

Detroit
Edison

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10CFR50.73

January 9, 1990
NRC-90-0004



Nuclear
Generation

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. 89-030-00

Please find enclosed LER No. 89-030-00, dated
January 9, 1990, for a reportable event that occurred on
December 10, 1989. A copy of this LER is also being sent
to the Regional Administrator, USNRC Region III.

If you have any questions, please contact Patricia
Anthony at (313) 586-1617.

Sincerely,

Enclosure: NRC Forms 366, 366A

cc: A. B. Davis
J. R. Eckert
R. W. Defayette/W. I. Axelson
W. G. Rogers
J. F. Stang

Wayne County Emergency
Management Division

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PDR ADOCK 05000341
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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) <p style="text-align:center;">Fermi 2</p>	DOCKET NUMBER (2) <p style="text-align:center;">0 5 0 0 0 3 4 1 1</p>	PAGE (3) <p style="text-align:center;">1 OF 0 7</p>
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TITLE (6) **Level Transmitter Improperly Installed and Incomplete Actions Taken When the Condition Was Discovered.**

EVENT DATE (5)			LER NUMBER (8)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (9)		
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES		
1	2	0 8	8 9	8 9	0 3 0	0 1	0 9	9 0	NA		
									NA		
									DOCKET NUMBER(S)		
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OPERATING MODE (8) <p style="text-align:center;">2</p>	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)									
POWER LEVEL (10) <p style="text-align:center;">0 0 4</p>	20.402(b)	20.405(e)	50.73(a)(2)(iv)	73.71(b)						
	20.405(a)(1)(i)	50.36(c)(1)	50.73(w)(2)(v)	73.71(e)						
	20.405(a)(1)(ii)	50.36(c)(2)	X 50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)						
	20.405(a)(1)(iii)	X 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)(ix)							

LICENSEE CONTACT FOR THIS LER (12)

NAME <p style="text-align:center;">Patricia Anthony, Compliance Engineer</p>	TELEPHONE NUMBER
	AREA CODE <p style="text-align:center;">3 1 1 3</p>
	<p style="text-align:center;">5 8 6 - 1 6 1 7</p>

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)

YES (If yes, complete EXPECTED SUBMISSION DATE) NO

EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR

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

On October 26, 1989, a Channel C Level 1 and 2 replacement transmitter was installed incorrectly during an outage. This condition was not recognized by the Instrumentation and Control (I&C) personnel nor the Quality Assurance inspector at the time.

The plant was restarted following the outage and was increasing pressure when it was noticed that the Channel C trip unit, which is fed from the transmitter, was still offscale when the other three trip units monitoring the same parameter were back on scale. I&C started to investigate the cause and the operators declared the trip unit inoperable. Once I&C determined the transmitter was inoperable, the operator failed to place the other Channel C trip unit associated with the transmitter in the tripped condition within an hour as required by Technical Specifications. Once the failure to follow Technical Specifications was discovered, the unit was placed in the tripped condition. The transmitter was restored to service.

Accountability meetings regarding this event have been held and required reading, training and critiques have or are being developed and will be given to the departments involved. An overall action plan which includes generic concerns from this event has been developed.

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TEXT (If more space is required, use additional NRC Form 388A's) (17)

TEXT

Plant Conditions at Time of Discovery:

Operational Condition: 2 (Startup)
 Reactor Power: 4 percent
 Reactor Pressure: 902 psig
 Reactor Temperature: 535 degrees Fahrenheit

Description of Occurrence:

On December 10, 1989, during performance of a channel check, it was noted by the operators that a Reactor Vessel Level 2 trip unit, B21-N681C, was reading upscale (greater than 220 inches), while the other three trip units monitoring the same parameter were reading between 195 inches and 200 inches. Instrumentation and Control (I&C) personnel were contacted to investigate the discrepancy.

At 1851 hours, I&C had not completed their investigation of the problem. The Nuclear Shift Supervisor (NSS) decided that it would be prudent to declare the trip unit B21-N681C inoperable. This trip unit was placed in the tripped condition in accordance with Technical Specification 3.3.2, action b., at 1908 hours.

I&C informed the NSS going off shift that transmitter B21-N081C, which feeds trip unit B21-N681C and the Level 1 slave trip unit B21-N684C, was reading upscale at 1915 hours. The output voltage of the transmitter was 6.2 volts when it's maximum should be 5.0 volts. I&C stated they would verify the lineup of the transmitter and report back to the NSS. This information was discussed between the NSS coming on shift and the off-going NSS as part of the shift turnover. No other actions were taken at this time.

