page. The revised page is identified by amendment number and contains marginal lines indicating the area of change.

INSERT

REMOVE

- 4 -

- 4 -

Technical Specifications

Replace the following pages of the 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.

REMOVE

INSERT

1.1-3

1.1-3

3.3-49a

3.3-49a

3.3-49b

3.3-49b

3.3-49c

3.3-49c

3.3-71

3.3-71

3.5-8

3.5-8

3.5-9

3.5-9

3.5-9a

3.5-9a

3.5-10

3.5-10

3.5-11

3.5-11

3.6-7

3.6-7

3.6-13

3.6-13

3.6-17

3.6-17

3.8-12

3.8-12

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 223, 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.

1.1 Definitions (continued)

CORE OPERATING LIMITS REPORT (COLR)	The COLR is the unit specific document that provides cycle specific parameter limits for the current reload cycle. These cycle specific limits shall be determined for each reload cycle in accordance with Specification 5.6.5. Plant operation within these limits is addressed in individual Specifications.
DOSE EQUIVALENT I-131	DOSE EQUIVALENT I-131 shall be that concentration of I-131 (microcuries/gram) that alone would produce the same thyroid dose as the quantity and isotopic mixture of I-131, I-132, I-133, I-134, and I-135 actually present. The thyroid dose conversion factors used for this calculation shall be those listed in Table III of TID-14844, AEC, 1962, "Calculation of Distance Factors for Power and Test Reactor Sites."
DRAIN TIME	<p>The DRAIN TIME is the time it would take for the water inventory in and above the Reactor Pressure Vessel (RPV) to drain to the top of the active fuel (TAF) seated in the RPV assuming:</p> <ul style="list-style-type: none">a) The water inventory above the TAF is divided by the limiting drain rate;b) The limiting drain rate is the larger of the drain rate through a single penetration flow path with the highest flow rate, or the sum of the drain rates through multiple penetration flow paths susceptible to a common mode failure, for all penetration flow paths below the TAF except:<ul style="list-style-type: none">1. Penetration flow paths connected to an intact closed system, or isolated by manual or automatic valves that are closed and administratively controlled in the closed position, blank flanges, or other devices that prevent flow of reactor coolant through the penetration flow paths;

(continued)

3.3 INSTRUMENTATION

3.3.5.3 Reactor Pressure Vessel (RPV) Water Inventory Control Instrumentation

LC0 3.3.5.3 The RPV Water Inventory Control instrumentation for each Function in Table 3.3.5.3-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.5.3-1.

ACTIONS

-----NOTE-----
Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more channels inoperable.	A.1 Initiate action to place channel in trip.	Immediately
	<u>OR</u>	
	A.2.1 Declare associated penetration flow path(s) incapable of automatic isolation.	Immediately
	<u>AND</u>	
	A.2.2 Initiate action to calculate DRAIN TIME.	Immediately

SURVEILLANCE REQUIREMENTS

-----NOTE-----
 These SRs apply to each Function in Table 3.3.5.3-1.

SURVEILLANCE	FREQUENCY
SR 3.3.5.3.1 Perform CHANNEL CHECK.	In accordance with the Surveillance Frequency Control Program
SR 3.3.5.3.2 Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program

Table 3.3.5.3-1 (page 1 of 1)
RPV Water Inventory Control Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	ALLOWABLE VALUE
1. RHR System Isolation			
a. Reactor Vessel Water Level - Low, Level 3	(a)	2 in one trip system	≥ 171.9 inches
2. Reactor Water Cleanup (RWCU) System Isolation			
a. Reactor Vessel Water Level - Low Low, Level 2	(a)	2 in one trip system	≥ 103.8 inches

(a) When automatic isolation of the associated penetration flow path(s) is credited in calculating DRAIN TIME.

3.3 INSTRUMENTATION

3.3.8.1 Loss of Power (LOP) Instrumentation

LC0 3.3.8.1 The LOP instrumentation for each Function in Table 3.3.8.1-1 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

-----NOTE-----
Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more buses with one or more channels inoperable.	A.1 Restore channel to OPERABLE status.	72 hours
B. Required Action and associated Completion Time of Condition A not met. <u>OR</u> One or more buses with LOP trip capability not maintained.	B.1 Declare associated EDG inoperable.	Immediately

3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS), RPV WATER INVENTORY CONTROL, AND REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM

3.5.2 Reactor Pressure Vessel (RPV) Water Inventory Control

LC0 3.5.2 DRAIN TIME of RPV water inventory to the top of active fuel (TAF) shall be \geq 36 hours.

AND

One low pressure ECCS injection/spray subsystem shall be OPERABLE.

