

William T. O'Connor, Jr.
Vice President, Nuclear Generation

Fermi 2
6400 North Dixie Hwy., Newport, Michigan 48166
Tel: 734.586.5201 Fax: 734.586.4172

Detroit Edison



A DTE Energy Company

10CFR50.73

May 6, 2002
NRC-02-0029

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

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

Subject: Licensee Event Report (LER) No. 02-001

Pursuant to 10 CFR 50.73(a)(2)(i)(B), Detroit Edison is submitting the enclosed LER No. 02-001. This LER documents the setpoints of the primary containment isolation instrumentation Division I HPCI and RCIC equipment room high temperature setpoints exceeding the Technical Specification allowable value.

No commitments are being made in this LER.

Should you have any questions or require additional information, please contact Mr. Norman K. Peterson of my staff at (734) 586-4258.

Sincerely,

William T O'Connor

cc: T. J. Kim
M. A. Ring
M. V. Yudas, Jr.
NRC Resident Office
Region III
Regional Administrator, Region III
Wayne County Emergency Management Division

IE22

USNRC
NRC-02-0029
Page 2

bcc: G. D. Cerullo
D. K. Cobb
B. P. Fisher
R. W. Libra
D. J. Noetzel
W. T. O'Connor, Jr.
S. R. Peterman
N. K. Peterson
L. D. Sanders
S. Stasek

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LICENSEE EVENT REPORT (LER)

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1. FACILITY NAME

Fermi 2

2. DOCKET NUMBER

05000341

3. PAGE

1 OF 5

4. TITLE

HPCI and RCIC Room Area Temperature Switches Beyond TS Allowable Value

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
03	08	2002	2002	- 001	- 00	05	07	02	FACILITY NAME	DOCKET NUMBER
										05000
9. OPERATING MODE		1	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)							
10. POWER LEVEL		100	20.2201(b)			20.2203(a)(3)(ii)			50.73(a)(2)(ii)(B)	50.73(a)(2)(ix)(A)
			20.2201(d)			20.2203(a)(4)			50.73(a)(2)(iii)	50.73(a)(2)(x)
			20.2203(a)(1)			50.36(c)(1)(i)(A)			50.73(a)(2)(iv)(A)	73.71(a)(4)
			20.2203(a)(2)(i)			50.36(c)(1)(ii)(A)			50.73(a)(2)(v)(A)	73.71(a)(5)
			20.2203(a)(2)(ii)			50.36(c)(2)			50.73(a)(2)(v)(B)	OTHER
			20.2203(a)(2)(iii)			50.46(a)(3)(ii)			50.73(a)(2)(v)(C)	Specify in Abstract below or in
			20.2203(a)(2)(iv)			50.73(a)(2)(i)(A)			50.73(a)(2)(v)(D)	NRC Form 366A
			20.2203(a)(2)(v)		X	50.73(a)(2)(i)(B)			50.73(a)(2)(vii)	
			20.2203(a)(2)(vi)			50.73(a)(2)(i)(C)			50.73(a)(2)(viii)(A)	
			20.2203(a)(3)(i)			50.73(a)(2)(ii)(A)			50.73(a)(2)(viii)(B)	

12. LICENSEE CONTACT FOR THIS LER

NAME

Jerome Flint - Principal Specialist, Licensing

TELEPHONE NUMBER (Include Area Code)

734-586-5212

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

14. SUPPLEMENTAL REPORT EXPECTED

YES (If yes, complete EXPECTED SUBMISSION DATE). x NO

15. EXPECTED SUBMISSION DATE

MONTH DAY YEAR

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

On March 8, 2002, at approximately 1430 hours, technicians (utility, non-licensed) performing a Channel Functional Test on Division I High Pressure Coolant Injection (HPCI) and Reactor Core Isolation Cooling (RCIC) Room Area High Temperature switches (E41N602A and E51N602A) found the temperature switch setpoint to be set above the Technical Specification (TS) allowable value. The cause of the temperature switches being set beyond TS allowable values was found to be a loose battery connection in a test instrument. HPCI and RCIC room area temperature isolation is provided to detect a small leak from the associated HPCI or RCIC system steam piping. The isolation is diverse from the steam line high flow instrumentation. The Division I HPCI and RCIC room area temperature isolation channels would have functioned at a slightly higher setpoint. During the time the Division I temperature switch setpoints were incorrect the Division II HPCI and RCIC room area temperature isolation channels were available, except during their Channel Functional Test. There was no condition that would have prevented an isolation from occurring. The room area high temperature isolation functions are not assumed in any UFSAR transient or accident analysis. Division II temperature switch setpoints were verified to be correct and Division I temperature switches were immediately adjusted to within their required setpoints. Corrective actions being considered are to add verification steps to procedures and include lessons learned into the Maintenance Initial and Continuing Training Program.

