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August 7, 2018
NRC-18-0045

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

Fermi 2 Power Plant
NRC Docket No. 50-341
NRC License No. NPF-43

Subject: Response to NRC Request for Additional Information for License
Amendment Request to Adopt TSTF-542, "Reactor Pressure Vessel
Water Inventory Control"

- References:
- 1) DTE Electric Letter to NRC, "Application to Revise Technical Specifications to Adopt TSTF-542, Reactor Pressure Vessel Water Inventory Control," NRC-17-0067, dated August 31, 2017 (ML17243A422)
 - 2) DTE Electric Letter to NRC, "Response to NRC Request for Additional Information for License Amendment Request to Adopt TSTF-542, Reactor Pressure Vessel Water Inventory Control," NRC-18-0019, dated April 4, 2018 (ML18094A165)
 - 3) DTE Electric Letter to NRC, "Response to NRC Request for Additional Information for License Amendment Request to Adopt TSTF-542, Reactor Pressure Vessel Water Inventory Control," NRC-18-0032, dated May 17, 2018 (ML18138A149)
 - 4) DTE Electric Letter to NRC, "Supplemental Information in Response to NRC Request for Additional Information for License Amendment Request to Adopt TSTF-542, Reactor Pressure Vessel Water Inventory Control," NRC-18-0040, dated June 27, 2018 (ML18178A134)

In Reference 1, DTE Electric Company (DTE) submitted a license amendment request (LAR) to replace existing Technical Specifications (TS) requirements related to "operations with a potential for draining the reactor vessel" (OPDRVs) with new requirements on Reactor Pressure Vessel Water Inventory Control (RPV WIC) to protect Safety Limit 2.1.1.3. In Reference 2, DTE sent a response to a NRC email request for additional information (RAI) from Ms. Sujata Goetz to Mr. Jason Haas dated March 6, 2018 along with supplemental information in support of the LAR. In Reference 3, DTE sent a response to a NRC email RAI from Ms. Sujata Goetz to Mr. Jason Haas dated May 9, 2018. Subsequent to this submittal, supplemental information was identified related to the Reference 3 response. The supplemental information for the RAI response was provided in Reference 4. A RAI from the NRC was sent by email dated July 25, 2018 from Ms. Sujata Goetz to Mr. Jason Haas. DTE's response to the RAI is provided in Enclosure 1.

Enclosure 2 to this letter provides the existing TS pages marked to show the proposed changes. Enclosure 3 provides revised (clean) TS pages. Enclosure 4 provided the existing TS Bases pages marked to show the proposed changes for information only.

No new commitments are being made in this submittal.

Should you have any questions or require additional information, please contact Mr. Scott A. Maglio, Manager – Nuclear Licensing, at (734) 586-5076.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on August 7, 2018



Keith J. Polson
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- Enclosures:
1. Response to NRC Request for Additional Information for License Amendment Request to Adopt TSTF-542, "Reactor Pressure Vessel Water Inventory Control"
 2. Proposed Technical Specification Changes (Mark-Up)
 3. Revised Technical Specification Pages (Clean)
 4. Proposed Technical Specification Bases Changes (Mark-Up) (For Information Only)

USNRC
NRC-18-0045
Page 3

cc: NRC Project Manager
NRC Resident Office
Reactor Projects Chief, Branch 5, Region III
Regional Administrator, Region III
Michigan Public Service Commission
Regulated Energy Division (kindschl@michigan.gov)

**Enclosure 1 to
NRC-18-0045**

**Fermi 2 NRC Docket No. 50-341
Operating License No. NPF-43**

**Response to NRC Request for Additional Information for License Amendment Request to
Adopt TSTF-542, "Reactor Pressure Vessel Water Inventory Control"**

By letter dated August 31, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML17243A422), DTE Electric Company (DTE or the licensee), submitted a license amendment request (LAR) to adopt Technical Specifications Task Force (TSTF) Traveler TSTF-542, "Reactor Pressure Vessel Water Inventory Control," Revision 2, ML16074A448 which changes the technical specifications (TS) for Fermi 2. Your application was also supplemented by letter dated April 4, 2018 (ADAMS Accession No. ML18094A165), May 17, 2018 (ADAMS Accession No. ML18138A149) and June 27, 2018 (ADAMS Accession No. ML18178A134).

