NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
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TITLE (4)
Safety Relief Valves Fail Their Set Pressure Surveillance Tolerance Test

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 NAMES	DOCKET NUMBER(S)
0 3	1 1	8 8	8 8	0 0 9	0 1	0 5	1 6	8 8	N/A	0 5 0 0 0
									N/A	0 5 0 0 0

OPERATING MODE (9)	4	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	0 0 0	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v)	73.71(c)
		20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
		20.405(a)(1)(iii)	X 50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
		20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
		20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
Joseph Pendergast, Licensing Engineer	AREA CODE 3 1 3 5 8 6 - 1 6 8 2

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

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

The Main Steam System is equipped with fifteen Safety Relief Valves (SRVs). Technical Specifications require that half of the SRVs be proven operable at least once every eighteen months by performing a set pressure test. Fifteen SRVs were removed and sent to Wyle Laboratories to meet the surveillance requirement. Wyle Laboratories notified Detroit Edison that nine of the SRVs failed their set pressure test.

The cause of this event is currently under review by the site and generically by the Boiling Water Reactor Owners Group (BWROG) SRV set point drift committee.

All valves removed from the plant for testing were refurbished, cleaned, retested and recertified to be within accepted tolerances prior to return to Fermi 2 from Wyle Laboratories.

IE22 1/1

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

Initial Plant Condition:

Operational Condition: 4 (Cold shutdown)
Reactor Power: 0 percent
Reactor Temperature: 125 degrees Fahrenheit
Reactor Pressure: 0 psig

Description of the Event:

The Main Steam (SB) system is equipped with fifteen Target Rock two stage, pilot operated Safety Relief Valves (SRVs) (RV) which are designed to prevent over pressurization of the Nuclear Steam Supply System (NSSS). Technical Specification surveillance requirement 4.4.2.1.2 states that half of the SRVs must be proven operable at least once every eighteen months by performing a set pressure test. All fifteen SRVs must be set pressure tested during a forty month period. Ten SRVs were removed and sent to Wyle Laboratories to meet the surveillance requirement during the eighteen month surveillance outage which began February 27, 1988.

On March 11, 1988, Wyle Laboratories notified the site that six of the ten SRVs sent to them failed their surveillance test. In accordance with American Society of Mechnical Engineers (ASME) Boiler and Pressure Vessel (B&PV) Section XI, 1980 edition W'81 Addenda, Paragraph IWV-3513, the site removed the five remaining SRVs and sent them to Wyle Laboratories for set pressure testing. On March 26, Wyle Laboratories notified the site that three more SRVs had failed their set pressure test. Technical Specification Limiting Condition of Operation 3.4.2.1 requires at least eleven of the SRVs not exceed 1.0 percent of their set pressure rating.

SRVs are divided into three set pressure groups. The first group consists of five valves set to open when Reactor Pressure Vessel (RPV) pressure exceeds 1110 psig, the second group consists of five valves set to open when RPV pressure exceeds 1120 psig and the third group consists of five valves set to open when RPV exceeds 1130 psig. Below is a table summarizing the results of the SRVs tested.

Pilot serial number	Required setpoint psig	Actual setpoint psig and % deviation
327	1110	1133 failed 2.1
330	1110	1109 passed 0.10
339 **	1110	1107 passed 0.20
371 **	1110	1113 passed 0.20
372 **	1110	1142 failed 2.80
328	1120	1232 failed 10.00
333 **	1120	1168 failed 4.28
334	1120	1220 failed 8.90
335	1120	1110 passed 0.89
389 **	1120	1128 passed 0.71
331	1130	1206 failed 6.70
332 **	1130	1163 failed 2.90
340 **	1130	1130 passed 0.00
342 *	1130	none failed none
391 **	1130	1170 failed 3.50

* Test Recorder Failed (Stuck Pen) Data Lost
(First test only counts for this purpose)

** Pilot Disc Material (ARMCO Alloy PH13-8 MO Steel)

Nine of the SRVs have failed their set pressure test which is outside of the Technical Specifications Limiting Condition of Operation 3.4.2.1.