APPLICABILITY: MODES 4 and 5.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Required ECCS injection/spray subsystem inoperable.	A.1 Restore required ECCS injection/spray subsystem to OPERABLE status.	4 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Initiate action to establish a method of water injection capable of operating without offsite electrical power.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. DRAIN TIME < 36 hours and ≥ 8 hours.	C.1 Verify secondary containment boundary is capable of being established in less than the DRAIN TIME.	4 hours
	<u>AND</u>	
	C.2 Verify each secondary containment penetration flow path is capable of being isolated in less than the DRAIN TIME.	4 hours
<u>AND</u>		
C.3 Verify one standby gas treatment (SGT) subsystem is capable of being placed in operation in less than the DRAIN TIME.	4 hours	

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME	
D. DRAIN TIME < 8 hours.	D.1 -----NOTE----- Required ECCS injection/spray subsystem or additional method of water injection shall be capable of operating without offsite electrical power. ----- Initiate action to establish an additional method of water injection with water sources capable of maintaining RPV water level > TAF for ≥ 36 hours.	Immediately	
	<u>AND</u>		
	D.2	Initiate action to establish secondary containment boundary.	Immediately
	<u>AND</u>		
	D.3	Initiate action to isolate each secondary containment penetration flow path or verify it can be manually isolated from the control room.	Immediately
	<u>AND</u>		
	D.4	Initiate action to verify one SGT subsystem is capable of being placed in operation.	Immediately

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.5.2.4 Verify correct voltage and breaker alignment to the LPCI swing bus.	In accordance with the Surveillance Frequency Control Program
SR 3.5.2.5 Verify, for the required ECCS injection/spray subsystem, locations susceptible to gas accumulation are sufficiently filled with water.	In accordance with the Surveillance Frequency Control Program
<p style="text-align: center;">-----NOTES-----</p> <p style="text-align: center;">1. Operation may be through the test return line.</p> <p style="text-align: center;">2. Credit may be taken for normal system operation to satisfy this SR.</p> <p style="text-align: center;">-----</p>	
SR 3.5.2.6 Operate the required ECCS injection/spray subsystem for ≥ 10 minutes.	In accordance with the Surveillance Frequency Control Program
SR 3.5.2.7 Verify each valve credited for automatically isolating a penetration flow path actuates to the isolation position on an actual or simulated isolation signal.	In accordance with the Surveillance Frequency Control Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.5.2.8 -----NOTE----- Vessel injection/spray may be excluded. ----- Verify the required ECCS injection/spray subsystem can be manually operated.</p>	<p>In accordance with the Surveillance Frequency Control Program</p>

3.6 CONTAINMENT SYSTEMS

3.6.1.3 Primary Containment Isolation Valves (PCIVs)

LCO 3.6.1.3 Each PCIV, except reactor building-to-suppression chamber vacuum breakers, shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

- NOTES-----
1. Penetration flow paths may be unisolated intermittently under administrative controls.
 2. Separate Condition entry is allowed for each penetration flow path.
 3. Enter applicable Conditions and Required Actions for systems made inoperable by PCIVs.
 4. Enter applicable Conditions and Required Actions of LCO 3.6.1.1, "Primary Containment," when PCIV leakage results in exceeding overall containment leakage rate acceptance criteria.
-

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. -----NOTE----- Only applicable to penetration flow paths with two PCIVs. ----- One or more penetration flow paths with one PCIV inoperable, except due to leakage not within limit.</p>	<p>A.1 Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.</p> <p><u>AND</u></p>	<p>4 hours except for main steam line</p> <p><u>AND</u></p> <p>8 hours for main steam line</p> <p>(continued)</p>

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Required Action and associated Completion Time of Condition A, B, C, or D not met.	E.1 Be in MODE 3.	12 hours
	<u>AND</u>	
	E.2 Be in MODE 4.	36 hours

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.6.1.3.11 Verify the combined leakage rate for all secondary containment bypass leakage paths that are not provided with a seal system is $\leq 0.10 L_a$ when pressurized to ≥ 56.5 psig.	In accordance with the Primary Containment Leakage Rate Testing Program and INSERVICE TESTING PROGRAM
SR 3.6.1.3.12 Verify combined MSIV leakage rate for all four main steam lines is ≤ 250 scfh and ≤ 100 scfh for any one steam line when tested at ≥ 25 psig.	In accordance with the Primary Containment Leakage Rate Testing Program
SR 3.6.1.3.13 Verify combined leakage rate through hydrostatically tested lines that penetrate the primary containment is within limits.	In accordance with the Primary Containment Leakage Rate Testing Program

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. One or both required EDGs inoperable.	B.1 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u>	
	B.2 Suspend movement of recently irradiated fuel assemblies in secondary containment.	Immediately
	<u>AND</u>	
	B.3 Initiate action to restore required EDGs to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.8.2.1 -----NOTE----- The following SRs are not required to be performed: SR 3.8.1.2, SR 3.8.1.3, SR 3.8.1.8, SR 3.8.1.9, SR 3.8.1.13, and SR 3.8.1.15. ----- The following SRs are applicable for AC sources required to be OPERABLE. SR 3.8.1.1 SR 3.8.1.6 SR 3.8.1.2 SR 3.8.1.8 SR 3.8.1.3 SR 3.8.1.9 SR 3.8.1.4 SR 3.8.1.13 SR 3.8.1.5 SR 3.8.1.15	In accordance with applicable SRs



