Peter Dietrich
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DTE

April 4, 2022
NRC-22-0013

10 CFR 50.73

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: Licensee Event Report (LER) No. 2022-001

Pursuant to 10CFR50.73(a)(2)(iv)(A), DTE Electric Company (DTE) is submitting LER No. 2022-001, Reactor Scram on Low Reactor Pressure Vessel Level

No new commitments are being made in this submittal.

Should you have any questions or require additional information, please contact Mr. Ertman III Bennett III, Manager – Nuclear Licensing, at (734) 586-4273.

Sincerely,

Peter Dietrich
Senior Vice President and Chief Nuclear Officer

Enclosure: Licensee Event Report No. 2022-001, Reactor Scram on Low Reactor Pressure Vessel Level

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

Enclosure to
NRC-22-0013

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

Licensee Event Report (LER) No. 2022-001
Reactor Scram on Low Reactor Pressure Vessel Level

NRC FORM 366 (08-2020) U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

(See Page 3 for required number of digits/characters for each block)
(See NUREG-1022, R.3 for instruction and guidance for completing this form http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/)

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 08/31/2023

1. Facility Name	2. Docket Number	3. Page
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4. Title
Reactor Scram on Low Reactor Pressure Vessel Level

5. Event Date			6. LER Number			7. Report Date			8. Other Facilities Involved	
Month	Day	Year	Year	Sequential Number	Revision No.	Month	Day	Year	Facility Name	Docket Number
02	04	2022	2022	- 001 -	00	04	04	2022	N/A	05000
									Facility Name: N/A	Docket Number: 05000

9. Operating Mode	10. Power Level
1	57.9

11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: *(Check all that apply)*

10 CFR Part 20	☐ 20.2203(a)(2)(vi)	☐ 50.36(c)(2)	☑ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(A)	**10 CFR Part 73**
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.69(g)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(4)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(i)	**10 CFR Part 21**	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	☐ 73.77(a)(1)(i)
☐ 20.2203(a)(2)(ii)	☐ 21.2(c)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)	☐ 73.77(a)(2)(i)
☐ 20.2203(a)(2)(iii)	**10 CFR Part 50**	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)	☐ 73.77(a)(2)(ii)
☐ 20.2203(a)(2)(iv)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)	
☐ 20.2203(a)(2)(v)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)	

☐ OTHER (Specify here, in abstract, or NRC 366A).

12. Licensee Contact for this LER

Licensee Contact	Phone Number (Include area code)
Ertman L. Bennett III – Manager, Nuclear Licensing	734-586-4273

13. Complete One Line for each Component Failure Described in this Report

Cause	System	Component	Manufacturer	Reportable to IRIS		Cause	System	Component	Manufacturer	Reportable to IRIS
N/A	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A

14. Supplemental Report Expected		15. Expected Submission Date	Month	Day	Year
☑ No	☐ Yes (If yes, complete 15. Expected Submission Date)				

16. Abstract (Limit to 1560 spaces, i.e., approximately 15 single-spaced typewritten lines)

At 1700, on February 4, 2022 the reactor automatically scrammed due to low reactor water level. The low reactor water level occurred as a result of a loss of feedwater while removing the south reactor feed pump (SRFP) from service. The SRFP was being removed from service per operating procedures as the plant was being shutdown to enter a refueling outage. When reducing speed on the SRFP, the north reactor feed pump (NRFP) increased speed and tripped on low suction pressure. The SRFP was unable to maintain reactor water level as the pump was in manual control at a reduced speed. The reactor water level was restored and then maintained at normal level following the scram using the condensate/feedwater system. Decay heat was removed through the main steam system to the main condenser. All control rods fully inserted into the reactor core. The scram was not complex. A Root Cause Evaluation is being conducted after completion of the refueling outage.

LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

(See NUREG-1022, R.3 for instruction and guidance for completing this form http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/)

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Fermi 2	05000- 341	2022	- 001	- 0

NARRATIVE

INITIAL PLANT CONDITIONS

Mode – 1
Reactor Power – 57.9%

There were no structures, systems, or components that were inoperable at the start of this event that contributed to this event. However, the plant had known valve leak-by in the Feedwater system downstream of the RFPs that may have contributed to the Feedwater system's response.

