NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/85

LICENSEE EVENT REPORT (LER)

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TITLE (4)

Reactor Water 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	0 9	8 5	8 5	— 0 3 5	— 0 0	0 8	0 8	8 5		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9)	2	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	0 0 2	20.402(b)	20.405(c)	X 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)(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
L.P. Bregni, Compliance Engineer	AREA CODE 3 1 3 — 5 8 6 - 5 3 1 3

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)	XX NO				

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

On July 9, 1985, a reactor scram occurred due to an actual reactor water level 3 condition. The scram was actuated by all four reactor protection system channels. The plant responded as designed. The scram resulted from a slow water level decrease that started when reactor pressure was manually increased. The increase was just sufficient to overcome feedwater pump discharge pressure. The feedwater turbine was also in manual and did not, therefore, automatically compensate for the increase in discharge head. Feedwater control was in automatic and was unable to maintain level by further opening the feedwater startup level control valve.

Prior to the event the plant was in Operational Condition 2 (Startup) with reactor power at 2 percent. A post-scram evaluation was performed, required surveillances accomplished, and reactor criticality reestablished at 0935 hours on July 10, 1985.

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At 2303 hours on July 9, 1985, the reactor scrammed due to an actual level 3 condition. The scram 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 group 13 valves went closed. A post-scram evaluation was performed, required surveillances accomplished, and reactor criticality reestablished at 0935 hours on July 10, 1985.

Prior to the event the plant was in Operational Condition 2 (Startup) with reactor power at 2 percent. Reactor pressure was being maintained manually at a nominal 920 to 1020 psig for scram time testing of the control rod drives (CRD's). At the time, automatic pressure control was down for repairs and manual pressure control was being accomplished by manipulation of the turbine bypass valves. The reactor feed pump turbine was in manual, and the recirculation pumps were at the minimum speed setting of 30 percent.

Feedwater control was in the automatic, single-element mode. In this mode reactor water level is controlled automatically in accordance with the reactor water level controller setpoint, and does not consider total steam flow signal nor total feedwater flow signal. These signals are not used under conditions of low steam and feedwater flow that existed at the time because the signal strenghths are too low and would only introduce instability in the control system.

The following is the sequence of events that led to the reactor scram:

1. At about 2045 hours the operator controlling reactor pressure raised reactor pressure about 30 psig, from 965 to 995 psig. As stated above, reactor pressure was being controlled manually with the turbine bypass valve because of a problem with the automatic pressure controller which was being repaired.

2. When reactor pressure was raised, the reactor feed pump, which was also in manual, was no longer developing sufficient discharge pressure to maintain level. Reactor water level began decreasing very slowly.

3. As the difference between actual and setpoint level increased, the reactor feedwater pump (RFP) startup level control valve began to open further. At 2258 hours the "RFP Startup Valve Open" alarm annunciated indicating that the valve was greater

than 80 percent open. However, the operator at the controls failed to recognize the alarm and the event went unnoticed. Reactor water level continued to decrease.

4. At 2302 hours one of the post-scram recorders shifted to high speed as it is designed to do when reactor water reaches level 3. This change in chart recorder speed is also annunciated, and thus alerted the operator to the low-level condition.

5. The operator attempted to raise water level, but within 20 seconds all four RPS channels tripped on level 3 causing the reactor scram. After the scram, water level recovered and was maintained by the feedwater heater pumps. The Main Steam Isolation Valves were closed to reduce the cooldown rate.

The root cause of this event was operator error in that the operator at the feedwater controls did not recognize that level was decreasing, albeit slowly, and failed to respond to the "RFP Startup Valve Open" alarm. Circumstances that contributed to this error were the high level of activity in the control room prior to the event and the number of alarms received in the control room.

As stated above, several plant parameters that are normally controlled automatically were being manually controlled and thereby required additional operator attention. Other activities underway which required control room operator attention included scram time testing of the CRD's, troubleshooting and calibration of the south reactor feedpump, and startup of the reactor water cleanup system. All of these activities contributed to divert operator attention away from the decreasing water level.

Because of the level of testing and startup activity a number of alarms were being received in the control room. The ongoing troubleshooting and calibration activity on the south reactor feedpump was being controlled in the control room from the same panel that received the alarm on the feedwater startup valve. Because other feedwater related alarms were being generated and annunciated at this panel, the alarm that indicated a problem with reactor water level went unnoticed.

Another factor that contributed to the event was an inoperative reactor water level 4 alarm. The alarm was already annunciated in the control room and acknowledged, and a repair order had been written

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

earlier in the day to repair the spurious alarm. Because the water level was decreasing slowly, this alarm would have given the operators sufficient time to act to prevent the level 3 scram.

This event was discussed at the Nuclear Shift Supervisors' meeting, emphasizing the importance of maintaining an awareness of newly received alarms. This LER will be placed in the required reading for all licensed operators.

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August 8, 1985
NP850016

Nuclear Operations

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 85-035

Please find enclosed LER No. 85-035-00, dated August 8, 1985, for a reportable event which occurred on July 9, 1985. As indicated below, a copy of this LER is being sent to the Region III office.

If you have any questions, please contact us.

Sincerely,

G. A. Dahl for RSL

R. S. Lenart
Plant Manager

Enclosure: NRC Forms 366, 366A

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

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