

## LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Fermi 2										DOCKET NUMBER (2) 0 5 0 0 0 3 4 1 1 0 0 4									
TITLE (4) Actuation of the Reactor Protection System Due to a Transient in Common Reference Leg																			
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 N/A						DOCKET NUMBER(S) 0 5 0 0 0				
06	25	87	87	025	000	07	20	87	N/A						0 5 0 0 0				
OPERATING MODE (9) 3		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)																	
POWER LEVEL (10) 0.010		20.402(b)				20.405(c)				<input checked="" type="checkbox"/> 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)				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)(vii)(B)									
		20.405(a)(1)(v)				50.73(a)(2)(iii)				50.73(a)(2)(ix)									
LICENSEE CONTACT FOR THIS LER (12)																			
NAME Girija S. Shukla, Compliance Engineer										TELEPHONE NUMBER 3113 5186 + 11617									
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																			
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC					
SUPPLEMENTAL REPORT EXPECTED (14)										EXPECTED SUBMISSION DATE (15)				MONTH	DAY	YEAR			
YES (If yes, complete EXPECTED SUBMISSION DATE)										<input checked="" type="checkbox"/> NO									

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

On June 25, 1987 at 1456 hours the Reactor Protection System actuated and several engineered safety features were challenged. This event occurred as an instrument repairman was opening the isolation valve to a newly replaced transmitter on a common reference leg. Due to a combination of trapped air in transmitter and difficulty in operating the isolation valve smoothly, a pressure transient occurred. This affected the reactor water level transmitters and caused a reactor water level 1 trip signal.

While this type of event has occurred previously, the installation of a new dry transmitter made this type of occurrence more probable. Therefore management decided to perform the replacement during a shutdown to minimize the effect on the plant.

In order to minimize the possibility of recurrence of this event, multi-turn needle valves will be installed to improve the repairman's control when returning instruments on the common reference legs to service.

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## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104  
EXPIRES: 8/31/88

FACILITY NAME (1)  Fermi 2	DOCKET NUMBER (2)  0500034187	LER NUMBER (6)			PAGE (3)		
		YEAR 7	SEQUENTIAL NUMBER -025	REVISION NUMBER -00			

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

Initial Plant Conditions:

Operational Condition: 3 (Hot Shutdown)  
Reactor Power: 0 percent  
Reactor Pressure: 670 psig  
Reactor Temperature: 500 degrees Fahrenheit

Description of Event:

On June 25, 1987 the reactor vessel pressure transmitter (PIT), C32-N005A on a common reference leg was replaced. A thorough effort was made by the Instrumentation and Control (I&C) repairman to ensure the new transmitter was free of air prior to restoration. The I&C repairman was restoring the transmitter to service by opening its isolation valve in accordance with the approved procedure when a pressure spike occurred in the reference leg. This pressure spike was sensed by the reactor vessel water level transmitters (LT) and the Reactor Protection System (JC) was actuated. A Level 1 scram signal was generated at 1456 hours.

In response to the scram signal the Reactor Core Injection Cooling System (BN) actuated and injected into the reactor vessel. The operable parts of the engineered safety features system (JC) challenged during this event responded per their design with the following exceptions:

- Neither division of the Residual Heat Removal System (RHR) (BO) actuated, though the "RHR Initiation Reactor Vessel H2O Level 1" alarm was received as documented by the Sequence of Events Recorder.
- Emergency Diesel Generator 13 (EDG) (EK) automatically started. When the control room operator loaded the EDG to approximately 28% of its continuous rating, he could not control voltage. The control room indication (JI) for EDG 13 showed the maximum negative kilovolt-amperes reactive (kilovars).

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/88

FACILITY NAME (1)  Fermi 2	DOCKET NUMBER (2)  0 5 0 0 0 3 4 1 8 7	LER NUMBER (E)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

At 1512 hours the scram signal was reset and the actuated safety features system excluding the RHR System and EDG 13 were subsequently returned to standby condition on June 25. After further investigation and performance of surveillance requirements to verify operability, EDG 13 was declared operable and returned to service on June 26 and both divisions of RHR were declared operable and returned to service on June 27.

Cause of the Event:

The scram signal was caused by the pressure spike sensed by the reactor vessel water level transmitters on the common reference leg when the new pressure transmitter was restored to service. Apparently air was still trapped within the transmitter and/or its tubing even though the I&C repairman attempted to completely fill the new transmitter. The transmitter, GEMAC type 556, does not have venting capability as part of its design. Therefore it was not possible for the I&C repairman to verify that the transmitter was completely filled.

Additionally since the isolation valve cannot be operated smoothly, the control required to only crack the valve open during restoration is difficult to achieve. No other components, systems or structures that were inoperable contributed to this event.

Because the pressure spike was of a short duration (82 milliseconds) it did not last long enough for the seal-in relay (44) in the RHR pump start logic to actuate. The initiation alarm received during the event annunciates prior to the actuation of the seal-in relay.

Investigation of the kilovar control problem for EDG 13 could not determine the cause. Operability of the EDG was demonstrated by performing a surveillance after the investigation which revealed nothing abnormal.

Analysis of Event:

Management was aware of the possibility of this type of occurrence while replacing the reactor vessel pressure transmitter. Therefore they chose to perform this maintenance during a reactor shutdown in order to minimize the effects on the plant.



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APPROVED OMB NO. 3150-0104

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

During the pressure transient, the reactor vessel water level remained normal. Had the actual reactor vessel water level required the operation of the engineered safety features system, their actuation and performance would not have been prevented. The safety consequences would have been more severe if this event had occurred during power operation.

Corrective Actions:

While there is a history of this type of event occurring at General Electric nuclear plants, previous corrective actions taken at Fermi 2 to train I&C personnel on a mock up of the instrument rack starting in late 1985 have reduced the number of these events. Because of this trend, it can be concluded that the training has been effective in reducing this type of event.

In order to minimize the possibility of recurrence of this event, multi-turn needle valves will be installed for instruments connected to the common reference legs.

The new valves will allow for improved control when returning the instruments to service. Installation of the needle valves is anticipated during the first refueling outage subject to the availability of suitable valves.

A description of this event will be included in the required reading given to I&C repairmen in August in order to keep them aware of the potential consequences when working on the reference leg instruments.

Previous Similar Occurrences:

There have been several previous similar events where isolations occurred while I&C personnel were working with instruments on the common reference legs. These were reported in Licensee Event Reports 85-005, 85-014, 85-015, 85-021, 85-030, 85-067, 85-073, 86-033 and 87-016.

Robert S. Lenart  
Plant Manager

10CFR50.73

Detroit  
Edison

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Nuclear  
Operations

July 20, 1987  
NRC-87-0112

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

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

Subject: Licensee Event Report (LER) No. 87-025-00

Please find enclosed LER No. 87-025-00, dated July 20, 1987, for a reportable event that occurred on June 25, 1987. A copy of this LER is also being sent to the Regional Administrator, USNRC Region III.

If you have any questions, please contact Mr. Girija Shukla at (313) 586-1617.

Sincerely,

R. S. Lenart  
Plant Manager

Enclosure: NRC Forms 366, 366A

cc: A. B. Davis  
J. R. Eckert  
E. G. Greenman  
W. G. Rogers  
J. J. Stefano

Wayne County Emergency  
Management Division

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