At approximately 2000 hours, I&C determined that the transmitter was properly valved-in. After discussion with the NSS and Nuclear Assistant Shift Supervisor, it was decided to perform a calibration on the transmitter by performing parts of surveillance procedure 44.020.009, "NSSSS Reactor Vessel Low Level 1 and 2 Division 2 Channel C Calibration". At 0420 hours on December 11, 1989, the results of the surveillance were found unsatisfactory.

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TEXT (If more space is required, use additional NRC Form 356A's) (17)

It was discovered that the transmitter's high pressure and low pressure sensing lines had been installed backwards when an

Engineering Design Package (EDP) was implemented during the first refueling outage. The NSS directed I&C to check the other transmitters changed out by the same EDP and to properly install transmitter B21-N081C.

I&C completed the verification of the proper installation of the other transmitters by 0545 hours. No other deficiencies were identified.

At approximately 0700 hours, the operators recognized that slave trip unit B21-N684C should have been placed in the tripped condition within an hour of the discovery of the transmitter being inoperable. This trip unit was placed in the tripped condition at that time.

The repairs to transmitter B21-N081C were completed on December 11, at 2253 hours, and testing of the transmitter per 44.020.009 commenced. The surveillance was successfully completed and the transmitter restored to service at 0510 hours on December 12, 1989. The transmitters on two instrument racks that were replaced during the outage under a different EDP were also checked for proper installation.

Investigation into the cause of the improper installation of the transmitter has shown that on October 25, 1989, work on the transmitter per EDP 10757 started and the transmitter was declared inoperable. The work was completed on October 26, 1989. At that point, the high and low pressure sensing lines were reversed. The technicians did not properly trace down the lines and this was not detected by the Quality Assurance inspector signing off the hold point. The package specified that procedure 44.020.009 be performed as post modification testing. This test checks transmitter calibration rather than proper hook up of the instrument. This was successfully completed and the transmitter was declared operable.

Because of plant conditions (levels greater than 220 inches) while shutdown, all of the trip units monitoring this parameter read off-scale. Therefore, the improper installation of the transmitter was not detected. Operational Condition 2 was entered on December 6, 1989, at 1740 hours. On December 8, the reactor achieved criticality. During the day on December 10, 1989, reactor pressure increased from 450 psig to 900 psig. At that point, the other trip units monitoring the same parameter came

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TEXT (if more space is required, use additional NRC Form 305A's) (17)

on-scale and the discrepancy with the trip unit B21-N681C reading was detected during performance of the next channel check.

Cause of Event:

This event and the subsequent failure to place the slave trip unit in a tripped condition were due to personnel errors on the part of various personnel. The I&C technicians (utility non-licensed) did not properly trace down the sensing lines. The Quality Assurance inspector (contractor) did not adequately check the transmitter installation when signing off the hold point during installation of the EDP. When the problem with the trip unit indication was found, operations personnel (licensed utility) focused on the trip unit rather than the transmitter that fed it. The turn over between the NSS's did not adequately convey the actions that had been taken and what remained to be done to resolve the condition. It should be noted that these transmitters are temperature compensated and will read higher than true water level until rated temperature is achieved.

Analysis of Event:

Trip units B21-N681C and B21-N681D provide the signal to the outboard isolation valves in valve groups 2, 10, 11, 12, 14, 16, 17 and 18, while trip units B21-N681A and B21-N681B provide the signal to the inboard isolation valves in the same groups. These are required to be operable when in Operational Conditions 1, 2 and 3.

Additionally, Division I of the Control Center Heating, Ventilating and Air Conditioning System (CCHVAC) receives a signal to shift to the recirculation mode from trip units B21-N681A and B21-N681B at the same time that the Reactor Building Heating Ventilating and Air Conditioning System (RBHVAC) isolates, Division I of the Standby Gas Treatment System (SGTS) starts and the Non-Interruptable Air System (NIAS) (non-Technical Specification support system) starts. This function of CCHVAC is required to be operable in all modes and while irradiated fuel is being handled per Technical Specifications. Trip units B21-N681C and B21-N681D provide the same signals to Division II of these systems.

Trip units B21-N684A or B21-N684C and B21-N684B or B21-N684D provide the isolation signal to the eight Main Steam Isolation Valves (MSIVS). The same trip units send signals to the group 1 main steam line drain valves using logic similar to the other

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group isolation valves. These are required to be operable in Operational Conditions 1, 2 and 3.

The Emergency Core Cooling System (ECCS) and the Reactor Protection System (RPS) initiation capabilities were not affected by this condition. Even if Division I of the systems impacted failed to initiate while operating, the RPS and ECCS would assure mitigation of the consequences of an accident. The radiological consequences of an accident are dependent on reactor power and power history. The maximum possible consequences of a failure of both divisions of isolation/actuation due to low reactor vessel level at 4 percent power is considerably less than that at full power.

