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Edison

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10CFR50.73

October 5, 1990
NRC-90-0145

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. 90-008

Please find enclosed LER No. 90-008, dated October 5, 1990, for a reportable event that occurred on September 5, 1990. 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

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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 4</p>
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TITLE (4)

HPCI Inadvertant Isolation

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 9	0 5	9 0	9 0	0 0 8	0 0	1 0	0 5	9 0		0 5 0 0 0
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OPERATING MODE (9) <p style="text-align:center;">1</p>	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5: (Check one or more of the following) (11)									
POWER LEVEL (10) <p style="text-align:center;">1 1 0 1 0</p>	20.402(b)	20.405(c)	<input checked="" type="checkbox"/>	50.73(a)(2)(ix)	73.71(b)					
	20.405(a)(1)(i)	50.36(c)(1)	<input type="checkbox"/>	50.73(a)(2)(v)	73.71(e)					
	20.405(a)(1)(ii)	50.36(c)(2)	<input type="checkbox"/>	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 386A)					
	20.405(a)(1)(iii)	50.73(a)(2)(i)	<input type="checkbox"/>	50.73(a)(2)(viii)(A)						
	20.405(a)(1)(iv)	50.73(a)(2)(ii)	<input type="checkbox"/>	50.73(a)(2)(viii)(B)						
20.405(a)(1)(v)	50.73(a)(2)(iii)	<input type="checkbox"/>	50.73(a)(2)(ix)							

LICENSEE CONTACT FOR THIS LER (12)		TELEPHONE NUMBER	
NAME <p style="text-align:center;">Barbara Siemasz, Compliance Engineer</p>	AREA CODE <p style="text-align:center;">3 1 1 3</p>	NUMBER <p style="text-align:center;">5 1 8 6 1 - 1 1 6 1 8 3</p>	

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NFRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NFRDS

SUPPLEMENTAL REPORT EXPECTED (14) <input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)	MONTH DAY YEAR
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ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

On September 5, 1990, at 1026 hours the High Pressure Coolant Injection (HPCI) system automatically isolated due to a spurious high steam flow signal on one of two channels. The system was in standby at the time of the event. In compliance with Technical Specification action statement requirements, the isolation channel was placed in a tripped condition, the system was declared inoperable, and the appropriate LCO was entered.

As a result of the investigation, the root cause of the HPCI isolation is believed to have been a transient process noise disturbance that became superimposed on an already noisy transmitter long enough to actuate the HPCI isolation output logic.

HPCI was subsequently declared operable based on the following: (1) the troubleshooting performed, (2) no trip signal present, (3) successful testing of system function and (4) relay replacement.

An engineering design change was implemented which filtered out the existing background noise from the transmitter's output, thus decreasing the susceptibility to transient disturbances. Subsequent testing verified the effectiveness of the corrective action.

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

Initial Plant Conditions:

Operating Condition: 1 (power operation)
 Reactor Power: 100%
 Reactor Pressure: 1008 PSIG
 Reactor Temperature: 530°F

Description of Event:

At 1026 hours on September 5, 1990, the High Pressure Coolant Injection [(HPCI)(BJ)] system automatically isolated while in standby. The source of the isolation signal was HPCI Steam Line Differential High Pressure (PT), Division II (Logic B). This initiated a HPCI Division II isolation including a HPCI turbine (TRB) trip, an outboard HPCI steam line isolation valve (ISV) closure, and closure of the HPCI pump suction from suppression pool outboard isolation valve (ISV). The specific isolation valves that closed were E41-F600 (HPCI steam supply line isolation bypass) and E41-F041 (HPCI pump suction from suppression pool outboard isolation valve). Valve E41-F003 (HPCI steam supply outboard isolation valve) also received an isolation signal but was already in the closed position as required for the HPCI standby valve line up. The HPCI system responded as expected to this isolation signal. No evidence of an actual HPCI steam line leak was observed and no isolation signal was received from the redundant channel, Division I (Logic A). Additionally, HPCI Steam Line Differential High Pressure Division II instrument trip units (PIT), E41-N657B and E41-N660B, driven by differential pressure transmitter E41-N057B (PT), were observed to be intermittently tripping as evidenced by a flashing trip unit light indicator with no change on the trip unit differential pressure analog indicator. The equivalent Division I instrumentation was observed and showed a steady analog readout with no intermittent flashing of the trip unit light indicator. Based on the above information, the Division II channel was declared inoperable. The channel was placed in the tripped condition as required by Technical Specification (TS) 3.3.2.b, and the HPCI system was declared inoperable at the time of the event in accordance with TS 3.3.2.b, Action 23. All other Emergency Core Cooling Systems (ECCS) and the Reactor Core Isolation Cooling [(RCIC)(BN)] systems were verified operable as required by TS 3.5.1.c.1, Action c.1. A Deviation Event Report (DER 90-0514) was written to investigate and evaluate the HPCI isolation.