RAI EICB-4

In Enclosure 2 of the LAR, the licensee proposed to adopt TS 3.3.5.3 Condition D (equivalent to TSTF-542 Standard Technical Specification (STS) 3.3.5.2 Condition D), which requires that an inoperable instrumentation channel be restored to operable status within 24 hours. It would apply to the manual initiation functions for core spray (CS) and low pressure coolant injection (LPCI) subsystem.

The licensee stated in its letter dated April 4, 2018, in response to RAI EICB -2:

Fermi 2 does not have the capability to actuate an entire subsystem of or LPCI by a single manual pushbutton, as described in the response to [question number] RAI EICB-1. Instead, a CS or LPCI subsystem is actuated by manually controlling each individual component of that subsystem in accordance with approved plant procedures. In this context, the phrase "manual initiation channel" in the proposed TS Bases page B 3.3.5.3-3 is used to collectively describe all of the individual components required to manually initiate a subsystem and is not intended to imply that pushing one or two buttons actuates an entire subsystem.

Based on this information, Fermi 2's design does not align with the TSTF-542 STS Bases 3.3.5.2 design description of manual initiation instrumentation, which assumes that an entire ECCS subsystem can be started with the press of one button.

Furthermore, TSTF-542 STS 3.3.5.2 Bases for Required Action D.1 states, in part:

If a manual initiation function is inoperable, the ECCS subsystem pumps can be started manually and the valves can be opened manually, but this is not the preferred condition.

The 24 hour Completion Time was chosen to allow time for the operator to evaluate and repair any discovered inoperabilities. The Completion Time is appropriate given the ability to manually start the ECCS pumps and open the injection valves and to manually ensure the pump does not overheat.

Since the Fermi 2 design does not have the capability to start an entire CS or LPCI subsystem, the individual component controls would be the only method to inject water. Should any of those controls become inoperable, there would be no backup means to inject water using the

associated required ECCS subsystem, rendering it inoperable as well. Proposed Fermi 2 TS 3.3.5.3 Condition D would allow the plant to remain in this condition, without injection capability, for up to 24 hours, which is a non-conservative TS action considering the assumptions described in the STS.

Please provide technical justification for why proposed Fermi 2 TS 3.3.5.3 Condition D would be appropriate for the CS and LPCI manual initiation functions, or revise the TS changes as necessary.

RESPONSE

DTE proposes to revise Technical Specification (TS) 3.3.5.3, as indicated in Enclosures 2 and 3, to require immediately declaring the associated required ECCS subsystem inoperable if the manual initiation function by means of individual component controls is inoperable. As described in RAI EICB-2, the Fermi design does not have the capability to actuate an entire subsystem of LPCI or CS by a single manual pushbutton, and instead relies on individual component controls to manually actuate a subsystem. In Modes 4 and 5, should any of those controls become inoperable, there would be no backup means to inject water using the associated required ECCS subsystem, rendering it inoperable as well. Therefore, the TS 3.3.5.3, Reactor Pressure Vessel (RPV) Water Inventory Control Instrumentation, Condition D Completion Time, referenced from Table 3.3.5.3-1 for the Core Spray and Low Pressure Coolant Injection manual initiation functions, is being revised from 24 hours to an immediate action to declare the associated low pressure ECCS injection/spray subsystem inoperable. Since failure to meet the Required Action and Completion Time of TS 3.3.5.3 Condition C will also result in declaring the associated low pressure ECCS injection/spray subsystem inoperable with an immediate Completion Time, Condition E is merged with Condition D to minimize duplicate condition actions. The associated TS Bases has similarly been revised as indicated in Enclosure 4 to clarify that if a manual initiation function is inoperable, the associated low pressure ECCS injection/spray subsystem may be incapable of performing the intended function, and must be declared inoperable immediately. The change in TS 3.3.5.3 Condition D Completion Time from 24 hours to immediately is a conservative change consistent with plant design and is an acceptable variation from TSTF-542, Revision 2.