LICENSEE EVENT REPORT (LER)

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Fermi 2	05000341	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 5
		2002	001	- 00	

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

Initial Plant Conditions:

Mode 1 (Power Operation)
 Reactor Power 100 Percent
 Reactor Pressure 1030 psig
 Reactor Temperature 540 Degrees Fahrenheit

Description of the Event

On March 8, 2002, at approximately 1430 hours, technicians (utility, non-licensed) performing a Channel Functional Test on High Pressure Coolant Injection (HPCI)(BJ) and Reactor Core Isolation Cooling (RCIC)(BN) Room Area High Temperature switches (TS) (E41N602A and E51N602A) found the temperature switch setpoints to be set above the Technical Specification (TS) allowable value. The switch setpoints were then restored and the previous Channel Functional Test was reviewed. It was determined that the setpoints had been misadjusted during the previous performance of this test on December 10, 2001.

The HPCI and RCIC Room Area High Temperature isolation instrumentation is listed in TS 3.3.6.1, Primary Containment Isolation Instrumentation (JM). These room area high temperature isolations are provided to isolate the associated system for very small steam leaks and are diverse from the high steam flow instrumentation (FI). The room area high temperature isolation functions are not assumed in any UFSAR transient or accident analysis. The room area high temperature isolation function remained available. The isolation would have occurred at slightly higher temperatures.

The Room Area High Temperature isolation instrument allowable value is less than or equal to 162 degrees F for the HPCI and RCIC Room Area High Temperature isolations. On March 8, 2002, the temperature switches were found to be set at approximately 185 degrees F, above the TS allowable value.

TS 3.3.6.1 requires placing an inoperable HPCI and RCIC room area temperature channel in trip within 24 hours. If this completion time is not met the TS directs isolating the affected penetration flow path within one hour. If this completion time is not met the TS directs placing the plant in mode 3 in 12 hours and mode 4 in 36 hours. This condition was not recognized at the time the HPCI and RCIC room area temperature switches were misadjusted in December, 2001. This TS non-compliance is reportable in accordance with 10CFR50.73 (a)(2)(i)(B) as a condition prohibited by Technical Specifications. At no time was there a condition that could have prevented the fulfillment of the safety function of HPCI or RCIC. At no time was there a condition that would have prevented the isolation of HPCI and RCIC for any UFSAR transient or accident.

LICENSEE EVENT REPORT (LER)

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Fermi 2	05000341	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	3 OF 5
		2002	001 -	00	

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

Division I temperature switches E41N602A and E51N602A were immediately adjusted to within their required setpoints.

Cause of the Event

Surveillance 44.020.227, Nuclear Steam Supply Shutoff System-HPCI and RCIC Room Area Temperature, Channel A Functional Test, utilizes a Transmation Thrice-Cell (EM) to verify the setpoints of temperature switches E41N602A and E51N602A. During performance of the surveillance on March 8, 2002, the temperature switches were found set at approximately 185 degrees F. The Thrice-Cell being used was replaced and surveillance steps reperformed with the identical results (185 degrees F setpoint). The redundant Division II instrument (E41N602B and E51N602B) setpoints were verified to be correct.

The cause of the temperature switches being set beyond TS allowable values was a loose battery connection on the Transmation Thrice-Cell resulting in the misadjustment of the temperature switches on December 10, 2001. Following the events described above, on March 18, 2002, while completing surveillance 44.020.230 on HPCI and RCIC Division II temperature room area switches E41N602B and E51N602B, a similar difference in test readings to the December 10, 2001 surveillance occurred. The setpoint values for these switches indicated lower than expected. Test equipment (Thrice-Cell) was replaced and the readings were verified to be in tolerance. The functionality of Thrice-Cell used in the first measurement (TM-004-M) was suspect. The technician could hear that the battery had freedom of movement inside the Thrice-Cell indicating that it may have been loose. The impact of the Thrice-Cell battery on a temperature monitoring loop was tested. A test setup similar to that used in surveillance 44.020.227 was constructed. Thrice-Cell TM-011-M, which is different than the suspect Thrice-Cell, was used in the test. The milivolt (mV) power supply which provides input to the Thrice-Cell was set to 2.75 mV, which is consistent with the setpoint verified in the surveillance. The output of the Thrice-Cell was measured with the battery installed (1.8 mV) and without the battery installed (2.8 mV). Thus, the loss of the Thrice-Cell battery voltage resulted in a 1 mV offset in the output of the Thrice-Cell. The direction and amount of the offset matched the symptoms of the December, 2001 out of calibration condition.