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 223 TO

RENEWED FACILITY OPERATING LICENSE NO. NPF-43

DTE ELECTRIC COMPANY

FERMI 2

DOCKET NO. 50-341

1.0 INTRODUCTION

DTE Electric Company (DTE) (the licensee) requested changes to the technical specifications (TSs) for Fermi, Unit 2, (Fermi) by license amendment request (LAR), dated August 4, 2022, Agencywide Documents Access and Management System (ADAMS) Accession No. ML22216A151. In its application, the licensee requested that the U.S. Nuclear Regulatory Commission (NRC, the Commission) process the proposed LAR under the Consolidated Line Item Improvement Process (CLIIP). The proposed changes would revise the TSs related to reactor pressure vessel (RPV) water inventory control (WIC) based on Technical Specifications Task Force (TSTF) Traveler TSTF-582, Revision 0, "RPV WIC Enhancements" (ML19240A260), and the associated NRC staff safety evaluation (SE).

The boiling-water reactor (BWR) RPV design includes multiple penetrations located below the top of active fuel (TAF). These penetrations provide entry for control rods, recirculation flow, reactor water cleanup (RWCU), and shutdown cooling. Since these penetrations are below the TAF, this creates a potential to drain the reactor vessel water inventory and lose effective core cooling. The loss of water inventory and effective core cooling can potentially lead to fuel cladding failure and radioactive release. Drain Time is the time it would take for the water inventory in and above the RPV to drain to the TAF.

1.1 Proposed TS Changes to Adopt TSTF-582

In accordance with NRC staff-approved TSTF-582, the licensee proposed changes that would revise the TSs related to RPV WIC to incorporate operating experience and to correct errors and omissions that the licensee incorporated into the Fermi TSs when adopting TSTF-542, Revision 2, "Reactor Pressure Vessel Water Inventory Control" (ML16074A448). Specifically, the licensee proposed the following changes to adopt TSTF-582:

- The Drain Time definition in TS 1.1 would be revised to move the examples of common mode failure mechanisms to the Bases and delete seismic events.

- In TS 1.1, Drain Time definition, the exception from considering the Drain Time for penetration flow paths isolated with manual or automatic valves that are that are “locked, sealed, or otherwise secured” would be revised to apply the exception for manual or automatic valves that are “closed and administratively controlled.”
- The Actions of TS 3.3.5.3 would be revised to permit placing an inoperable isolation channel in trip as an alternative to declaring the associated penetration flow path incapable of automatic isolation.
- TS 3.3.5.3, Required Action B.2 requires calculating Drain Time with a Completion Time of “immediately.” The Required Action would be renumbered as A.2.2 and revised to state, “Initiate action to calculate Drain Time.”
- In TS 3.5.2, the first use of the acronym “SGT” [standby gas treatment] would be defined in Required Action C.3 and the acronym “SGT” would be used in Required Action D.4.
- TS 3.5.2 and TS 3.3.5.2 would be revised to eliminate the requirement for a manual emergency core cooling system (ECCS) initiation signal to start the required ECCS injection/spray subsystem, and to instead rely on manual valve alignment and pump start. TS 3.5.2 Surveillance Requirements related to manual initiation using the ECCS signal (such as verifying automatic alignment of valves on an initiation signal) would be eliminated. Related to this change, the TS 3.3.5.2 functions, Surveillance Requirements, and Actions that only support manual initiate on using an ECCS signal (including interlocks and minimum flow instruments) would be eliminated.
- Surveillance Requirement (SR) 3.5.2.7, that requires operating the required ECCS injection/spray subsystem for at least 10 minutes through the recirculation line, would be modified by the addition of two notes. The first Note would replace the existing SR that the ECCS subsystem be run through the recirculation line with a Note that states that operation may be through the test return line. The second Note would permit crediting normal operation of the low-pressure ECCS subsystem for performance of the SR.
- The Applicability of TS 3.6.1.3, “Primary Containment Isolation Valves (PCIVs),” would be revised to delete the phrase, “When associated instrumentation is required to be OPERABLE per Limiting Condition for Operation (LCO) 3.3.6.1, ‘Primary Containment Isolation Instrumentation.’” This would make TS 3.6.1.3 only applicable in Modes 1, 2, and 3. Following adoption of TSTF-542, no functions in LCO 3.3.6.1 are applicable outside of Modes 1, 2, or 3. The Actions and SRs of TS 3.6.1.3 would be revised to reflect this change.
- TS 3.8.2, “AC [Alternating Current] Sources - Shutdown,” SR 3.8.2.1, would be revised to not require SRs that test the ability of the automatic diesel generator to start in Modes 4 and 5. TSTF-542 eliminated the automatic ECCS initiation in Modes 4 and 5.

1.2 Additional Proposed TS Changes

The licensee proposed to make the following additional changes:

- TS 3.3.8.1, “Loss of Power (LOP) Instrumentation,” would be revised to delete “When the associated diesel generator is required to be OPERABLE by LCO 3.8.2, ‘AC Sources – Shutdown’.” from the Applicability.
- SR 3.8.2.1 would be revised to add SR 3.8.1.7, SR 3.8.1.14, and SR 3.8.1.16 to the list of TS 3.8.1 SRs that are not applicable under SR 3.8.2.1.