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

At 2050 hours, HPCI was returned to the standby mode while troubleshooting continued. By 0100 hours on September 6, 1990, after successful testing, the HPCI isolation instrumentation was declared operable. With HPCI in standby, although still declared inoperable, the system was able to perform its function had it been necessary to do so.

HPCI was declared operable at 1408 hours on September 7, 1990. The basis for the operability determination was that (1) the troubleshooting performed identified the most probable cause of the HPCI isolation, (2) the trip signal was no longer present, (3) testing also showed the system would fulfill its intended safety function and (4) suspect relays were replaced.

Cause of the Event:

The investigation of the HPCI isolation revealed that the differential pressure transmitter E41-N057B (Division II) was functioning properly, however, its output response indicated that it was receiving a high level of process noise. The source of the noise on the transmitter was partial resonance to noise that was observed on Main Steam Line "A" which supplies steam to HPCI. Although no trip unit trips were observed during the investigation (i.e., flashing trip unit indicators), intermittent momentary trips had been observed on trip units previously, as documented on DER 88-1217. At that time, no isolation of HPCI occurred because the trips were not present long enough to actuate the time delayed trip logic.

The root cause for this event is believed to have been a transient noise disturbance which superimposed additional process noise on the process noise already being received by E41-N057B transmitter. This additional noise was present long enough to actuate the isolation logic and cause a HPCI Division II isolation. This condition does not exist on the redundant Division I instrument line.

Analysis of Event:

The HPCI isolation rendered the system inoperable. The appropriate Technical Specification actions were met following this event. While HPCI was inoperable, the Automatic Depressurization System (part of

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

ECCS) along with Low Pressure Coolant Injection (BO) and/or Core Spray [(ECCS)(BM)] and RCIC were available to perform the same safety function as HPCI. Therefore, if an event had occurred which would have challenged HPCI normally, the other systems would have fulfilled this safety function.

After the isolation occurred, HPCI was returned to standby mode at 2050 hours but the system was not declared operable due to the on-going troubleshooting. Once the system was in standby mode, the system was functional, while not operable, if it had been necessary to use HPCI.

Based upon the availability of adequate ECCS and RCIC, this event did not impact the safe operation of the plant or the health and safety of the public.

Corrective Actions:

Relays E41-K202B and E41-K203B, which are actuated directly by the trip units for pressure transmitter E41-N057B, were replaced due to a suspected large number of actuations from the excess system noise. The corrective action to replace both relays is considered to be a prudent action to assure the highest reliability for the HPCI isolation circuitry.

An engineering design change was implemented which installed a capacitor across the outputs of each transmitter, E41-N057B (Division II) and E41-N057A (Division I). This capacitor provides a low pass signal filter which attenuates the process noise signal sufficiently to prevent spurious HPCI isolation. The effectiveness of this change was verified by post modification testing.

Previous Similar Events:

This is the only Licensee Event Report describing an isolation of HPCI due to spurious noise on a high steam flow differential pressure transmitter.

Failed Component Data:

There were no failed components identified that contributed to this event.