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Nuclear Operations

10CFR50.73

May 24, 1991
NRC-91-0058

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. 91-008

Please find enclosed LER No. 91-008, dated May 24, 1991, for a reportable event that occurred on April 24, 1991. 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: A. B. Davis
J. R. Eckert
R. W. DeFayette
W. G. Rogers
J. F. Stang

Wayne County Emergency
Management Division

IE22
1/1

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 4

TITLE (4) ESF Actuation During Performance of Reactor Pressure Vessel Level Transmitter Calibration

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 4	2 4	9 1	9 1	— 0 0 8	— 0 0	0 5	2 4	9 1		0 5 0 0 0
										0 5 0 0 0

OPERATING MODE (9)	5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	0 0	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
	AREA CODE
Barbara 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)

At 0440 hours on April 24, 1991, unexpected Engineered Safety Feature actuations took place during the performance of a surveillance test on the Division II, Channel B reactor pressure vessel level transmitter. The plant was in a refueling outage with the reactor defueled.

An investigation determined the cause of the ESF actuation was due to a trip output logic switch in the wrong position on a Division I, Rosemount 510 DU trip unit, C71N650A (Drywell Pressure High). The root cause of this event was personnel error. The trip output logic switch, located on a printed circuit board in the trip unit, was inadvertently mispositioned during rework of the board.

Immediate corrective action was to verify that Rosemount analog trip system switches were in the correct position. As a long term corrective action, a Human Performance Enhancement System analysis is being performed for this event in order to identify actions which could be effective in preventing future similar events.

Initial Plant Conditions:

Operational Condition: Fuel Off Loaded
Reactor Power: 0%
Reactor Pressure: 0 psig
Reactor Temperature: 90°F

Description of Event:

At 0440 hours on April 24, 1991, Reactor Building Heating, Ventilation and Air Conditioning [VA] tripped, Division I Standby Gas Treatment [BH] auto started, and Division I Control Center Heating, Ventilation and Air Conditioning [VI] shifted to the recirculation mode. The unexpected Engineered Safety Feature (ESF) actuations took place during the performance of a calibration of Division II, Channel B, Nuclear Steam Supply Shutoff System (NSSSS) [JC] Reactor Vessel, Level 2 setpoints, in accordance with the calibration portion of surveillance procedure 44.020.008, "NSSSS Reactor Vessel Level 1 and 2, Channel B".

The NSSSS has two trip systems. Trip system A is comprised of Channels A and C. Trip system B is comprised of Channels B and D. A trip from Channels A and B or C and D is necessary for an ESF actuation to occur. The secondary containment isolation logic, which was actuated in this event, was a combined trip from Reactor Low Level 2 and High Drywell Pressure.

An investigation determined the ESF actuations were the result of a trip output logic switch in the wrong position on Rosemount 510 DU trip unit, C71N650A (Drywell Pressure High). The mispositioned trip output logic switch caused the trip unit's output to be in the reverse state from normal. Thus, the trip unit's output was the same as if a high drywell pressure condition existed, although an actual high drywell pressure input signal was not present. This resulted in a half-trip condition for the associated NSSSS actuation logic. Subsequently, during the performance of the Channel B calibration, the resultant reactor pressure vessel low level (L2) signal, combined with the existing high drywell pressure condition from Channel A, caused a full trip on the NSSSS actuation logic leading to the ESF actuations.

All Instrument and Control (I&C) surveillance testing was stopped until the status of Rosemount analog trip system switches in the trip units on instrument panels H21P080, H21P082, H21P084, and H21P086 could be verified to be in the correct position. The trip output logic switch on C71N650A was placed from the "normal" position to the correct "reverse" position. Subsequently, the surveillance testing was resumed and satisfactorily completed.

Cause of Event:

The root cause of this event was personnel error. The trip output logic switch is located on a printed circuit board in the trip unit. The trip units were removed from the plant to comply with General Electric SIL 520 which suggested replacement of the Q-8 transistor. Handling and transport of the trip unit circuit board to and from the instrument shop for rework resulted in the inadvertent mispositioning of the trip output logic switch.

A factor that contributed to this event was that actuation and trip instrumentation associated with NSSSS logic Channels C and D of the Rosemount analog trip system were de-energized due to plant work. The procedure being performed required certain prerequisites be met prior to performing the surveillance. One of these prerequisites (step 5.1) was to verify that annunciator 3D85, "Primary Containment High Pressure Channel Trip," was clear. However, at this time, this annunciator was illuminated, since Channels C and D were tripped as a result of panel de-energization for the Q-8 transistor replacement. Consequently, the I&C technician was unable to obtain the information from the already lit annunciator that the trip output logic switch for Channel A was mispositioned. The I&C technician stopped the procedure when the prerequisites could not be met. Upon further review, system engineering determined that the prerequisites could not be performed, as required for this instrument calibration, due to the existing logic actuation from the de-energized panel for Channels C and D. The risk of plant trips associated with performance of this calibration was considered minimal based on the logic review. The Nuclear Shift Supervisor was informed of this situation by system engineering and allowed the surveillance to proceed.

Analysis of Event:

The available safety systems/logic that actuated during this event fulfilled their safety function. No other engineered safety features were affected by this event. Had an event occurred during this time frame which required operation of the ESF systems impacted, these systems would have fulfilled their design basis safety function. Therefore, during this event, the health and safety of the public as well as, plant personnel were not affected.

Corrective Actions:

All I&C surveillance testing was stopped and a work request was written to verify and correct, as required, the position of all switches located on Rosemount analog trip systems on instrument panels H21P080, H21P082, H21P084, and H21P086. As transistor replacement for trip units removed from instrument panels H21P081, H21P083, H21P085, and H21P087 had not yet started, those work requests were revised to check and record switch position upon removal of the circuit board and to ensure proper switch position upon replacement. All immediate corrective actions have been completed.

A Human Performance Enhancement System (HPES) analysis is being performed for this event in order to identify actions which could be effective in preventing future similar events. This evaluation is expected to be completed by May 31, 1991. Personnel from organizations involved in this event will be scheduled for training on the HPES analysis upon completion of the corrective actions from this evaluation. If there is a change to the corrective actions pertinent to this LER, a supplement will be submitted within 30 days of management approval of the HPES.

Previous Similar Events:

This is the only LER describing a drywell pressure transmitter trip output logic switch mispositioned.