As a result of reviewing the TS Bases as part of this RAI response, DTE proposes to revise the TS Bases for TS 3.3.5.3 Functions 1.b and 2.b Manual Initiation to delete the paragraph that states, "The Manual Initiation Function is not assumed in any accident or transient analyses in the UFSAR. However, the Function is retained for overall redundancy and diversity of the low pressure ECCS function as required by the NRC in the plant licensing basis." The paragraph was carried over from the current Fermi TS Bases (TS B 3.3.5.1 Functions 1.d & 2.h), but is not included in TSTF-542, Revision 2.

The markups in Enclosures 2 and 4 only highlight the new changes from this RAI response. Enclosure 3 shows all changes, including previous RAI responses, as clean.

DTE has reviewed the information supporting a finding of No Significant Hazards Consideration and the Environmental Consideration provided to the NRC in Sections 3.1 and 4.0 of Enclosure 1 of the Reference 1 LAR. The information provided in this letter does not affect the bases for concluding that the proposed license amendment does not involve a significant hazards consideration. In addition, the information provided in this letter does not affect the bases for concluding that neither an environmental impact statement nor an environmental assessment needs to be prepared in connection with the proposed amendment.

**Enclosure 2 to
NRC-18-0045**

**Fermi 2 NRC Docket No. 50-341
Operating License No. NPF-43**

**Response to NRC Request for Additional Information for License Amendment Request to
Adopt TSTF-542, “Reactor Pressure Vessel Water Inventory Control”**

Proposed Technical Specification Changes (Mark-Up)

Revised Page
3.3-49a (3.3.5.3 RPV Water Inventory Control Instrumentation)

3.3 INSTRUMENTATION

3.3.5.3 Reactor Pressure Vessel (RPV) Water Inventory Control Instrumentation

LCO 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 Enter the Condition referenced in Table 3.3.5.3-1 for the channel.	Immediately
B. As required by Required Action A.1 and referenced in Table 3.3.5.3-1.	B.1 Declare associated penetration flow path(s) incapable of automatic isolation. <u>AND</u> B.2 Calculate DRAIN TIME.	Immediately Immediately
C. As required by Required Action A.1 and referenced in Table 3.3.5.3-1.	C.1 Place channel in trip.	1 hour
D. As required by Required Action A.1 and referenced in Table 3.3.5.3-1. <u>OR</u> <u>Required Action and associated Completion Time of Condition C not met.</u>	D.1 <u>Declare associated low pressure ECCS injection/spray subsystem inoperable.</u> <div>Revise per NRC-18-0045</div>	<u>Immediately</u> <div>Delete per NRC-18-0045</div>
E. Required Action and associated Completion Time of Condition C or D not met.	E.1 Declare associated low pressure ECCS injection/spray subsystem inoperable.	Immediately

**Enclosure 3 to
NRC-18-0045**

**Fermi 2 NRC Docket No. 50-341
Operating License No. NPF-43**

**Response to NRC Request for Additional Information for License Amendment Request to
Adopt TSTF-542, “Reactor Pressure Vessel Water Inventory Control”**

Revised Technical Specification Changes (Clean)

Revised Page

3.3-49a (3.3.5.3 RPV Water Inventory Control Instrumentation)

3.3-49b (3.3.5.3 RPV Water Inventory Control Instrumentation)

3.3 INSTRUMENTATION

3.3.5.3 Reactor Pressure Vessel (RPV) Water Inventory Control Instrumentation

LCO 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 Enter the Condition referenced in Table 3.3.5.3-1 for the channel.	Immediately
B. As required by Required Action A.1 and referenced in Table 3.3.5.3-1.	B.1 Declare associated penetration flow path(s) incapable of automatic isolation.	Immediately
	<u>AND</u> B.2 Calculate DRAIN TIME.	Immediately
C. As required by Required Action A.1 and referenced in Table 3.3.5.3-1.	C.1 Place channel in trip.	1 hour

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. As required by Required Action A.1 and referenced in Table 3.3.5.3-1. <u>OR</u> Required Action and associated Completion Time of Condition C not met.	D.1 Declare associated low pressure ECCS injection/spray subsystem inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

-----NOTE-----
Refer to Table 3.3.5.3-1 to determine which SRs apply for each ECCS Function.

