

Fermi 2
6400 North Dixie Hwy., Newport, Michigan 48166
Tel: 313.586.5201 Fax: 313.586.4172

10CFR50.73

October 28, 1998
NRC-98-0140



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

Reference: 1) Fermi 2

NRC Docket No. 50-341
NRC License No. NPF-43

2) Detroit Edison Letter to NRC, NRC 97-0101, "Licensee Event Report (LER) No. 96-017, Revision 3," dated November 10, 1997

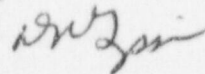
3) Detroit Edison Letter to NRC, NRC-98-0013, "Operation with Currently Installed Safety/Relief Valves for the remainder of Cycle 6," dated January 14, 1998

Subject: Licensee Event Report (LER) No. 98-010

Pursuant to 10CFR50.73(a)(2)(vii)(D), Detroit Edison is hereby submitting the enclosed LER No. 98-010 which documents the failure of Safety Relief Valves (SRVs) to open within their Technical Specification required tolerance.

There are no commitments being made in this LER. Please contact Norman K. Peterson at (734) 586-4258 if you have any questions.

Sincerely,



cc: Regional Administrator, Region III
B. L. Burgess
G. A. Harris
A. J. Kugler
M. V. Yudasz, Jr.
Region III
Wayne County Emergency Management Division

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LICENSEE EVENT REPORT (LER)

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

Estimated burden per response to comply with this mandatory information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the Records Management Branch (T-6 F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0104), Office of Management and Budget, Washington, DC 20503. If 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.

FACILITY NAME (1) Fermi 2	DOCKET NUMBER (2) 05000	PAGE (3) 1 OF 4
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TITLE (4)
Safety Relief Valve As-Found Settings Exceed Technical Specification Setpoint Tolerance Criteria

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
12	7	1998	1998	0 1 0	00	10	28	1998	FACILITY NAME	DOCKET NUMBER 05000
									FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9) 5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)										
POWER LEVEL (10) 000	20.2201(b)			20.2203(a)(2)(v)			50.73(a)(2)(i)			50.73(a)(2)(viii)	
	20.2203(a)(1)			20.2203(a)(3)(i)			50.73(a)(2)(ii)			50.73(a)(2)(x)	
	20.2203(a)(2)(i)			20.2203(a)(3)(ii)			50.73(a)(2)(iii)			73.71	
	20.2203(a)(2)(ii)			20.2203(a)(4)			50.73(a)(2)(iv)			OTHER	
	20.2203(a)(2)(iii)			50.36(c)(1)			50.73(a)(2)(v)			Specify in Abstract below or in NRC Form 166A	
20.2203(a)(2)(iv)			50.36(c)(2)			X 50.73(a)(2)(vii)					

LICENSEE CONTACT FOR THIS LER (12)

NAME Ron W. Gaston, Compliance Supervisor	TELEPHONE NUMBER (Include Area Code) (734) 586-5134
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
B	RV	SRV	T020	Y					

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

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

On October 7, 1998, during the sixth refueling outage (RFO6), Detroit Edison determined that 1 out of the 11 required safety relief valve (SRV) pilot assemblies failed to lift with its Technical Specification $\pm 3\%$ allowable setpoint tolerance limit when tested at Wyle Laboratories.

Detroit Edison's investigation of the setpoint drift experienced by Target Rock two stage SRVs in use at Fermi 2 has resulted in the conclusion that the cause is oxide bonding between the pilot valve disc and its seat. This conclusion has been substantiated by independent analysis (LER 96017-03) which has confirmed the cause of the previously reported high setpoint drift test results to be oxide bonding (NRC-98-0013). These analysis results are consistent with the conclusions of the Boiling Water Reactor Owner's Group (BWROG) (NRC-98-0013).

All 15 pilot valve assemblies were replaced with assemblies containing platinum ion beam bombarded discs during RFO6 as committed in LER 96017-03. Based upon the results at another facility, as provided through the BWROG, it is believed that these discs will lead to better performance of the SRVs at Fermi 2.

LICENSEE EVENT REPORT (LER)

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

Initial Plant Conditions

Operational Condition: 5 (Refueling)
 Reactor Power 0 percent
 Reactor Pressure 0 psig
 Reactor Temperature 95 degrees Fahrenheit

Description of the Event:

The Main Steam System is equipped with fifteen Target Rock two-stage pilot-operated Safety Relief Valves (SRVs)[RV], whose safety function is to prevent the reactor coolant system from being pressurized to more than 110 percent (1375 psig) of the reactor pressure vessel design pressure of 1250 psig. Technical Specification 3.4.2.1 requires the safety valve function of at least eleven of the following SRVs to be operable with the specified code safety valve function lift settings during Operational Conditions 1, 2 and 3:

- 5 safety/relief valves at 1135 psig +/- 3 percent
- 5 safety/relief valves at 1145 psig +/- 3 percent
- 5 safety/relief valves at 1155 psig +/- 3 percent

