



March 14, 2024
NRC-24-0019

TS 5.6.6
10 CFR 50.46

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: Submittal of 2023 Safety Relief Valve Challenge Report, Main Steam Bypass Lines Report, and ECCS Cooling Performance Evaluation Model Changes or Errors Report

The Fermi 2 Technical Specifications (TS) contain a requirement for submitting an annual report for safety relief valve challenges (TS 5.6.6). Enclosure 1 provides the Safety Relief Valve Challenge Report for 2023.

Enclosure 2 provides the Service Life of the Main Steam Bypass Lines Report for 2023. This satisfies the commitment stated in Detroit Edison's letter to the NRC dated November 7, 1986 (VP-86-0154).

Enclosure 3 provides the annual Emergency Core Cooling System (ECCS) Cooling Performance Evaluation Model Changes or Errors Report. This report is provided in accordance with 10 CFR 50.46(a)(3)(ii).

No new commitments are being made in this submittal.

Should you have any questions or require additional information, please contact me at (734) 586-4772.

Sincerely,

A handwritten signature in blue ink, appearing to read "Eric Frank".

Eric Frank
Manager - Nuclear Licensing

Enclosures: 1. Safety Relief Valve Challenge Report 2023
2. Service Life of Main Steam Bypass Lines Report 2023
3. ECCS Cooling Performance Evaluation Model Changes or Errors Report

cc: NRC Project Manager
NRC Resident Office
Regional Administrator, Region III

**Enclosure 1 to
NRC-24-0019**

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

Safety Relief Valve Challenge Report 2023

Safety Relief Valve Challenges (January 1, 2023 to December 31, 2023)

There were no instances in 2023 where reactor pressure was high enough to require Safety Relief Valve (SRV) actuation. There were also no instances in 2023 where an SRV actuation was demanded by an automatic logic system.

**Enclosure 2 to
NRC-24-0019**

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

Service Life of Main Steam Bypass Lines Report 2023

Service Life of Main Steam Bypass Lines (January 1, 2023 to December 31, 2023)

In accordance with Detroit Edison's letter to the NRC dated November 7, 1986 (VP-86-0154), the cumulative time the main steam bypass lines are operated with the bypass valves between 30 and 45 percent open will be reported annually. A cumulative value of 100 days is not to be exceeded, for a calendar year, without prior NRC notification.

As discussed in Detroit Edison's letter number VP-86-0154, the bypass lines are acceptable for safe operation when operated within the 100-day constraint.

The main steam bypass lines annual usage for 2023 is 0.17 days. As of December 31, 2023, the cumulative usage is 50.37 days.

**Enclosure 3 to
NRC-24-0019**

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

ECCS Cooling Performance Evaluation Model Changes or Errors Report

Emergency Core Cooling System (ECCS) Cooling Performance Evaluation Model – Analysis of Record

On April 8, 2020, DTE Energy submitted a re-analysis of the Loss of Coolant Accident (LOCA) using TRACG-LOCA (Reference 1). This re-analysis established a new licensing basis Peak Clad Temperature (PCT) of 1980°F for GE14 fuel and 2150°F for GNF3 fuel which are both associated with the limiting small break LOCA.

ECCS Cooling Performance Evaluation Model Changes or Errors

Since the time of the submittal of the analysis of record identified above, General Electric - Hitachi (GEH) and Global Nuclear Fuel (GNF) have issued the following notifications which indicated that changes had been made in the ECCS-LOCA analyses inputs that affect Fermi 2.

2020-01	April 14, 2020	Reference 2
2021-01	February 18, 2021	Reference 3
2021-02	February 18, 2021	Reference 4
2021-04	July 06, 2021	Reference 5
2021-08	October 14, 2021	Reference 6
2021-09	October 14, 2021	Reference 7

A tabulated summary of the impacts of all errors is provided below.

Current LOCA Model Assessment

Description	GE14 PCT	GNF3 PCT
10CFR 50.46 Baseline Licensing Basis PCT (Reference 1)	PCT=1980°F	PCT=2150°F
10 CFR 50.46 Notification Letter 2020-01 dated April 14, 2020, PRIME Coding Errors for Zircaloy Irradiation Growth and Zr Barrier Thermal Conductivity as Input to ECCS LOCA Analyses (Reference 2)	$\Delta\text{PCT} = 0^\circ\text{F}$	Not applicable to GNF3 fuel
10 CFR 50.46 Notification Letter 2021-01 dated February 18, 2021, Error in Fuel Pellet to Plenum Spring Conductance (Reference 3)	$\Delta\text{PCT} = 0^\circ\text{F}$	Not applicable to GNF3 fuel
10 CFR 50.46 Notification Letter 2021-02 dated February 18, 2021, Discrepancy in Inner Cladding Surface Roughness (Reference 4)	$\Delta\text{PCT} = 0^\circ\text{F}$	Not applicable to GNF3 fuel
10 CFR 50.46 Notification Letter 2021-04 dated July 06, 2021, Noncondensable Gas Error in Zero Cell Side Branch (Reference 5)	$\Delta\text{PCT} = 0^\circ\text{F}$	$\Delta\text{PCT} = 0^\circ\text{F}$
10 CFR 50.46 Notification Letter 2021-08 dated October 14, 2021, Incorrect Upper Plenum Volume (Reference 6)	$\Delta\text{PCT} = 0^\circ\text{F}$	$\Delta\text{PCT} = 0^\circ\text{F}$

Description	GE14 PCT	GNF3 PCT
10 CFR 50.46 Notification Letter 2021-09 dated October 14, 2021, TRACG04P Version 4.2.76.1 (Reference 7)	$\Delta\text{PCT} = 0^{\circ}\text{F}$	$\Delta\text{PCT} = 0^{\circ}\text{F}$
Net PCT	PCT=1980°F	PCT=2150°F

References:

1. DTE Letter to USNRC, "Submittal of Plant Specific Emergency Core Cooling System (ECCS) Evaluation Model Reanalysis," NRC-20-0010, dated April 8, 2020 (ML20100B567)
2. General Electric-Hitachi, "10 CFR 50.46 Notification Letter 2020-01," dated April 14, 2020.
3. General Electric-Hitachi, "10 CFR 50.46 Notification Letter 2021-01," dated February 18, 2021.
4. General Electric-Hitachi, "10 CFR 50.46 Notification Letter 2021-02," dated February 18, 2021.
5. General Electric-Hitachi, "10 CFR 50.46 Notification Letter 2021-04," dated July 06, 2021.
6. General Electric-Hitachi, "10 CFR 50.46 Notification Letter 2021-08," dated October 14, 2021.
7. General Electric-Hitachi, "10 CFR 50.46 Notification Letter 2021-09," dated October 14, 2021.