DESCRIPTION OF THE EVENT

At 1700 on February 4, 2022 the plant was in Mode 1 operating at 57.9% reactor power. Operations personnel were in the process of shutting down the plant to commence the refueling outage (RF 21). While lowering speed on the south reactor feed pump (SRFP) [SJ] to remove it from service the north reactor feed pump (NRFP) tripped on low suction pressure [JK] and reactor water level decreased to Level 3, the reactor trip [JD] set point of 173 inches above the top of active fuel (TAF) [AC]. Reactor water level was recovered initially by the SRFP. The SRFP was later tripped manually due to increasing vibration levels. The Reactor Pressure Vessel (RPV) pressure was lowered using the pressure regulator to approximately 700 psig to maintain RPV injection with the heater feed pumps [SK]. Main Steam Isolation Valves remained open and decay heat was removed through the main steam system to the main condenser [SG].

The following actuation signals were generated with the reactor water level trip (Level 3), Automatic Depressurization System (ADS) received a permissive signal and Traversing In-core Probes (TIPs) received a retraction signal however TIPs did not move as they were already retracted. The following Primary Containment isolation signals resulted from RPV Level 3 signal: Group 4 RHR Shutdown Cooling and Head Spray (already isolated), Group 13 Drywell Sumps isolated and Group 15 Traversing In-Core Probe System (already isolated). All actuations and isolations occurred as expected. All systems responded as expected. No Emergency Core Cooling Systems (ECCS) actuated or were required.

Due to the reactor protection system actuation while critical, this event was reported as a non-emergency notification (EN 55730) per 10 CFR 50.72(b)(2)(iv)(B). The low reactor water level also caused primary containment [JM] (Groups 4, 13 and 15) isolation signals. The Primary Containment Group isolations notification was reported under 10 CFR 50.72(b)(3)(iv)(A). This Licensee Event Report (LER) is made per 10 CFR 50.73(a)(2)(iv)(A) any event or condition that results in actuation of the reactor protection system when the reactor is critical and the associated group isolations that occurred.

SIGNIFICANT SAFETY CONSEQUENCES AND IMPLICATIONS

Reactor water level decreased to the Level 3 reactor trip set point of 173 inches above the Top of Active Fuel (TAF) [AC]. Reactor water level was restored through the Feedwater system prior to reaching level 2 setpoint of 111 inches above TAF. The lowest reactor water level observed during the transient was 117.3 inches above TAF. No Emergency Core Cooling System [JE] actuated or was required to actuate for this scram. High Pressure Coolant Injection [BJ], Reactor Core Isolation Cooling [BN] and Automatic Depressurization System [JC] were available.

The Updated Final Safety Analysis Report (UFSAR) was reviewed for applicable transients similar to this event and this event is bounded by existing accident analysis.

The reactor tripped on low water level and the plant responded as designed. As such, there was no impact to the health and safety of the public or plant personnel.

LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

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1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
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NARRATIVE

CAUSE OF THE EVENT

The reactor scram was caused by low reactor water level caused due to the NRFP trip on low suction pressure. The SRFP was unable to immediately recover RPV level due to being in Manual control.

The initial reactor scram investigation discovered some conditions that may have contributed to the Feedwater system response. Those are the System Operating Procedure (SOP) 23.107 "Reactor Feedwater and Condensate Systems," contained insufficient guidance for impact of low RFP suction pressure when shutting down a RFP and valve leak in the Feedwater system downstream of the RFPs may have contributed. A Root Cause Evaluation is being conducted after completion of the refueling outage. The Root Cause will determine whether the feedwater system design and response were contributing factors to the reactor trip.

CORRECTIVE ACTIONS

The leaking Feedwater Heater Number 6 Outlet to Condenser Isolation Motor Operated valve that may have contributed to the Feedwater system's response is being cut out and replaced during the refueling outage.

A Root Cause Evaluation is being conducted after completion of the refueling outage.

PREVIOUS OCCURRENCES

This plant shutdown was compared to two previous plant shutdowns performed when entering Forced Outage 21-01 and Refueling Outage 19. A review of these two prior plant shutdowns determined that the RFP shutdown occurred at lower reactor power levels and higher RFP suction pressures. These similar prior plant shutdowns did not result in a reactor trip or the RFP trip.