Technical Specification Surveillance 4.4.2.1.2 requires that one-half of the SRV pilot assemblies be pressure setpoint tested at least once every eighteen months. Detroit Edison currently tests all fifteen SRV pilot assemblies each refueling outage based on previous test results (LER 96017-03). The 15 SRV pilot assemblies removed during this refueling outage (RFO6) and tested at Wyle Laboratories were installed during a mid-cycle 6 outage in October 1997 (NRC-98-0013). Twelve of the assemblies contained Stellite 6B discs while three contained platinum alloyed discs (not ion beam bombarded). Results confirming that 5 of the 15 pilot assemblies failed the Technical Specification 3.4.2.1 criteria were received at 1350 hours on October 7, 1998. An event notification was made to the NRC at 1558 hours on the same date.

The following is a table summarizing the results of the testing:

Valve Number	Nominal Setpoint (psig)	As Found Setpoint (psig)	Percent Drift
B2104-F013A*	1135 +/- 3%	1147	+ 1.1
B2104-F013B	1135 +/- 3%	1160	+ 2.2
B2104-F013C	1135 +/- 3%	1186	+ 4.5
B2104-F013G	1135 +/- 3%	1162	+ 2.4
B2104-F013K	1135 +/- 3%	1313	+15.7
B2104-F013D	1145 +/- 3%	1158	+ 1.1
B2104-F013F	1145 +/- 3%	1146	+ 0.1

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

<u>Valve Number</u>	<u>Nominal Setpoint (psig)</u>	<u>As Found Setpoint (psig)</u>	<u>Percent Drift</u>
B2104-F013L	1145 +/- 3%	1117	- 2.4
B2104-F013M*	1145 +/- 3%	1221	+ 6.6
B2104-F013N	1145 +/- 3%	1169	+ 2.1
B2104-F013E	1155 +/- 3%	1178	+ 2.0
B2104-F013H*	1155 +/- 3%	1153	- 0.2
B2104-F013J	1155 +/- 3%	1262	+ 9.3
B2104-F013P	1155 +/- 3%	1192	+ 3.2
B2104-F013R	1155 +/- 3%	1178	+ 2.0

* - Platinum alloyed discs

Cause of the Event

Detroit Edison's investigation of the setpoint drift experienced by Target Rock two stage SRVs in use at Fermi 2 has resulted in the conclusion that the cause is oxide bonding between the pilot valve disc and its seat. This conclusion has been substantiated by independent analysis (LER 96017-03) which has confirmed the cause of the previously reported high setpoint drift test results to be oxide bonding (NRC-98-0013). These analysis results are consistent with the conclusions of the Boiling Water Reactor Owner's Group (BWROG) (NRC-98-0013).

Analysis of the Event

The safety function of the SRVs is to prevent the reactor coolant system from being pressurized to greater than 110% (1375 psig) of the reactor pressure vessel design pressure of 1250 psig in accordance with the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code. The Fermi 2 Updated Final Safety Analysis Report (UFSAR) and corresponding General Electric (GE) reload licensing overpressure analysis demonstrate that only 11 of the 15 installed SRVs are necessary to ensure reactor pressure remains less than the ASME Code allowable value of 1375 psig for the worst case transient. The reload licensing analysis is performed assuming the unavailability of the 4 lowest setpoint SRVs, with the remaining 11 SRVs having set pressures 3% above nominal. Evaluation of the RFO6 SRV setpoint data shows that the as-found setpoints of the SRVs are enveloped by the Cycle 6 reload licensing analysis assumptions. Therefore, reactor pressure vessel overpressure protection would have been adequately provided by these SRVs and there was no threat to public health or safety.

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

Corrective Actions

All 15 pilot valve assemblies were replaced with assemblies containing platinum ion beam bombarded discs during RFO6 as committed in LER 96017-03. Based upon the results at a similar facility, as provided through the BWROG, it is believed that these discs will lead to better performance of the SRVs at Fermi 2.

Additional Information:

A. Failed Components

Component: Main Steam Safety Relief Valve
 Description: Two Stage Safety Relief Valve
 Manufacturer/Model: Target Rock Company, Model 7567F

B. Previous LERs (including revisions) on Similar Problems

- LER 96017 "Multiple Safety Relief Valves As-Found Settings Outside of One-Percent Tolerance Allowance"
- LER 94002: "Safety Relief Valve Set Pressures Outside of Technical Specification Limits"
- LER 92009: "Safety Relief Valves Set Pressure Outside Technical Specification Limit"
- LER 91013: "Safety Relief Valves Set Pressure Outside Technical Specification Limit"
- LER 89028: "Safety Relief Valves Fail Their Set Pressure Tolerance Test"
- LER 88009 "Safety Relief Valves Fail Their Set Pressure Tolerance Test"
- LER 86013: "Reactor Coolant System Safety Relief Valves Exceed Nameplate Set Pressure Surveillance Test Tolerances"