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DTE Energy



10 CFR 50.73

May 30, 2008
NRC-08-0044

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: Submittal of Licensee Event Report No. 2008-004,
"Relay Locking Straps Not Fully Engaged"

Pursuant to 10 CFR 50.73(a)(2)(i)(B) and 50.73(a)(2)(vii), Detroit Edison is hereby submitting the enclosed Licensee Event Report (LER), No. 2008-004. This LER documents an April 9, 2008 discovery that relay locking straps were discovered not fully engaged.

No new commitments are made in this letter.

Should you have any questions or require additional information, please contact Mr. Ronald W. Gaston of my staff at (734) 586-5197.

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
NRR

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, NE-0B-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.

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4. TITLE
Relay Locking Straps Not Fully Engaged

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
04	09	2008	2008	- 004	- 00	05	30	2008	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)			
10. POWER LEVEL 100%	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input checked="" 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 checked="" type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)		

Specify in abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME Ronald W. Gaston, Manager Licensing	TELEPHONE NUMBER (Include Area Code) (734) 586-5197
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13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED	15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
<input type="checkbox"/> YES (If yes, complete 15. EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO			

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

On April 9, 2008, in preparation for planned maintenance to replace a relay, the relay locking straps for two installed relays were discovered not fully engaged. This condition was subsequently determined to exist on five relays. All relays were Agastat relays. Operations and Engineering reviewed the relay functions and determined that with the exception of one control relay for Reactor Core Isolation Cooling (RCIC) system Level 8 trip, all other relay design functions were met by redundant relays. In the case of the control relay for RCIC Level 8 trip, an automatic level 8 trip function would not occur if the relay failed to operate as a result of the relay locking strap not being fully engaged. This event is being reported under 50.73(a)(2)(i)(B), as a condition which was prohibited by Technical Specifications for the RCIC Level 8 control relay and a high drywell pressure control relay. This event is also reportable under 50.73(a)(2)(vii), as a common cause inoperability of independent trains or channels since a single cause or condition caused at least one independent train or channel to become inoperable in multiple systems. Calculated values for the change in Core Damage Frequency (CDF) and Large Early Release Frequency (LERF) demonstrate the safety significance of this issue was very low. Corrective actions for this licensee-identified condition include training for instrument technicians and operators and revision to preventative maintenance documents for similar relays.

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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 April 9, 2008, during a walkdown in preparation for planned maintenance to replace an Agastat relay [RLY] in the H21-P081 Testability Cabinet [CAB], an Instrument Technician noted that the relay locking straps for relays B31-K201B and B31-K203B were not fully engaged. The locking strap is required to provide restraint to the relays under seismic conditions. This condition was verified by a Component Engineer and the relay locking straps were then fully engaged. Relay locking straps for all relays in the H21-P081 Testability Cabinet were verified to be fully engaged.

On April 16, 2008, System Engineering and Operations performed a walkdown to visually inspect all accessible relays in all Testability Cabinets (H21-P080, H21-P081, H21-P082, H21-P083, H21-P084, H21-P085, H21-P086, and H21-P087). The walkdown identified four relays with the locking straps not fully engaged, relays B31-K203B (the other side of this relay was identified to be not fully engaged on April 9, 2008), B21-K209G, B21-K203B, and E51-K201C. All relays were Agastat relays with style ECR0002 sockets and ECR0133 locking straps. The relays perform the following functions:

- B31-K203B, Trip Channel A, Trip System A, control relay for Reactor Recirculation Pump B [AD] differential pressure; operates during Low Pressure Coolant Injection (LPCI) Loop Select [BO] to determine which reactor recirculation pumps are running.
- B31-K201B, Trip Channel B, Trip System A, control relay for reactor recirculation riser differential pressure; operates during LPCI Loop Select to determine if either reactor recirculation loop has a break.
- B21-K209G, Trip Channel C, Trip System B, control relay for high drywell pressure for Emergency Core Cooling Systems.
- E51-K201C, Trip Channel C, Trip System A, control relay for Reactor Core Isolation Cooling (RCIC) [BN] exhaust pressure high turbine trip.
- B21-K203B, Trip Channel B, Trip System A, control relay for RCIC Level 8 trip.