The NRC staff notes that the above proposed changes are consistent with TSTF-583-T, Revision 0, “TSTF-582 Diesel Generator Variation” (ML20248H330).

- LCO 3.5.2 would be revised to delete NOTE, “A low Pressure Coolant Injection (LPCI) subsystem may be considered OPERABLE during alignment and operation for decay heat removal if capable of being manually realigned and not otherwise inoperable.”

The NRC staff notes that the above proposed change is consistent with TSTF-587-T, Revision 0, “Delete LCO 3.5.2 Note.”

1.2.1 Variations

The licensee noted that Fermi TSs have different numbering than standard technical specifications (STSs) for the RPV WIC related TS.

- When the licensee adopted TSTF-542, a variation was taken to add the new “Reactor Pressure Vessel (RPV) Water Inventory Control Instrumentation” at the end of Section 3.3.5, rather than adding in the middle and renumbering. As a result, the Fermi 2 TS 3.3.5.3, “Reactor Pressure Vessel (RPV) Water Inventory Control Instrumentation,” corresponds to STS 3.3.5.2 “Reactor Pressure Vessel (RPV) Water Inventory Control Instrumentation.” This numbering difference appears not only in Fermi 2 TS 3.3.5.3 (STS TS 3.3.5.2), but any other locations in the TS that cross-reference that numbering.
- Fermi 2 TS 3.3.8.1, “Loss of Power (LOP) Instrumentation,” Surveillance Requirement (SR) 3.3.8.1.3 corresponds to STS 3.3.8.1, “Loss of Power (LOP) Instrumentation,” SR 3.3.8.1.4. This numbering difference appears not only in these SRs, but any other locations in the TS that cross-reference that numbering.
- When the licensee adopted TSTF-542, a variation was taken with respect to the numbering of certain SRs in TS 3.5.2, “RPV Water Inventory Control.” As a result, Fermi 2 SRs 3.5.2.5 through SR 3.5.2.9 correspond to STS SRs 3.5.2.4 through SR 3.5.2.8.
- Fermi 2 TS 3.6.1.3, “Primary Containment Isolation Valves (PCIVs),” Conditions E and F correspond to STS 3.6.1.3, “Primary Containment Isolation Valves (PCIVs),” Conditions F and H, respectively.
- Fermi 2 TS 3.6.1.3, “PCIVs,” SRs 3.6.1.3.6, 3.6.1.3.11, 3.6.1.3.12, and 3.6.1.3.13 correspond to STS 3.6.1.3, “PCIVs,” SRs 3.6.1.3.7, 3.6.1.3.12, 3.6.1.3.13, and 3.6.1.3.14, respectively.

1.2.2 Differences

The licensee noted that Fermi TSs contain requirements that differ from the STS on which TSTF-582 was based but are encompassed in the TSTF-582 justification. The differences are listed below:

- Fermi 2 TS 3.3.5.3 contains a Note prior to the SR section which states “When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours for Functions 1.a and 2.a, provided the associated Function maintains ECCS initiation capability.” With the deletion of Functions 1.a Core Spray System Reactor Steam Dome Pressure Low (Injection Permissive) and 2.a Low Pressure Coolant Injection (LPCI) System Reactor Steam Dome Pressure Low (Injection Permissive) according to TSTF-582, this Fermi 2 plant-specific Note is no longer applicable and is therefore deleted. Reference to this Note is also deleted from corresponding TS Bases B 3.3.5.3, including deletion of Reference #6 which was only provided to support this Note.
- TSTF-582 corrects the title of STS Section 3.5 which is referenced from the Applicability section of TS Bases 3.5.2, “RPV Water Inventory Control.” In the Fermi 2 TS Bases 3.5.2, “RPV Water inventory Control,” the reference to Fermi 2 TS Section 3.5 in the Applicability section already more closely matched the actual title. Therefore, the title is not changed.
- When Fermi 2 adopted TSTF-542, “Reactor Pressure Vessel Water Inventory Control,” the revised page for TS 3.5.2, Required Action D.3 inadvertently omitted the word “each” in “Initiate action to isolate each secondary containment penetration flow path or verify it can be manually isolated from the control room” (emphasis added). Note that the word “each” was included in the proposed TS page mark-up for TSTF-542, it was only omitted in the revised TS page. To correct this omission, the word “each” is added to the text of Required Action D.3.
- TSTF-582 proposes to delete “low pressure coolant injection” and the parentheses around “(LPCI)” from SR 3.5.2.2 since low pressure coolant injection was previously defined as LPCI in the Note associated with Limiting Condition for Operation (LCO) 3.5.2. Fermi is also adopting changes from TSTF-587, “Delete LCO 3.5.2 Note,” which deletes the Note from LCO 3.5.2, including the definition of LPCI as low-pressure coolant injection. Therefore, this TSTF-582 change is not adopted.
- Fermi SR 3.5.2.5 is equivalent to the STS SR 3.5.2.4 (with TSTF-542 revisions). The Fermi TS Bases 3.5.2 discussion of SR 3.5.2.5 does not contain the equivalent text to STS SR 3.5.2.4 that is shown as revised in TSTF-582. Therefore, the proposed change in TSTF-582 to replace “initiation signal” with “actuation” is not applicable to Fermi 2.
- Fermi 2 SR 3.5.2.6 contains a Note prior to the SR which states “Not required to be met for system vent flow paths opened under administrative control.” This Note is not present in the equivalent SR in the STS (SR 3.5.2.5). With deletion of the SR according to TSTF-582, this Fermi 2 plant-specific Note is no longer applicable and is therefore also deleted. Similarly, discussion of the Note in the Fermi 2 TS Bases for SR 3.5.2.6 is also deleted.

