William S. Orser
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10CFR50.73

June 8, 1992
NRC-92-0054

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

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

Subject: Licensee Event Report (LER) No. 92-004

Please find enclosed voluntary LER No. 92-004, dated June 8, 1992, for a reportable event that occurred on May 8, 1992. A copy of this LER is also being sent to the Regional Administrator, USNRC Region III.

If you have any questions, please contact Barbara Siemasz, Compliance Engineer, at (313) 586-1683.

Sincerely,

Enclosure: NRC Forms 366, 366A

cc: T. G. Colburn
A. B. Davis
M. P. Phillips
S. Stasek
P. L. Torpey

Wayne County Emergency
Management Division

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)
Fermi 2	0 5 0 0 0 3 4 1	1 OF 0 5

TITLE (4) Emergency Equipment Service Water Pump Start Due to Shorting Across Terminal Connections

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 5	0 8	9 2	9 2	— 0 0 4	— 0 0	0 6	0 8	9 2		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	1 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)	X 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
	AREA CODE
Barbara G. Siemasz, Compliance Engineer	3 1 3 5 8 6 - 1 6 8 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)	X NO				

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

On May 8, 1992 at 1042, Instrument and Control (I&C) technicians were in the process of removing a flow indicator for corrective maintenance when Division II Emergency Equipment Service Water (EESW) pump P4500C001B inadvertently started. The I&C technicians moved a bundle of conductors connected to a terminal strip several times in order to reach up and back far enough to determinate the flow indicator. Two conductors in the bundle were found to be part of the EESW "B" pump manual start circuit. A single strand of wire was found loose from the lug of one of the two conductors. As the bundle was moved, the loose strand of wire came in contact with and shorted across to the adjacent terminal which then provided an electrical path to start the pump.

The start of EESW "B" pump was determined not to be a result of an ESF system logic actuation. The root cause of this event has been determined to be improper termination of a lug during initial installation.

Immediate corrective action was to cover the loose strand of wire with insulating tape. A work request has been written to rework the lug. A review of this event will be presented in Third Quarter 1992 Electrical Maintenance and I&C continuing training.

This event was reported under 10CFR50.72(b)(2)(ii). Subsequent reviews by Detroit Edison determined this event did not clearly meet the current guidance for an Engineered Safety Feature actuation. However, because of Nuclear Regulatory Commission interest in this event, this voluntary Licensee Event Report is being submitted.

Initial Plant Conditions:

Operational Condition: 1 (Power Operation)
Reactor Power: 100 %
Reactor Pressure: 1008 psig
Reactor Temperature: 540 Degrees Fahrenheit

Description of Event:

On May 8, 1992 at 1042, Instrument and Control (I&C) technicians (utility, non-licensed) were in the process of removing flow indicator [FB] R30-R850D from the back of control room panel H11P602 for corrective maintenance when Division II Emergency Equipment Service Water (EESW) [BI] pump [P] P4500C001B inadvertently started. Operations personnel (utility, licensed operator) in the control room notified the I&C technicians of the EESW pump start and stopped work in the panel. An investigation was initiated into the cause of the pump start and included a review of component (pump) and system logic drawings and a field evaluation.

In reviewing component and system logic drawings, the start logic for the pump would require manual operation of the Coordinated Manual Control (CMC) switch [HS] to the "run" position located on the front of control room panel H11P602. A check with Operations personnel confirmed this action had not been taken. The system start logic was not actuated since expected alarms [ALM] were not received and the relay [RLY] which actuates the Emergency Equipment Cooling Water (EECW) [CC] and EESW was not energized. Also, an interfacing relay between the component logic and system logic which could start the pump independent of system logic actuation was not energized. A check of the relay room panel H11P870 verified position of both relays. The system automatic initiation logic for the three Engineered Safety Feature (ESF) signals (postulated design basis accident, loss of off-site power and passive failure of the Reactor Building Closed Cooling Water system) and the system manual initiation logic pushbutton were not actuated. Had an ESF actuation from one of these signals taken place, EECW would have automatically started and initiated an automatic start of EESW. Neither system was actuated during this event. The start of EESW "B" pump was determined not to be a result of an ESF system logic actuation.

A check of personnel having accessed the Relay Room and panel H11P870 at the time of the event found no one had entered the room. A check also of personnel having access to Division II Switchgear Room found no one had entered at the time of this event. The only work being performed in the control room at that time was taking place behind panel H11P602. The I&C technicians stated that, while working behind this panel, they had to move a bundle of conductors connected to a terminal strip several times in order to reach up and back far enough to determinate flow indicator R30-R850D. A review of the EESW "B" pump logic drawings indicated that two conductors in the bundle were part of the EESW "B" pump manual start circuit. After close examination of the physical condition of the wiring and terminal board connections, a single strand of wire was found loose from the lug of one of the two conductors. The stray wire measured one-quarter to one-half inch in length.

At 1210 hours, upon completion of the initial investigation and verification that the ESF contact in the pump start circuit was not actuated, EESW "B" pump was shutdown. The EESW pump was returned to its standby configuration.

Cause of Event:

Investigation subsequent to the event has determined that, as the bundle containing the two conductors was moved, the loose strand of wire on one of the conductors came in contact with and shorted across to the adjacent terminal of the other conductor which then provided an electrical path to start the pump. The single strand loose from the lug was determined capable of providing sufficient current to permit pickup of the EESW "B" pump manual starting coil. Based on a review of the EESW "B" pump start logic drawings, a short circuit between these two conductors can result in initiation of EESW "B" pump and the observed sequence of event recorder points.

The root cause of this event has been determined to be improper termination of a lug during initial installation. A review of past maintenance work on the two terminal connections has determined that no other work had been performed since initial installation. A review of the I&C technicians' work practices showed they had performed their work as expected. They conducted a visual inspection of the

terminals/wires prior to entering the panel and found nothing wrong. They used a wrapped (insulated) screwdriver when working to determinate flow indicator R30-R850D. The loose strand was not visible except after a close and detailed inspection of the lugs.

Analysis of Event:

This event involved an inadvertent start of an ESF component which did not actuate via its ESF system logic. The operation of the pump is consistent with its required safety function. The remainder of the EECW/EESW system components and logic were not affected by the momentary initiation of the EESW "B" pump manual start circuit and were available to perform their design basis safety function. Based on the above conditions, the ESF function of EESW/EECW was unaffected by this event. Therefore, the health and safety of the public and safety of the plant were ensured.

This event was reported under 10CFR50.72(b)(2)(ii). As discussed above, it was subsequently determined that the EESW pump manual start did not actuate via its ESF system logic. The guidance for reporting under 10CFR50.72(b)(2)(ii) [ESF actuations] was not clearly satisfied. However, because of Nuclear Regulatory Commission interest in this event, Detroit Edison is submitting this voluntary Licensee Event Report.

Corrective Actions:

An accountability meeting was held to discuss this event with personnel involved and with management.

A work request was written to rework the lug to eliminate the loose strand of wire. In the interim, the loose strand of wire was covered by insulating tape.

This event will be presented in Electrical Maintenance and I&C continuing training in Third Quarter 1992.

Previous Similar Events:

There have been no previous reportable events involving only an inadvertent manual pump start.

Failed Component Data:

There were no failed components involved in this event.