

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Fermi-2	DOCKET NUMBER (2) 0 5 0 0 0 3 4 1	PAGE (3) 1 OF 0 3
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TITLE (4)
RPV Level 3 Scram

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	7	05	85	03	3	0	8	14			0 5 0 0 0
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THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)

OPERATING MODE (9) 2	20.402(b)	20.406(e)	<input checked="" type="checkbox"/>	60.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10) 0 0 4	20.408(a)(1)(i)	60.36(e)(1)	<input type="checkbox"/>	60.73(a)(2)(v)	73.71(c)
	20.408(a)(1)(ii)	60.36(e)(2)	<input type="checkbox"/>	60.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 365A)
	20.408(a)(1)(iii)	60.73(a)(2)(i)	<input type="checkbox"/>	60.73(a)(2)(iii)(A)	
	20.408(a)(1)(iv)	60.73(a)(2)(ii)	<input type="checkbox"/>	60.73(a)(2)(viii)(B)	
20.408(a)(1)(v)	60.73(a)(2)(iii)	<input type="checkbox"/>	60.73(a)(2)(x)		

LICENSEE CONTACT FOR THIS LER (12)

NAME L.P. Bregni, Compliance Engineer	TELEPHONE NUMBER AREA CODE: 3 1 3 5 8 6 - 5 3 1 3
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS

SUPPLEMENTAL REPORT EXPECTED (14)

<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
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ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single space typewritten lines) (16)

On July 5, 1985, a reactor trip occurred due to an actual reactor water level 3 condition. The reactor trip was actuated by all four Reactor Protection System (RPS) channels. The plant responded as designed. The reactor trip resulted from a water level transient that occurred when the turbine bypass valve controller malfunctioned causing the bypass valves to close.

Prior to the event the plant was in Operational Condition 2 (Startup) with reactor power at 4 percent. A post reactor trip evaluation was performed, required surveillances accomplished, and reactor criticality was reestablished at 0108 hours on July 6, 1985.

The possible causes of the turbine bypass valve controller malfunction have been corrected by installing an AC interference filter on the valve control circuit and by adjusting the filter on the steam pressure signal to dampen an oscillating signal.

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

At 1531 hours on July 5, 1985, a reactor trip occurred due to an actual reactor water level 3 condition. The reactor trip was actuated by all four Reactor Protection System (RPS) channels. The plant responded as designed. All withdrawn rods fully inserted. Primary containment isolation valve groups 13 and 15 received an isolation signal. The group 15 valves were already closed, and the group 13 valves closed on signal.

Prior to the event the plant was in Operational Condition 2 (Startup) with reactor power at 4 percent. A post reactor trip evaluation was performed, required surveillances accomplished, and reactor criticality was reestablished at 0108 hours on July 6, 1985.

The following sequence of events led to the reactor trip:

1. After establishing reactor conditions of 630 psig and 490 degrees F the Nuclear Supervising Operator (NSO) at the reactor controls noticed that the turbine bypass valves were closed and that an alarm indication existed for the pressure control system. He also observed that reactor pressure was steadily increasing.
2. The NSO at the reactor controls attempted to open the bypass valves by depressing the manual open pushbutton for each valve without success. This action generated a signal to the valve position controller for the bypass valve to open. This signal was prevented from being acted upon, however, until the signal which had initially caused the bypass valves to close was cleared.
3. The Patrol NSO was directed to reset the bypass valve control in the relay room. The Patrol NSO discovered both channels had "MOD F" alarms. He turned the valve controller power supplies off twice which cleared the module fault on the east valve, but the west valve required several more tries before resetting.
4. At 1526 hours, the east bypass valve opened to 30-40 percent when the module fault cleared. This resulted in a pressure decrease and water level increase which caused the operating reactor feed pump to trip on Level 8 about eight seconds later.
5. The control room operator began inserting control rods to reduce power. At about 1528 hours, the reactor water level began to decrease rapidly due to blowdown.

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TEXT (If more space is required, use additional NRC Form 306A's) (17)

- With the reactor feed pumps tripped, the heater feed pumps did not provide adequate flow to overcome the blowdown losses because the heater feed pumps design discharge pressure was less than reactor pressure. Thus the water level continued to decrease until it reached Level 3 at 1531 hours, which caused a reactor trip as designed.

A post event investigation revealed that the pressure control system which controls the bypass valve position to achieve a selected reactor pressure was malfunctioning. The bypass valves are hydraulically operated. The accumulator tank which provides the pressure to move the valves is believed to have been exhausted due to repeated cycling of the valves just prior to the event. When this occurs, the valves are unable to move and the control circuitry then signals the valves to close. A number of potential causes for the valve cycling have been identified.

The valve control circuitry was observed to have an AC induced signal from a nearby motor operated potentiometer. It has also been observed that a resonance oscillation in the steam pressure in the main steam line can generate a signal causing the bypass valves to cycle.

The operator's action upon discovering that the bypass valves were closed was to open them using the manual control pushbutton. He was unaware that this generates a signal to open the valve to a position which is proportional to the length of time the button is held in and that this signal is sealed into the control module until the module fault alarm is reset. No indication of this applied signal is available to the operator.

When the Patrol NSO reset the module fault in the relay room, the open signal present caused the east bypass valve to immediately open to a 30-40 percent open position. This caused the subsequent pressure and level transient.

After the event, the pressure control system was adjusted and has functioned properly since. A temporary modification was installed to filter any AC noise in the demand signal. A permanent modification is being designed. The motor operated potentiometer was replaced which reduced the level of interference. Abnormal Operating Procedure 20.109.02, "Reactor Pressure Controller Failure" is being revised to properly address operation of the bypass system and an engineering evaluation is being conducted to provide a control room alarm when a non-zero pushbutton signal is present.

The plant responded as designed. Reactor core isolation cooling and low pressure coolant injection were available if water level had continued to decrease.

**Detroit
Edison**

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August 14, 1985
NP850007

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

Gentlemen:

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

Subject: Transmittal of Licensee
Event Report 85-033

Please find enclosed LER No. 85-033-00, dated August 14, 1985, for a reportable event which occurred on July 5, 1985. Per discussion with Region III, an extension was granted to defer submittal until August 14, 1985. As indicated below, a copy of this LER is being sent to the Administrator Region III.

If you have any questions, please contact us.

Sincerely,



R. S. Lenart
Plant Manager

Enclosure: NRC Forms 366, 366A

cc: P.M. Byron
M.D. Lynch

Regional Administrator
USNRC Region III
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Glen Ellyn, IL 60137

Director/Coordinator
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