- The Fermi 2 TS 3.6.1.3, "PCIVs," does not have Condition G. Therefore, the proposed changes in TSTF-582 to STS 3.6.1.3, "PCIVs," Condition G are not applicable to Fermi. Similarly, the proposed changes in TSTF-582 for Condition G in the Bases for STS 3.6.1.3 are not applicable to Fermi.
- The Fermi TS 3.6.1.3 Bases do not contain the word "most" which is proposed to be deleted by TSTF-582. Therefore, the proposed change in TSTF-582 to delete "most" is not applicable to Fermi.
- TSTF-582 revises the Applicability of TS 3.6.1.3 to be only Modes 1, 2, and 3. Fermi 2 TS 3.6.1.3 has Note 4 prior to the Actions section which includes instructions that only apply in Modes 1, 2, and 3. With the revised Applicability restricted to Modes 1, 2, and 3 per TSTF-582, the Note 4 no longer needs the discussion of Modes since it is already specified by the Applicability. Although not identified in TSTF-582, Fermi 2 has revised LCO 3.6.1.3 Actions Note 4 to delete "...in MODES 1, 2, and 3" to be consistent with the other TSTF-582 changes to TS 3.6.1.3 that delete the note "Only required to be met in MODES 1, 2, and 3."
- TSTF-582 proposes to delete the Note "Only required to be met in MODES 1, 2, and 3" from multiple SRs in TS 3.6.1.3, "PCIVs." Fermi 2 TS 3.6.1.3 does not have the Note in SR 3.6.1.3.6 (STS SR 3.6.1.3.7), SR 3.6.1.3.11 (STS SR 3.6.1.3.12), and 3.6.1.3.12 (STS SR 3.6.1.3.13). The Fermi 2 TS do not have SRs equivalent to STS SR 3.6.1.3.1, 3.6.1.3.2, and 3.6.1.3.15 to require deletion of the Note as shown in TSTF-582. Therefore, the proposed changes in TSTF-582 to delete the Note from those SRs are not applicable to Fermi.
- SR 3.8.2.1 Note currently lists Fermi 2 SR 3.8.1.2 as an SR that is not required to be performed. Although the STS SR 3.8.1.2 and Fermi 2 SR 3.8.1.2 are equivalent, the STS SR 3.8.2.1 Note does not include SR 3.8.1.2 as an SR that is not required to be performed and TSTF-582 (and TSTF-583) also does not include it in the Note as part of the changes. DTE will retain Fermi 2 SR 3.8.1.2 in the list of SRs that are not required to be performed in the Note for Fermi 2 SR 3.8.2.1.
- The Fermi 2 TS 3.8.2, "AC Sources-Shutdown," SR 3.8.2.1 Note currently lists Fermi 2 SRs 3.8.1.7 and 3.8.1.11 as SRs that are not required to be performed. Although STS SRs 3.8.1.7 and 3.8.1.12 are equivalent to Fermi 2 SRs 3.8.1.7 and 3.8.1.11, the STS SR 3.8.2.1 Note does not include these SRs in the list of those not required to be performed.
- The Fermi 2 TS Bases 3.8.2, "AC Sources - Shutdown," LCO Section does not contain the statement which is contained in the STS Bases that "Automatic initiation of the required DG during shutdown conditions is specified in LCO 3.3.8.1, 'LOP Instrumentation'."
- The Fermi 2 TS do not contain SRs equivalent to the STS SRs 3.8.1.8 and 3.8.1.17 that are referenced in STS SR 3.8.2.1. Therefore, the proposed changes in TSTF-582 (and TSTF-583) that affect these SRs are not applicable to Fermi 2.

- The Fermi 2 TS and TS Bases use the phrase Emergency Diesel Generators (EDGs) rather than the more generic phrase Diesel Generators (DGs) used in the STS. In addition, since the Fermi 2 design is based on two EDGs per division rather than the STS which is one DG per train, the Fermi 2 TS and TS Bases use EDGs plural when sometimes the STS uses DG singular. When incorporating the TSTF-582 (and TSTF-583) changes to TS Bases Section 3.8.2, the acronym EDG is used rather than DG and plural grammar is used rather than singular grammar when necessary.

