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DTE Energy

10 CFR 50.73

February 23, 2011
NRC-11-0003

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington D C 20555-0001

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

Subject: Licensee Event Report (LER) No. 2010-004

Pursuant to 10 CFR 50.73(a)(2)(v)(D), Detroit Edison is submitting the enclosed LER No. 2010-004. This LER documents the December 28, 2010 loss of the High Pressure Coolant Injection System due to an inoperable minimum flow valve.

No commitments are being made in this LER.

Should you have any questions or require additional information, please contact Mr. Rodney W. Johnson of my staff at (734) 586-5076.

Sincerely,

J. Plona

Enclosure

cc: NRC Project Manager
NRC Resident Office
Reactor Projects Chief, Branch 4, Region III
Regional Administrator, Region III
Supervisor, Electric Operators,
Michigan Public Service Commission

NRC FORM 366 (10-2010) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: No. 3150-0104 Expires 10/31/2013

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA/Privacy Service Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects.resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

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4. TITLE

High Pressure Coolant Injection System Inoperable Due To Inoperable Minimum Flow Valve

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
12	28	2010	2010	- 004 -	00	02	23	2011		05000
									FACILITY NAME	DOCKET NUMBER 05000

9. OPERATING MODE

1

10. POWER LEVEL

75

11. THIS REPORT SUBMITTED PURSU ANT TO THE REQUIREMENTS OF 10 CFR§: *(Check all that apply)*

☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ OTHER
☐ 20.2203(a)(2)(vi)	☐ 50.73(a)(2)(i)(B)	☒ 50.73(a)(2)(v)(D)	Specify in abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THS LER

FACILITY NAME	TELEPHONE NUMBER (Include Area Code)
Rodney W. Johnson – Manager, Nuclear Licensing	(734) 586 - 5076

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
B	BJ	CNTR	G082	Yes					

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

ABSTRACT *(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)*

On December 28, 2010, during the HPCI turbine trip portion of a HPCI surveillance test, the HPCI minimum flow valve open and close indicating lights in the control room began blinking simultaneously. After a short duration (approximately 1 minute) the blinking faded and both indicators went out at 1220 EST. The HPCI minimum flow valve did not fully close as expected. Upon discovery of the problem and performance of minor troubleshooting, Operations determined that the ability of the HPCI minimum flow valve to perform its intended function was unreliable, and the valve was declared inoperable at 1220 EST. System troubleshooting, diagnostic testing, and analysis were performed, and components were identified that could be responsible for the problem. These components were replaced. Post maintenance testing was successfully completed on December 30, 2010 at 1027 EST. The HPCI minimum flow valve was closed, the system returned to service, and the LCO cleared December 30, 2010 at 1042 EST. Subsequent evaluation determined that the valve failure was caused by the close contactor, auxiliary contact alignment or high resistance, or high resistance connections. Those problems were corrected prior to returning HPCI to service. The safety consequences of this event were evaluated and determined to be low.

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NARRATIVE

Initial Plant Conditions:

Mode 1
Reactor Power 75 percent

Description of the Event

On December 28, 2010 at approximately 0950 EST the quarterly High Pressure Coolant Injection (HPCI) [BJ] system surveillance procedure was released for performance. The system and the minimum flow valve (E4150F012) performed as expected during the startup of the HPCI System.

During the HPCI turbine trip portion of the surveillance, however, the HPCI minimum flow valve open and close indicating lights in the control room began blinking simultaneously. After a short duration (approximately 1 minute) the blinking faded and both indicators went out at 1220 EST. The HPCI minimum flow valve did not fully close as expected. Operations manually operated and closed the valve. Upon discovery of the problem and performance of minor troubleshooting, Operations determined that the ability of the HPCI minimum flow valve to perform its intended function was unreliable, and the valve was declared inoperable at 1220 EST. With an inoperable minimum flow valve, the system may not have been able to perform its intended function since the valve is relied upon for pump protection under low flow and high discharge pressure conditions that accompany system startup.

System troubleshooting, diagnostic testing, and analysis were performed, and a number of components were identified that could be responsible for the problem. These components were replaced. Post maintenance testing was successfully completed on December 30, 2010 at 1027 EST. The HPCI minimum flow valve was closed, and the system returned to service on December 30, 2010 at 1042 EST.

Significant Safety Consequences and Implications

The HPCI system, a single train safety system, was rendered inoperable when the operation of the HPCI minimum flow valve was determined to be unreliable and the valve was declared inoperable. The purpose of the HPCI system is to provide emergency core cooling in the event of an accident involving loss of coolant from a small break. Reactor steam is used to drive the HPCI turbine, which in turn drives the main and booster pumps to provide a source of high pressure water to the reactor. The Reactor Core Isolation Cooling [BN] and Standby Feedwater [SJ] systems remained available for high pressure injection in the event of an emergency. Additionally, the Automatic Depressurization System [JE] was available to reduce reactor pressure to within the capabilities of the low pressure Emergency Core Cooling Systems.

This event resulted in approximately 46-hours where HPCI was inoperable. Technical Specification 3.5.1 allows HPCI to be taken out of service for planned outages for up to 14 days. This risk increase associated with HPCI being out of service for approximately 46-hours has been evaluated by the Probabilistic Safety Analysis (PSA) group and determined to be low.

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This report is made in accordance with 10 CFR 50.73(a)(2)(v)(D), for any event or condition that could have prevented the fulfillment of a safety function of structures or systems that are needed to mitigate the consequences of an accident. An eight-hour non-emergency notification was made pursuant to 10 CFR 50.72(b)(3)(v)(D) as a condition that at the time of discovery could have prevented the fulfillment of a safety function to mitigate the consequences of an accident based on loss of a single train safety system (EN 46515).

Cause of the Event

A number of potential causes were identified related to the HPCI minimum flow valve. The potential causes that were not ruled out by troubleshooting and failure analysis were the close contactor, auxiliary contact alignment or high resistance, and high resistance connections (power fuse clip, loose leads).

Corrective Actions

The close contactor was replaced. The auxiliary contacts were removed, inspected and cleaned, and proper operation verified following installation. Circuit leads were inspected and tightened, and power fuse tightness verified during fuse replacement. This event has been documented in the Fermi 2 Corrective Action Program and additional actions may be taken as determined by the program.

Additional Information

A. Failed Component:

Component: Contactor
Function: Controls power to the valve actuator motor
Manufacturer: General Electric
Model Number: CR305T026
Failure Cause: Internal contactor failure

B. Previous LERs on Similar Problems:
There are no other LERs on similar problems noted within the past five years