All relays were restored to their original configuration by fully engaging their relay locking straps. Work orders were subsequently generated to inspect those relays that were not accessible without entry into the Testability Cabinets. All Testability Cabinet relay locking straps were verified to be fully engaged. Relays located outside the Testability Cabinets were verified to have their locking straps fully engaged.

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Significant Safety Consequences and Implications

Operations and Engineering reviewed the relay functions for the five affected relays and determined with the exception of B21-K203B, control relay for RCIC Level 8 trip, all other relay design functions would be met by redundant relays, should the relays fail to function due to the lack of a properly engaged locking strap during a seismic event. In the case of the control relay for the level 8 trip an automatic level 8 trip would not occur if the relay failed to operate as a result of the relay locking strap not being fully engaged. The operator retained the ability to manually trip the RCIC system in response to a rising water level.

All relays with the exception of the E51-K201C, control relay for RCIC exhaust pressure high turbine trip are explicitly modeled in the Fermi 2 Probabilistic Safety Analysis (PSA) model. Relay E51-K201C does not impact an accident sequence and was not included in the PSA model. Since the exposure time for the condition is assumed to be longer than one year, the results of the analysis are expressed as frequency rather than probability. A conservative assumption was made to fail the four remaining individual relays resulting in a calculated value for the change in Core Damage Frequency of 1.0 E-7/year. This is well below the threshold of 1.0 E-6/year required in Regulatory Guide (RG) 1.174, "An Approach for using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis." The calculated value for the change in Large Early Release Frequency (LERF) is 3.0E-9/year, which is well below the threshold of 1.0 E-7/year required in Regulatory Guide (RG) 1.174. This demonstrates that the safety significance of this condition is very low.

This event is being reported under 50.73(a)(2)(i)(B), as a condition which was prohibited by the Technical Specifications (TS) for:

- B21-K209G, control relay for high drywell pressure, required placing the channel in a tripped condition within 12 hours per TS 3.3.6.1, Condition A.
- B21-K203B, control relay for RCIC Level 8 trip, required restoring the channel to an operable status within 24 hours per TS 3.3.5.2, Condition C.

This event is also reportable under 50.73(a)(2)(vii), as a common cause inoperability of independent trains or channels since a single cause or condition caused at least one independent train or channel to become inoperable in multiple systems. The independent trains and channels are:

- B31-K203B, Trip Channel A, Trip System A, control relay for Reactor Recirculation Pump B differential pressure; operates during Low Pressure Coolant Injection (LPCI) Loop Select to determine which reactor recirculation pumps are running.
- B31-K201B, Trip Channel B, Trip System A, control relay for reactor recirculation riser differential pressure; operates during LPCI Loop Select to determine if either reactor recirculation loop has a break.
- B21-K209G, Trip Channel C, Trip System B, control relay for high drywell pressure Emergency Core Cooling Systems.
- B21-K203B, Trip Channel B, Trip System A, control relay for RCIC Level 8 trip

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Cause of the Event

Less than adequate work practices led to the relay locking straps not being fully engaged into their bases. Contributing causes: 1) work package instructions not providing an adequate level of detail; 2) training material not covering the locking straps resulting in varying levels of skill and experience, and 3) the layout of the testability cabinets makes it difficult to visually verify a locking strap is fully engaged.

This condition applies to a total of 398 Agastat relays requiring seismic qualification. There were 217 relays located in the Testability Cabinets. All 398 of these relays were verified to have their locking straps fully engaged.

Corrective Actions

Relay locking straps were fully engaged and verified. Action was taken to review the event and lessons learned with Instrument Technicians.

Training will be provided to instrument technicians and licensed operators on recognition of relay locking straps less than fully engaged. Preventative maintenance events for Agastat relay replacement will be modified to include specific steps and verifications for reinstalling relay locking straps.

This licensee-identified condition has been documented in the Fermi 2 Corrective Action Program. A root cause evaluation has been performed to address the event and develop pertinent corrective actions. Additional evaluation and corrective actions are being performed in accordance with the corrective action program. Actions will be determined, tracked and implemented commensurate with their safety significance and in accordance with the program guidelines.

Additional Information

- A. Failed Components: None.
- B. Previous LERs on Similar Problems: None