William S. Orser
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10CFR50.73

Nuclear Generation

November 22, 1989
NRC-89-0249

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. 89-029-00

Please find enclosed LER No. 89-029-00, dated November 22, 1989, for a reportable event that occurred on October 23, 1989. A copy of this LER is also being sent to the Regional Administrator, USNRC Region III.

If you have any questions, please contact Joseph Pendergast at (313) 586-1682.

Sincerely,

Enclosure: NRC Forms 366, 366A

cc: A. B. Davis
J. R. Eckert
R. W. Defayette/W. L. Axelson
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) Engineered Safety Feature Actuations Due to Loss of Reactor Protection System Motor Generator Set "B" Power

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)
									N/A	0 5 0 0 0
1 0	2 3	8 9	8 9	0 2 9	0 0	1 1	2 2	8 9	N/A	0 5 0 0 0

OPERATING MODE (9)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
5	20.402(b)	20.405(c)	X 50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10) 0 0 0	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
Joseph Pendergast, Licensing Engineer	AREA CODE 3 1 3 5 8 6 - 1 6 8 2

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 October 23, 1989, at 1020 hours, a half scram signal was received when power was lost on Reactor Protection System bus "B". Several Engineered Safety Features were actuated. All of the expected actuations/isolations were received. Shutdown Cooling was not expected to isolate at the time of the event since the affected Shutdown Cooling suction valve in the system was de-energized open for surveillance testing. The valve did close when power was restored to it.

The loss of RPS bus "B" was attributed to the location of a breaker operating switch in a high traffic area in the plant.

A Security investigation was conducted to determine if any personnel could have bumped the switch. This Licensee Event Report will be given to operations personnel as required reading. A Potential Design Change will be evaluated to determine if breaker covers should be installed at panels when the breaker operating switches are located in high traffic areas.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Fermi 2	0 5 0 0 0 3 4 1	8 9	— 0 2 9	— 0 0	0 2 OF 0 4

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

Initial Plant Conditions:

Operational Condition: 5 (Refueling)
Reactor Power: 0 Percent
Reactor Temperature: 98 degrees Fahrenheit
Reactor Pressure: 0 psig

Description of the Event:

On October 23, 1989, at 1020 hours, a half scram signal was received when power was lost to Reactor Protection System bus "B" (RPS) (JC). The loss of power caused several Engineered Safety Features to actuate. All of the expected actuations/isolations were received. These included:

1) The Control Center Heating Ventilation and Air Conditioning System (VI) (CCHVAC) shifted to the recirculation mode.

2) Reactor Building Heating Ventilation and Air Conditioning (VA) (RBHVAC) isolated.

3) The Standby Gas Treatment System (BH) (SGTS) automatically started.

4) Division 2 Non-Interruptible Air Supply control air compressor (COMP) (NIAS) automatically started.

Operations personnel quickly determined that the loss of power to RPS bus "B" had been caused by a trip of RPS motor generator "B". All expected isolations and actuations were verified to have occurred. Shutdown cooling had not isolated since the Residual Heat Removal (RHR) Shutdown Cooling Valve E11-F008 was de-energized in the open position at the time of the event for a battery surveillance test.

Power was restored to RPS bus "B" from the alternate power supply at 1103 hours. At 1210 hours, the above described system actuations and isolations were returned to normal except for E11-F008 which was still de-energized open for the surveillance.

At 1214 hours, power was restored to E11-F008 initiating a closure of the valve and isolating Shutdown Cooling. Operations personnel immediately recognized the valve closure as an expected isolation due to the previous RPS bus "B" power loss. The valve was opened and Shutdown Cooling restored in approximately one minute.

Cause of the Event:

A thorough investigation was conducted. The trip of the RPS Motor Generator set "B" was attributed to the location of the breaker operating switch. The switch is located in an area that has seen high traffic during the refueling outage. The Motor Control Center is located at the bottom of a stairwell leading to a path that is traveled heavily during the refueling outage. A clearance of twenty-six inches exists between the path and the switch. Workers handling bulky objects may have had difficulty negotiating the clearance, and not realized they bumped the switch. Security has investigated and found no evidence of deliberate tampering with the switch.

The following is a detailed explanation of the E11-F008 operation during this event.

At the time of the event an uncommon condition existed in that E11-F008 was de-energized in the open position for a battery surveillance. Operations personnel checked plant conditions and alarms against expected actuations and isolations as described in Enclosure "B" of NPP 23.316, "RPS 120 VAC and RPS MG Sets". The difference was noted that E11-F008 had not closed and Shutdown Cooling had not isolated as normally would have been expected.

The closure of valve E11-F008 upon re-enerization was due to a seal-in closure signal created by the isolation signal. This was through the open/intermediate position of the valve operating pushbutton. The signal actuated the "close" coil. With the valve operator in the full open position and de-energized, no method of removing the "close" seal-in existed except for pushing the "open" pushbutton prior to re-energizing the valve operator. Thus, when the valve operator was re-energized, the seal-in "closure" signal caused the valve to close.

It should also be noted that there are differences between AC and DC valve operating circuits. For most DC operators and nearly all AC operators, de-energization of the valve Motor Control Center de-energizes both the operator logic and the valve motor. For some DC operators, the power supply to the valve motor is 260 VDC while the operator logic is 130 VDC supplied from an independent source. Some of these selected DC operators have control relay contacts/relays in the valve operator logic that serve to de-energize the logic when the valve motor power is lost. F11-F008 does not have these controls/relays and it is necessary to either pull control power fuses in the valve operator's logic or break the seal-in "close" by pressing the open pushbutton to

prevent valve closure before power restoration after a closure signal is received. When E11-F008 closed, the condition was recognized immediately by operations personnel and actions taken to restore Shutdown Cooling were complete in approximately one minute.

Analysis of the Event:

All of the safety systems which actuated/isolated functioned as designed when the RPS "B" power supply was lost. CCHVAC, RBHVAC, SGTS, and NIAS responded by actuating or isolating per design.

The loss of Shutdown Cooling was for only one minute. Prompt operator action was taken. In addition, the gate between the Spent Fuel Pool and the Reactor Cavity was open. The volume of water contained in the Reactor Cavity and Spent Fuel Pool, coupled with the heat removal capability of the Fuel Pool Cooling and Cleanup System could have served as an additional source of heat removal had there been a need to remove excess heat. Under operating conditions requiring Shutdown Cooling, a loss of this capability for approximately one minute would have had a negligible effect on reactor coolant temperature. Therefore, the health and safety of plant employees and the public was protected at all times.

Corrective Actions:

A security investigation was initiated to identify any personnel who could have bumped the switch or tampered with the switch. No deliberate tampering is suspected.

Potential Design Change 10972 will be evaluated to determine if breaker covers should be installed at panels when the breaker operating switches are located in high traffic areas. This evaluation is expected to be complete by March 15, 1990.

This Licensee Event Report will be given to Operations personnel as required reading. It will serve to alert operators to the particular conditions which were encountered during this event. This will be complete by December 30, 1989.

Previous Similar Events:

Licensee Event Report 88-025, "Reactor Protection Trip System B De-energized Due To Personnel Mishap" described a similar event however the individual who caused the actuation was identified.