1.2.3 Adopted changes

The licensee incorporated changes in TSTF-582 as variations during adoption of TSTF-542. Therefore, in some cases, the TSTF-582 changes are not needed. Other changes were added as variations during adoption of TSTF-542 which have been superseded by the requirements in TSTF-582. In some cases, these plant-specific changes are replaced by the TSTF-582 generic requirements. The variations for changes adopted in TSTF-542 are described below:

- As a result of variations taken during adoption of TSTF-542, the current Fermi 2 TS 3.3.5.3 Condition D is equivalent to a combination of Conditions D and E from STS 3.3.5.2. Deletion of Conditions D and E from the STS and STS Bases as shown in TSTF-582 is accomplished by deletion of Condition D from the Fermi 2 TS and TS Bases.
- The Fermi 2 TS SR 3.3.5.3.3 referenced for the manual initiation functions in Table 3.3.5.3-1 is for a Channel Functional Test rather than the Logic System Functional Test in the STS SR 3.3.5.2.3. Deletion of SR 3.3.5.2.3 for Logic System Functional Test from the STS and STS Bases as shown in TSTF-582 is accomplished by deletion of SR 3.3.5.3.3 for Channel Functional Test from the Fermi 2 TS and TS Bases.
- The Fermi 2 Table 3.3.5.3-1 and TS Bases B 3.3.5.3 do not contain the equivalent of STS Table 3.3.5.2-1 Function 1.b, “Core Spray Pump Discharge Flow - Low (Bypass),” or Function 2.b, “Low Pressure Coolant Injection Pump Discharge Flow - Low (Bypass).” Functions 1.b and 2.b in the Fermi 2 TS Table 3.3.5.3-1 are instead the functions for Manual Initiation for Core Spray and LPCI, respectively, and the Fermi 2 TS Table 3.3.5.3-1 has no Functions 1.c and 2.c. In addition, Footnote (a) is assigned to the Required Channels per Function column for Functions 1.a and 2.a, a Fermi 2 plant-specific Footnote (c) is assigned to the Required Channels per Function column for Functions 1.b and 2.b, and the wording “1 per subsystem” is used rather than “1” for the Required Channels per Function column for Function 2.b. Deletion of the entirety of Functions 1 and 2, as well as deletion of Footnote (c), from Fermi 2 TS Table 3.3.5.3-1 and the corresponding TS Bases changes accomplishes the intent of the corresponding TSTF-582 changes regardless of the number of subfunctions and footnotes.
- The Fermi 2 TS Bases B 3.3.6.1, “Primary Containment Isolation Instrumentation,” reference to Action J.2 was previously deleted and the Action J.1 text was revised. However, the resultant wording in the Fermi 2 TS Bases for Action J.1 based on the TSTF-542 variation does not match the proposed TSTF-582 TS Bases changes. For this reason, the Fermi 2 TS Bases for Action J.1 is revised so that it will match what is shown in TSTF-582 with the exception that the phrase “these Required Actions allow” is revised to “the Required Action allows” to reflect that there is a single action (J.1).

- The Fermi 2 TS SR 3.5.2.9 currently states to “Verify the required ECCS injection/spray subsystem can be manually operated.” Therefore, the proposed changes in TSTF-582 to revise STS SR 3.5.2.8 are not required; the Fermi 2 TS already reflect the change. However, the wording in the Fermi 2 TS Bases for SR 3.5.2.9 based on the TSTF-542 variation does not currently match the proposed TSTF-582 TS changes.

The licensee proposed the following additional editorial variations associated with the TS Bases.

- The Fermi 2 TS Bases description of Actions A.1 and B.1 contains the text in a single paragraph rather than two paragraphs as shown in the STS pages included with the TSTF-582. To maintain consistency with the STS, the Fermi 2 TS Bases description of Actions A.1 and B.1 is revised to split the single paragraph into two paragraphs.
- To more closely match the justification in TSTF-582 and be consistent with typical usage at Fermi 2, the Fermi 2 Bases discussion of the new Note 2 clarifies that an example of normal system operation is the “shutdown cooling mode of RHR” (emphasis added).
- The Fermi 2 Bases for SR 3.5.2.9 (STS SR 3.5.2.8) contains the phrase “required CS subsystems or LPCI subsystem” (emphasis added) which is grammatically inconsistent. This inconsistent use of plural vs. singular in the Fermi 2 and STS Bases was introduced by TSTF-542. TSTF-582 modifies the sentence containing this phrase but does not correct the phrase itself. In addition to adopting the TSTF-582 changes, the Fermi 2 TS Bases for SR 3.5.2.9 is also revised to use the singular “subsystem” for both CS and LPCI.

2.0 REGULATORY EVALUATION

The regulation at 50.36(c)(2) per Title 10 of the *Code of Federal Regulations* (10 CFR) requires that TSs include LCOs per 10 CFR 50.36(c)(2)(i), “are the lowest functional capability or performance levels of equipment required for safe operation of the facility.” The regulation also requires that when an LCO of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the TS until the condition can be met.

The regulation at 10 CFR 50.36(c)(3) requires that TSs include items in the category of SRs, which are requirements relating to test, calibration, or inspection, to assure that the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the LCOs will be met.

