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DTE Energy



10 CFR 50.73

January 26, 2009
NRC-09-0003

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. 2008-005

Pursuant to 10 CFR 50.73(a)(2)(v)(D), Detroit Edison is submitting the enclosed LER No. 2008-005. This LER documents the December 4, 2008 loss of the High Pressure Coolant Injection System safety function due to closure of a steam supply valve in accordance with Technical Specification requirements.

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,



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

JE22
NR

LICENSEE EVENT REPORT (LER)

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

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 Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@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.

1. FACILITY NAME
Fermi 2

2. DOCKET NUMBER
05000341

3. PAGE
1 OF 3

4. TITLE
Loss of High Pressure Coolant Injection System Safety Function Due to Closure of Steam Supply Valve

5. EVENT DATE
MONTH DAY YEAR
12 04 2008

6. LER NUMBER
YEAR SEQUENTIAL NUMBER REV NO
08 - 005 - 00

7. REPORT DATE
MONTH DAY YEAR
01 26 2009

8. OTHER FACILITIES INVOLVED
FACILITY NAME DOCKET NUMBER
FACILITY NAME DOCKET NUMBER
05000
05000

9. OPERATING MODE
1

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

- | | | | |
|---|---|---|---|
| <input type="checkbox"/> 20.2201(b) | <input type="checkbox"/> 20.2203(a)(3)(i) | <input type="checkbox"/> 50.73(a)(2)(i)(C) | <input type="checkbox"/> 50.73(a)(2)(vii) |
| <input type="checkbox"/> 20.2201(d) | <input type="checkbox"/> 20.2203(a)(3)(ii) | <input type="checkbox"/> 50.73(a)(2)(ii)(A) | <input type="checkbox"/> 50.73(a)(2)(viii)(A) |
| <input type="checkbox"/> 20.2203(a)(1) | <input type="checkbox"/> 20.2203(a)(4) | <input type="checkbox"/> 50.73(a)(2)(ii)(B) | <input type="checkbox"/> 50.73(a)(2)(viii)(B) |
| <input type="checkbox"/> 20.2203(a)(2)(i) | <input type="checkbox"/> 50.36(c)(1)(i)(A) | <input type="checkbox"/> 50.73(a)(2)(iii) | <input type="checkbox"/> 50.73(a)(2)(ix)(A) |
| <input type="checkbox"/> 20.2203(a)(2)(ii) | <input type="checkbox"/> 50.36(c)(1)(ii)(A) | <input type="checkbox"/> 50.73(a)(2)(iv)(A) | <input type="checkbox"/> 50.73(a)(2)(x) |
| <input type="checkbox"/> 20.2203(a)(2)(iii) | <input type="checkbox"/> 50.36(c)(2) | <input type="checkbox"/> 50.73(a)(2)(v)(A) | <input type="checkbox"/> 73.71(a)(4) |
| <input type="checkbox"/> 20.2203(a)(2)(iv) | <input type="checkbox"/> 50.46(a)(3)(ii) | <input type="checkbox"/> 50.73(a)(2)(v)(B) | <input type="checkbox"/> 73.71(a)(5) |
| <input type="checkbox"/> 20.2203(a)(2)(v) | <input type="checkbox"/> 50.73(a)(2)(i)(A) | <input type="checkbox"/> 50.73(a)(2)(v)(C) | <input type="checkbox"/> OTHER |
| <input type="checkbox"/> 20.2203(a)(2)(vi) | <input type="checkbox"/> 50.73(a)(2)(i)(B) | <input checked="" type="checkbox"/> 50.73(a)(2)(v)(D) | |