This condition alone would not have prevented performance of the associated safety functions, if needed. No events occurred that required actuation of a Reactor Vessel level trip signal. The condition was discovered at low power and a means existed to ensure it was detected at low power.

The function of Channel C was impacted and therefore, the operability of Division II isolation/actuators was impacted. Review of the records show that at various times during the period that the transmitter was inoperable, the other division of the impacted systems was also removed from service. On October 26, 1989, Channel A was out of service for approximately 12 1/2 hours and Channel B was out of service for approximately a 1/2 hour. During this time, the plant was in Operational Condition 5 with no core alterations in progress. Therefore, the systems required to be operable that were affected were CCHVAC and NIAS. Other automatic and manual initiation capabilities of these systems were unaffected.

On October 30, 1989, Division I of CCHVAC was removed from service for approximately 62 hours. During this time, low Reactor Vessel water level would not have been able to shift CCHVAC Division II to the recirculation mode during this period of time. The manual initiation and high radiation initiation for CCHVAC were not affected. The reactor was in Operational Condition 5 during this time with core alterations in progress.

On October 31, 1989, Channel A was taken out of service for approximately 2 hours. At that time, the reactor was in Operational Condition 5 with core alterations (e.g., friction testing) in progress. This would have impacted the operability of the secondary containment isolation actuation instrumentation, which supplies signals to the SGTS and RBHVAC, and NIAS. Other

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TEXT (If more space is required, use additional NRC Form 200A's) (17)

automatic and manual initiation capability was not affected. CCHVAC was still removed from service as described previously.

On November 8, 1989, Channel A was taken out of service for approximately a 1/2 hour. At that time, the reactor was in Operational Condition 5 with no core alterations in progress.

On November 9, 1989, Channel B was out of service three times during the day: 8 hours in the morning, 3 hours in the afternoon and 1 1/2 hours during the night. Additionally, Channel A was out of service for 4 hours during the evening. On November 10, Channel B was out of service for approximately an hour. During this time, the plant was in Operational Condition 5 and CCHVAC was operating in recirculation mode part of that time. While Channels A and B were out of service, CCHVAC and NIAS would not have received a low Reactor Vessel water level initiation signal. The remaining start signals were not impacted. The other systems in question were not required to be operable at the time.

From November 19 through the 23, Division I of CCHVAC was out of service while the plant was in Operational Condition 4. Division II of the system would not have initiated for low reactor vessel water level, but the other system initiation signals were available.

On November 27, 1989, Channel A was removed from service for approximately 15 hours. The plant was in Operational Condition 4 at the time. CCHVAC and NIAS would not have initiated due to low reactor vessel water levels, but the other signals were not inhibited.

Fermi 2 accidents analyzed for Operational Conditions 4 and 5 do not rely on this low water level signal for any system actuations or isolations to mitigate the consequences of these events.

On December 8, 1989, the reactor was in Operation Mode 2 and Channel A was taken out of service for 24 minutes. During this time, low reactor water level initiation for the equipment discussed previously was not available, but none of the action statements for the equipment require action be taken in that short of duration. If an accident had occurred during this 24 minute period of time, diverse signals were available to perform the functions necessary to mitigate the consequences. Even if no automatic initiation signals functioned, manual initiation was possible since none of the affected systems were out of service. Additionally, as discussed earlier, ECCS and RPS capability are not affected by Transmitter B21-N081C.

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TEXT (If more space is required, use additional NRC Form 306A's) (17)

Corrective Actions:

Upon discovery that the transmitter had been improperly installed, other transmitters installed under the same EDP and those installed on racks H11-PO09 and H11-PO10 were verified to be properly installed. No other discrepancies were found.

An accountability meeting was held between the personnel involved and plant management. Additionally, a fact finding meeting was held; based upon review of the facts presented there, discipline will be administered in accordance with company policy.

Informal training on this event was given to I&C shop personnel following the event. A critique of the operators' performance following discovery of this problem has been written and will be included in the January required reading for operations personnel. Quality Assurance has developed a "lessons learned" based upon this event. Training for the Production Quality Assurance inspectors will be completed in January of 1990.

A Human Performance Evaluation System report on this event is being developed. Based upon the conclusions of that report, potential actions to prevent recurrence will be proposed. This report is expected to be completed in January of 1990.

The potential generic ramifications of this event were considered in the accountability action plan developed by Detroit Edison as described in Detroit Edison letter NRC-89-0300. Included in this action plan is verification that there are no other problems with the return to service of safety-related equipment from the outage. The Quality Assurance organization will perform an oversight function during implementation of this action plan.

Previous Similar Events:

In Licensee Event Report 88-012, an event was reported where the operability of a transmitter was affected over an extended period of time due to partial closure of the rack isolation valve.