The NRC staff’s guidance for the review of TSs is in Chapter 16.0, “Technical Specifications,” of NUREG-0800, Revision 3, “Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR [Light-Water Reactor] Edition” (SRP), March 2010 ML100351425). As described therein, as part of the regulatory standardization effort, the NRC staff has prepared STSs for each of the LWR nuclear designs. Accordingly, the NRC staff’s review includes consideration of whether the proposed changes are consistent with the “Standard Technical Specifications, General Electric BWR/4 Plants,” NUREG-1433, Volume 1, “Specifications,” and Volume 2, “Bases,” Revision 5.0, September 2021 (ML21272A357 and ML21272A358), as modified by NRC-approved travelers.

Traveler TSTF-582 revised the STSs related to RPV WIC to incorporate operating experience and to correct editorial errors in TSTF-542, Revision 2, “Reactor Pressure Vessel Water

Inventory Control” (ML16074A448). The NRC approved TSTF-542, Revision 2, on December 20, 2016 (ADAMS Package ML16343B066). The NRC staff approved TSTF-582 under the CLIIP in a letter dated August 13, 2020 (ML20219A333). The TSTF-582 SE states that a licensee may adopt the STS changes approved in TSTF-582, if the licensee has already adopted the STS changes approved in TSTF-542.

3.0 TECHNICAL EVALUATION

3.1 Proposed TS Changes to Adopt TSTF-582

The NRC staff compared the licensee’s proposed TS changes in section 1.0 of this SE against the changes approved in TSTF-582. In accordance with the SRP, chapter 16.0, the NRC staff determined that the STS changes approved in TSTF-582 are applicable to Fermi TSs because it is a BWR/4 design and the NRC staff approved the TSTF-582 changes for BWR/4 designs. The licensee meets the TSTF-582 SE provision for adoption of TSTF-582 since the licensee adopted Traveler TSTF-542 on September 17, 2018 (ML18247A452) in Amendment No. 211 for Fermi. Therefore, the NRC staff concludes that the licensee’s proposed changes to the Fermi TSs in section 1.0 of this SE are acceptable in that they are consistent with TSTF-582 and the terms for use stated in the NRC staff’s SE of TSTF-582.

The NRC staff finds that proposed changes to the TS 1.1 definition and LCOs 3.3.5.3, 3.5.2, and 3.6.1.3 correctly specify the lowest functional capability or performance levels of equipment required for safe operation of the facility in accordance with 10 CFR 50.36(c)(2)(i). Also, the NRC staff finds that proposed changes to the Actions of LCOs 3.3.5.3, 3.5.2, and 3.6.1.3 are adequate remedial actions to be taken until each LCO can be met provide protection to the health and safety of the public, thereby, satisfying 10 CFR 50.36(c)(2)(i).

The NRC staff finds that the proposed revisions to the SRs in TSs 3.3.5.2, 3.5.2, 3.6.1.3, and 3.8.2, continue to provide requirements relating to test, calibration, or inspection to assure the necessary quality of systems and components is maintained, that facility operation will be within safety limits, and that the LCOs will be met in accordance with 10 CFR 50.36(c)(3).

Thus, the proposed changes continue to meet the requirements of 10 CFR 50.36(c)(2)(i) and 10 CFR 50.36(c)(3) as discussed in section 3.0 of the NRC staff’s SE of TSTF-582.

3.2 Additional Proposed TS Changes

3.2.1.1 TS 3.3.8.1, Applicability

The licensee stated that TS 3.8.2 does not require automatic start and loading of a diesel generator (DG) within 10 seconds on an ECCS initiation signal or a loss of offsite power signal. Currently, TS 3.3.8.1, “Loss of Power (LOP) Instrumentation,” is applicable in Modes 1, 2, and 3, and when the associated DG is required to be operable by TS 3.8.2. The NRC staff confirmed that TS 3.8.2 no longer requires automatic start and loading of a DG on an LOP signal. The NRC staff finds it acceptable to revise the Applicability of LCO 3.3.8.1 by deleting “When the associated DG is required to be OPERABLE by LCO 3.8.2, ‘AC Sources – Shutdown’,” because the LOP instrumentation that generates the LOP signal does not need to be operable when the DG is required to be operable by TS 3.8.2. Therefore, the NRC staff concludes that the LCO applicability changes will continue to provide for the lowest functional capability or performance levels of equipment required for safe operation of the facility and, therefore, meet the LCO requirements of 10 CFR 50.36(c)(2).

3.2.1.2 SR 3.8.2.1

LCO 3.8.2, "AC Sources - Shutdown," requires one offsite circuit and one DG capable of supplying one division of the onsite Class 1E AC electrical power distribution subsystem(s) required by LCO 3.8.8, "Distribution Systems-Shutdown," to be operable in shutdown conditions. The existing SR 3.8.2.1 lists the TS 3.8.1 SRs that are applicable in shutdown conditions with some exceptions.