With the Thrice-Cell not working properly, there is no signal conditioning. A Thrice-Cell conditions the signal being supplied to the temperature switches, providing temperature compensation similar to the installed temperature detector and wiring. In the surveillance, the 2.8 mV signal measured at the mV power supply results in a 1.8 mV signal at the temperature switch with the Thrice-Cell working properly. The switch trip setpoint indicator will actuate with a 1.8 mV input signal. With the Thrice-Cell battery removed, a 1.8 mV signal out of the mV power supply will result in a 1.8 mV input signal to the temperature switch and actuate the trip setpoint indicator. The test setup resulted in a 1 mV decrease which was the exact symptom identified in both the December 10th and March 18th surveillance tests.

LICENSEE EVENT REPORT (LER)

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Fermi 2	05000341	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	4 OF 5
		2002	001	- 00	

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

All jobs utilizing this Thrice-Cell, from its last calibration were reviewed to determine if any data might be suspect. All data recorded in these jobs fell within the required values or did not have a 1 mV shift from the required band.

Analysis of the Event

Room area temperatures are provided to detect a small leak from the associated HPCI or RCIC system steam piping. A system isolation would take place if a leak had occurred. The isolation is diverse to the steam line high flow instrumentation which would isolate for a larger leak. These functions are not assumed in any UFSAR transient or accident analysis, since bounding analyses are performed for large breaks such as recirculation or Main Steam Line breaks. HPCI and RCIC room area temperature high signals are initiated from thermocouples that are appropriately located to protect the system that is being monitored. Two instruments monitor each area. Two channels for each room area temperature are to ensure that no single instrument failure can preclude the isolation function. HPCI and RCIC room area temperature receive input from two channels, with each channel in one trip system using a one-out-of-one logic. Each of the two trip systems in each isolation group is connected to one of the two valves (ISV) on each associated penetration.

From December 10, 2001, when the Division I HPCI and RCIC room area temperature switch setpoints were mistakenly changed until March 8, 2002, the redundant Division 2 HPCI and RCIC room area temperature primary containment isolation was available, except for approximately one hour and fifteen minutes on January 9, 2002, when the division II HPCI and RCIC room area switches underwent surveillance testing. The Division I HPCI and RCIC room area temperature isolations were functional during this time, with a setting of 185 F, slightly above the TS allowable value.

A review of the Significance Determination Process (SDP) was performed. The screening criteria of the IMC 609, Appendix A, Reactor Safety SDP, was used. None of the functions or cornerstones was identified as degraded as a result of the HPCI and RCIC room area temperature switch adjustment. The HPCI and RCIC room area temperature isolation function does not contribute to core damage and is not credited for mitigating the consequences of an accident leading to core damage. Therefore, the loss of this function can be considered to be safety and risk neutral.

LICENSEE EVENT REPORT (LER)

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Fermi 2	05000341	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	5 OF 5
		2002	001 -	00	

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

Corrective Actions

Upon discovery of the misadjustment on March 8, 2002, the Division I temperature switches E41N602A and E51N602A were immediately adjusted to within their required setpoints.

The Division I and II HPCI and RCIC room area temperature switch setpoints are verified/adjusted once each quarter. A review of the past two-year instrument setpoint verification history showed that the Division I temperature switches had required no adjustment during that time. It was discovered the setpoints of Division I temperature switches E41N602A and E51N602A had been found out of tolerance while performing surveillance 44.020.227 in December, 2001. The as found voltage measured was 1.841 mV for instrument E41N602A and 1.854 mV for instrument E51N602A. This is approximately 1 mV (30%) lower than the expected value. Since there were no indications of equipment failure, the temperature switches were adjusted higher by approximately 1 mV and the surveillance was completed. The as found discrepancies were documented, but not listed as a discrepancy.

This event has been documented in the Fermi 2 corrective action program as CARD 02-13570. The corrective actions will be tracked and implemented with the established processes and priorities of the program. Additional corrective actions may include revision of surveillances to verify setpoint temperatures before and after adjustments are made, physical repairs to the Thrice-Cell carrying case, and including lessons learned into the Maintenance Initial and Continuing Training Program.

Additional Information

A. Failed Components – None

B. Previous LERs On Similar Problems-No similar failures were found.