10. POWER LEVEL
100%

Specify in abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME TELEPHONE NUMBER (Include Area Code)
Rodney W. Johnson – Manager, 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	RLY	S188	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 04, 2008 at 17:35 EST during High Pressure Coolant Injection (HPCI) system steam line warming performed as part of a planned system pump and valve surveillance test, the HPCI Steam Supply Outboard Isolation Valve Bypass Valve (E4150F600) position indication lights did not function as expected. Upon discovery of the problem, Operations determined that the ability of the E4150F600 valve to close on a containment isolation signal was unreliable, and declared the valve inoperable. Containment Isolation Limiting Condition for Operation (LCO) 3.6.1.3 Condition A was entered for the E4150F600 valve, and the required action to isolate the penetration within four hours was completed on December 04, 2008 at 21:18 EST which rendered the HPCI System inoperable and unable to perform its intended safety function. A 14-day LCO was entered at that time for an inoperable HPCI System per LCO 3.5.1. System troubleshooting, diagnostic testing, and analysis were performed. The cause of the event was attributed to degraded contacts in a control relay (CR1), and it was replaced. Post maintenance testing was successfully completed. The HPCI Steam Supply Isolation Valve was opened, the system returned to service, and the LCOs cleared by December 6, 2008 at 00:12 EST. The HPCI system was out of service for less than 27-hours of the 14-days allowed by the Technical Specifications. The safety consequences of this event were evaluated using the Probabilistic Safety Analysis (PSA) Model and determined to be very low.

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17. NARRATIVE (If more space is required, use additional copies of NRC Form 366A)

Initial Plant Conditions:

Mode 1
Reactor Power 100 percent

Description of the Event

On December 04, 2008 at 17:35 EST during High Pressure Coolant Injection (HPCI) [BJ] system steam line warming performed as part of a planned system pump and valve surveillance test, the HPCI Steam Supply Outboard Isolation Valve Bypass Valve (E4150F600) position indication lights did not function as expected. During a partial opening stroke, the valve's Open light did not come on as expected and its Close light flickered while pushing the Open pushbutton for one to two seconds. The Close light continued to flicker for about five seconds after the Open pushbutton was released, at which time all indication was lost and a HPCI Motor Operated Valve Motor Overload/Loss of power alarm was received in the Control Room.

Upon discovery of the problem and performance of minor troubleshooting, Operations determined that the ability of the E4150F600 valve to close on containment isolation signal was unreliable, the valve was declared inoperable. Containment Isolation Limiting Condition for Operation (LCO) 3.6.1.3 Condition A was entered for the E4150F600 valve with the required action to isolate the penetration within four hours.

On December 04, 2008 at 21:18 EST an unplanned HPCI inoperability occurred when the HPCI Steam Supply Inboard Isolation Valve (E4150F002), was closed to isolate the HPCI steam line and satisfy LCO 3.6.1.3 Condition A Required Action to address the E4150F600 inoperability. A 14 day LCO was entered at that time for an inoperable HPCI system per LCO 3.5.1.

System troubleshooting, diagnostic testing, and analysis were performed, and control relay CR1 was replaced. Post maintenance testing was successfully completed on December 05, 2008 at 23:45 EST. The HPCI Steam Supply Inboard Isolation Valve was opened, the system returned to service, and the LCOs cleared by December 06, 2008 at 00:12 EST.

Significant Safety Consequences and Implications

The HPCI system, a single train safety system, was rendered inoperable when the HPCI steam isolation valve was closed in response to meet the requirements of the containment isolation Technical Specification. 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.

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This event resulted in approximately 27-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. The risk increase associated with HPCI being out of service for approximately 27-hours has been evaluated by the Probabilistic Safety Analysis (PSA) Model and determined to be very low.

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 the 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 44698).

Cause of the Event

The cause for HPCI being inoperable was the isolation of the main steam line penetration to meet Primary Containment Technical Specification requirements. The cause for the main steam line being closed is the loss of indication on the Outboard Isolation Valve Bypass Valve (E4150F600) attributed to a faulty CR1 relay with degraded electrical contacts. This relay connects the control power supply to the MOV operational controls and the valve indications.

Corrective Actions

Valve power fuses, control power fuses, and control power relay CR1 were replaced for the E4150F600 valve, and testing was performed to ensure proper valve operation and indication. This event has been added into the Corrective Action Program and additional actions may be taken as determined by the program.

Additional Information

A. Failed Components:

Component: 240 VDC relay (CR1 Relay)
 Function: Connects the control power supply to the MOV operational controls and the valve indications
 Manufacturer: Siemens 3TH30
 Model Number: 3TH3031-OBQ4
 Failure Cause: Electrical contact degradation

B. Previous LERs on Similar Problems:

In July 2003 the High Pressure Coolant Injection System was declared inoperable due to closing of the main steam supply valve. The component and cause of the failure were unrelated to the E4150F600 valve control circuitry. Therefore, the corrective actions for that event could not have precluded this event. No other similar problems were noted within the past five years.