TS SR 3.8.1.7 and SR 3.8.1.14 require that the DG starts from standby or hot conditions and achieve required voltage and frequency within 10 seconds and required steady state voltage and frequency ranges. The 10 second start requirement associated with the DG automatic start supports the assumptions in the design basis loss-of-coolant accident (LOCA) analysis. The NRC staff confirmed that 10 second timing is not required during a manual DG start to respond to a draining event, which has a minimum Drain Time of 1 hour. The NRC staff finds that the SRs 3.8.1.7 and 3.8.1.14 testing for the DG's capability to achieve required steady state voltage and frequency ranges will be performed in SR 3.8.1.2 since SR 3.8.1.2 provides the test for this DG capability. Therefore, the NRC staff finds it acceptable to add SRs 3.8.1.7 and 3.8.1.14 to the list of TS 3.8.1 SRs that are not applicable under SR 3.8.2.1.

TS SR 3.8.1.16 states, "Verify interval between each sequenced load block is within $\pm 10\%$ of design interval for each load sequencer timer." This SR verifies the load sequence time interval tolerance between each sequenced load block when loads are sequentially connected to the engineered safety features (ESF) bus by automatic sequencer while the DG is tied to the ESF bus. TS 3.5.2 requires manual starting of the equipment for water injection to respond to a draining event so that the DG will be manually loaded during a draining event. No other postulated events require automatic loading of the DG during shutdown conditions. The NRC staff confirmed that with respect to SR 3.8.1.16, the load sequencers are used for the automatic loading of the DG and are not used during a manual loading of the DG. Therefore, the NRC staff finds it acceptable to add SR 3.8.1.16 to the list of TS 3.8.1 SRs that are not applicable under SR 3.8.2.1.

The NRC staff finds that the proposed changes to revise SR 3.8.2.1 are acceptable because the remaining applicable SRs will continue to demonstrate the operability of the required AC power sources and, as such, ensure the availability of the AC power required to operate the plant in a safe manner and mitigate postulated events during shutdown conditions. Therefore, the NRC staff finds the proposed changes to SR 3.8.2.1 are acceptable because the changes continue to assure that the necessary quality of systems and components are maintained, that facility operation will be within safety limits, and that the associated LCO will continue to be met in accordance with 10 CFR 50.36(c)(3).

3.2.1.3 LCO 3.5.2 Note

Fermi SR 3.5.2.7 requires operating the ECCS subsystem periodically to verify its operability. TSTF-582 added a Note to Fermi SR 3.5.2.7 (and renamed it to SR 3.5.2.6) that permits a subsystem to be credited for operating in normal mode as demonstrating operation of the required ECCS subsystem. As stated in the TSTF-582 justification, "This Note permits crediting the normal operation of a residual heat removal shutdown cooling subsystem to satisfy the SR. The revised SR continues to ensure the ECCS injection/spray subsystem can inject water into the RPV if needed for defense-in-depth while eliminating unnecessary testing."

The NRC staff confirmed that removal of SR 3.5.2.6 by TSTF-582 and the addition of the SR Note to SR 3.5.2.7 (renumbered SR 3.5.2.6) eliminates the need for the LCO Note to consider the ECCS subsystem operable while operating in decay heat removal mode. The NRC staff finds the proposed change to LCO 3.5.2 acceptable because the NOTE of SR 3.5.2.6 will continue to demonstrate the operability of the ECCS subsystem and the associated LCO will continue to be met in accordance with 10 CFR 50.36(c)(3).

3.2.2 Variations

The licensee noted that Fermi TSs have different numbering than STS for the RPV WIC-related TS. The NRC staff finds that the different TS numbering changes are acceptable because they are editorial clarifications and do not substantively change TS requirements.

The licensee noted that Fermi TS contain requirements that differ from the STS on which TSTF-582 was based but are encompassed in the TSTF-582 justification. These differences are described in section 1.2.1 of this SE. The NRC reviewed the differences and determined that the proposed variations continue to meet the intent of TSTF-582 and does not affect the applicability of the Fermi TS to TSTF-582.

The licensee noted that changes in TSTF-582 were incorporated in the Fermi TS as variations during adoption of TSTF-542. Therefore, in some cases, the TSTF-582 changes are not needed. Other changes were added as variations during adoption of TSTF-542 which have been superseded by the requirements in TSTF-582. In some cases, these plant-specific changes are replaced by the TSTF-582 generic requirements. The variations for changes adopted in TSTF-542 are described in section 1.2.2 of this SE. The NRC staff reviewed the proposed changes and determined that they are editorial in nature and do not affect the applicability of TSTF-582 and continues to meet the intent of TSTF-582.

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 April 21, 2023. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes requirements with respect to the installation or use of facility components located within the restricted area as defined in 10 CFR part 20 and changes 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, as published in the *Federal Register* on November 1, 2022 (87 FR 65833), 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: T. Sweat, NRR

Date of Issuance: June 26, 2023

SUBJECT: FERMI UNIT 2 - ISSUANCE OF AMENDMENT NO. 223 REGARDING REVISION OF TECHNICAL SPECIFICATIONS TO ADOPT TSTF-582, "REACTOR PRESSURE VESSEL WATER INVENTORY CONTROL (RPV WIC) ENHANCEMENTS" (EPID L-2022-LLA-0109) DATED JUNE 26, 2023

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