Cause of the Event:

The SRV set pressure drift is an industry problem and is being addressed by the site, in conjunction with Boiling Water Reactor Owners Group (BWROG) SRV setpoint drift committee as a generic issue. The BWROG has suspected two conditions contribute to SRV upward set point drift in excess of three percent. The first cause is labyrinth seal clearances and the second is corrosion bonding of the pilot disc to its seat. From the as received data, two cases appear to be attributable to corrosion bonding resulting in drift in excess of three percent. The remaining three cases in excess of three percent are not clearly attributable to labyrinth clearance or corrosion bonding at this time. Cases of less than three percent drift have not as yet been addressed by the owners group.

Analysis of the Event:

An analysis of the SRV setpoints using the data received from Wyle Laboratories was performed by the Fermi 2 engineering staff. The analysis showed that the initial setpoint values obtained during SRV setpoint testing would have not compromised the integrity of the NSSS. If the SRVs would have lifted at the setpoint values initially found, the RPV pressure would have raised 20 psid over the existing USFAR analyzed peak pressure of 1278 psig. The resulting peak pressure of 1298 psig is a value well below Technical Specification Safety Limit 2.1.3 for reactor coolant system pressure which is 1325 psig. The American Society of Mechanical Engineers (ASME) B&PV Code allowable pressure is 1375 psig. The SRVs would have protected the reactor coolant pressure boundary by lifting at the initial setpoints found during testing and assured NSSS integrity.

Corrective Action:

To minimize future high set pressure drift on the SRVs four actions were taken:

The first action taken was to install ten SRVs utilizing stellite pilot disc material. Additionally five valves returned from Wyle laboratories with discs of PH13-8MO material were installed. This was done as recommended by the BWROG. PH13-8MO material appears to have reduced corrosion bonding between the pilot and its seat during service. Eight spare valves remain at Wyle Laboratories.

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Present plans are to have 5 of the spare valves contain PH13-8MO discs. After the first refuel outage, the plant will have the BWROG recommended SRV pilot disc material installed ratio of fifty percent. Additional confirmation of satisfactory performance will be necessary before installing more replacement disc material above the fifty percent ratio.

The second action taken was to completely disassemble, clean and reassemble the valves whose pilot condition appeared to warrant this action. The third action was to inspect and rework, as necessary, all the pilot valve labyrinth seals. Seal clearances of this model SRV have been determined to be a factor which may contribute to upward set pressure drift.

The final action taken was to adjust the set pressure for each valve to within its proper value, then retest and recertify each valve to be within accepted tolerances.

Previous Similar Events:

One previous event similar to this occurred in May 1986. This event was reported in Licensee Event Report 86-013.

William S. Orser
Vice President
Nuclear Operations

Detroit Edison

Fermi 2
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Newport, Michigan 48166
(313) 586-5300

10CFR50.73

Nuclear Operations

May 16, 1988
NRC-88-0120

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

Reference: (1) Fermi 2
NRC Docket No. 50-341
Facility Operating License No. NPF-43

(2) Transmittal of Licensee Event Report 88-009-00 dated April 11, 1988, NRC-88-0090

Subject: Licensee Event Report (LER) No. 88-009-01

Please find enclosed LER No. 88-009-01, dated May 16, 1988, for a reportable event that occurred on March 11, 1988. This revision describes results of analysis completed for Safety Relief Valve set pressure drift and its effect to the Nuclear Steam Supply System. A copy of this LER is also being sent to the Regional Administrator, USNRC Region III.

If you have any questions, please contact Patricia Anthony at (313) 586-1617.

Sincerely,

Enclosure: NRC Forms 366, 366A

cc: A. B. Davis
J. R. Eckert
R. C. Knop
T. R. Quay
W. G. Rogers

Wayne County Emergency
Management Division

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