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
SR 3.3.5.3.3 Perform CHANNEL FUNCTIONAL TEST.	In accordance with the Surveillance Frequency Control Program

**Enclosure 4 to
NRC-18-0045**

**Fermi 2 NRC Docket No. 50-341
Operating License No. NPF-43**

**Response to NRC Request for Additional Information for License Amendment Request to
Adopt TSTF-542, “Reactor Pressure Vessel Water Inventory Control”**

**Proposed Technical Specification Bases Changes (Mark-Up)
(For Information Only)**

Revised Page

3.3.5.3-3 (B 3.3.5.3 RPV Water Inventory Control Instrumentation)
3.3.5.3-6 (B 3.3.5.3 RPV Water Inventory Control Instrumentation)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

The Allowable Value is low enough to prevent overpressuring the equipment in the low pressure ECCS.

The four channels of Reactor Steam Dome Pressure - Low Function are required to be OPERABLE in MODES 4 and 5 when ECCS manual initiation is required to be OPERABLE by LCO 3.5.2.

1.b, 2.b. Manual Initiation

The Manual Initiation channel provides manual initiation capability by means of individual component controls. There is one manual initiation channel for each of the CS and LPCI subsystems (i.e., four for CS and four for LPCI).

Delete Per
NRC-18-0045

~~The Manual Initiation Function is not assumed in any accident or transient analyses in the UFSAR. However, the Function is retained for overall redundancy and diversity of the low pressure ECCS function as required by the NRC in the plant licensing basis.~~

There is no Allowable Value for this Function since the channels are mechanically actuated based solely on the position of the individual components. Each channel of the Manual Initiation Function is only required to be OPERABLE in MODES 4 and 5 when the associated ECCS subsystems are required to be OPERABLE per LCO 3.5.2.

RHR System Isolation3.a - Reactor Vessel Water Level - Low, Level 3

The definition of DRAIN TIME allows crediting the closing of penetration flow paths that are capable of being isolated by valves that will close automatically without offsite power prior to the RPV water level being equal to the TAF when actuated by RPV water level isolation instrumentation. The Reactor Vessel Water Level - Low, Level 3 Function associated with RHR System isolation may be credited for automatic isolation of penetration flow paths associated with the RHR System.

Reactor Vessel Water Level - Low, Level 3 signals are initiated from four level transmitters that sense the difference between the pressure due to a constant column of water (reference leg) and the pressure due to the actual water level (variable leg) in the vessel. While four channels (two channels per trip system) of the Reactor Vessel Water Level - Low, Level 3 Function are available, only two channels (both in the same trip system) are required to be OPERABLE.

BASES

ACTIONS (continued)

If a manual initiation function is inoperable, the associated low pressure ECCS injection/spray subsystem may be incapable of performing the intended function, and must be declared inoperable immediately.

Replace Per
NRC-18-0045

D.1

There is a risk that the associated low pressure ECCS pump could overheat when the pump is operating and the associated injection valve is not fully open. In this condition, the operator can take manual control of the pump and the injection valve to ensure the pump does not overheat. If a manual initiation function is inoperable, the ECCS subsystem pumps can be started manually and the valves can be opened manually, but this is not the preferred condition.

The 24 hour Completion Time was chosen to allow time for the operator to evaluate and repair any discovered inoperabilities. The Completion Time is appropriate given the ability to manually start the ECCS pumps and open the injection valves and to manually ensure the pump does not overheat.

E.1

With the Required Action and associated Completion Time of Condition C or D not met, the associated low pressure ECCS injection/spray subsystem may be incapable of performing the intended function, and must be declared inoperable immediately.

Delete per
NRC-18-0045

SURVEILLANCE
REQUIREMENTS

As noted in the beginning of the SRs, the SRs for each RPV Water Inventory Control instrument Function are found in the SRs column of Table 3.3.5.3-1.

SR 3.3.5.3.1

Performance of the CHANNEL CHECK ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between the instrument channels could be an indication of excessive instrument drift in one of the channels or something even more serious. A CHANNEL CHECK guarantees that undetected outright channel failure is limited; thus, it is key to verifying the instrumentation continues to operate properly between each CHANNEL FUNCTIONAL TEST.

Agreement criteria are determined by the plant staff, based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the instrument has drifted outside its limit.

The Surveillance Frequency is controlled under the Surveillance Frequency Control Program.