

Detroit
Edison

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April 23, 1990
NRC-90-0066

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

- Reference: (1) Fermi 2
NRC Docket No. 50-341
NRC License No. NFF-43
- (2) Licensee Event Report 89-031-00;
Detroit Edison Letter NRC-89-0255,
dated December 20, 1989.
- (3) NRC Inspection Report No. 50-341/89033(DRP),
dated February 2, 1990.
- (4) NRC Inspection Report No. 50-341/90002(DRP),
dated March 23, 1990.

Subject: Response to NRC Notice of Violation 89-033-01

Reference 3 identified two apparent violations (reference report paragraphs 7.a and 7.b) which the NRC reviewed for potential enforcement action. On February 7, 1990, at the NRC Region III offices in Glen Ellyn, Illinois, an Enforcement Conference was held regarding these potential violations from the circumstances associated with Reference 2; i.e., Licensee Event Report (LER) 89-031-00. This LER reported the Technical Specifications inoperability of the Emergency Equipment Cooling Water (EECW) and Emergency Equipment Service Water (EESW) systems following the performance of an Engineered Safety Feature (ESF) Load Shedding Verification Test. As a result of the EECW/EESW Enforcement Conference, Reference 4 provided the Notice of Violation (NOV) (89-033-01) to Detroit Edison. Detroit Edison's response to the Reference 4 NOV is provided in the Enclosure to this letter.

We acknowledge your comment in the cover letter to the Reference 4 report regarding reportability of questionable occurrences (under 10 CFR 50.72). It is our policy to fully evaluate, under our corrective action program, plant events to determine applicable reporting requirements. Reports via the Emergency Notification System (ENS) will be made, as appropriate, based on their applicability under 10 CFR 50.72. If the results of our determination of reportability for an event is questionable, our policy is to conservatively report the event using the ENS.

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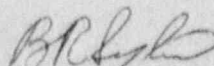
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The enclosed response to NOV 89-033-01 includes (1) a discussion of the event, (2) corrective actions taken and results achieved, (3) corrective actions taken to avoid further violations and (4) the date when full compliance will be achieved, as required by Reference 4. It should be noted that, based on Detroit Edison's evaluation and corrective actions, Fermi 2 is currently in compliance with the applicable Technical Specifications and the affected surveillance procedures have been appropriately revised.

If there are any questions related to this response, please contact Terry L. Riley, Supervisor of Compliance and Special Projects, at (313) 586-1684.

Sincerely,



B. R. Sylvia
Senior Vice President

Enclosure

cc: A. B. Davis
R. W. DeFayette
W. G. Rogers
J. F. Stang
Region III

Detroit Edison Response to Notice of Violation 89-033-01

Statement of Violation

"As a result of the inspection conducted from December 28, 1989 through January 8, 1990, and in accordance with the "General Policy and Procedures for NRC Enforcement Actions" (10 CFR Part 2, Appendix C), the following violation was identified:

Technical Specification 3.7.1.2 requires two independent Emergency Equipment Cooling Water (EECW) subsystems to be operable in modes 1, 2, 3, 4 and 5. Inclusive in the definition of an operable EECW subsystem is the ability of the EECW pump associated with that subsystem to automatically start on an automatic actuation signal as discussed in Technical Specification Surveillance Requirement 4.7.1.2.b.

Technical Specification 3.7.1.3 requires two independent Emergency Equipment Service Water (EESW) subsystems to be operable in modes 1, 2, 3, 4 and 5. Inclusive in the definition of an operable EESW subsystem is the ability of the EESW pump associated with that subsystem to automatically start on an automatic actuation signal as discussed in Technical Specification Surveillance Requirement 4.7.1.3.b.

The Technical Specification action statements associated with 3.7.1.2 and 3.7.1.3 require in part that the action associated with Technical Specification 3.5.2 be taken as applicable.

Technical Specification 3.5.2 requires two subsystems of emergency core cooling be operable in cold shutdown (mode 4) and under action statement "b" secondary containment integrity must be established within 12 hours of loss of both subsystems.

Technical Specification 6.8.1.d states "Written procedures shall be established, implemented, and maintained covering surveillance and test activities of safety-related equipment."

Contrary to the above on November 20, 1989, while in cold shutdown plant operators failed to establish secondary containment integrity within 12 hours after all EECW, EESW and consequently all Emergency Core Cooling Systems were rendered inoperable by the performance of two 480 VAC load shed surveillance tests in that the surveillance procedures established for this test activity did not direct restoration of the EECW and EESW pump breakers closing circuits to accept all the automatic initiation signals.

This is a Severity Level IV violation (Supplement I)."

Discussion of Event

On November 20, 1989, the Division I EECW system pump and valve operability test was being performed. During the test, both the Division II EECW and EESW system pumps tripped immediately when Division II EECW was manually initiated per the procedure. The manual initiation signal was reset by cycling the "CMC" switches for the pumps and the trip lights were cleared.

Surveillance procedures 24.305.01 and 24.305.02, Division I and II 480VAC Engineered Safety Features Bus Load Shedding Verification Tests, had been performed the previous day. Investigation into the cause of the EECW/EESW pump trips determined that when specific steps of procedure 24.305.02 were performed to preclude tripping of the Division II EECW pump during the load shedding surveillance, they also defeated selected automatic start features of the EECW pump. This occurred when the "52XX" relays were de-energized during these steps by operating undervoltage relay 4NT94. Similar relay logic exists in the Division I EECW pump auto-start logic circuit and for the Divisions I and II EESW pumps (see the attached simplified figure for the EECW/EESW Pump Start Logic Circuit which shows the 52XX relays). This condition existed for approximately 30 hours following completion of the load shedding surveillance test and before discovery during the EECW pump and valve operability test.

Corrective Actions Taken and the Results Achieved

The immediate investigation by the on-shift Operations staff determined in less than one hour that the 52XX relays were not reset. Prompt actions were taken to reset these relays by moving the "CMC" control switches for these pumps to the "off-reset" position and then back to "auto". This action fully restored the EECW and EESW systems to operable status as defined by the Technical Specifications.

Upon discovery of this condition, Deviation Event Report (DER) 89-1371 was written and a thorough investigation into the root cause was conducted. The immediate cause attributed to this violation was the inadequate surveillance procedures used to perform the 480 Volt Load Shedding Verification Tests described above. The procedures were inadequate in that their performance resulted in de-energizing the 52XX relays and there were no steps provided to reset these relays. This resulted in the loss of the auto-start capability for the EECW/EESW pumps on selected actuation signals (i.e., High Drywell Pressure and Reactor Building Closed Cooling Water (RWCCW) Low Differential Pressure). Thus, the EECW and EESW pumps were technically inoperable per the Fermi 2 Technical Specifications, sections 3.7.1.2 and 3.7.1.3, respectively.

The root cause of the procedure inadequacies was personnel error in the preparation and review of these new 24.Series procedures. In August 1988, appropriate 480 Volt Load Shedding Tests were developed and conducted under Sequence of Events (SOE) tests (R1102-88-03 and R1102-88-04). In the fall of 1988, as part of the Procedures Upgrade Program and the Technical Specifications Improvement Program, surveillance procedures 24.305.01 and 24.305.02 were created to accomplish the same testing. The previously used SOE did include steps to reset the EECW/EESW pump breakers, thus not disabling the 52XX relays. However, the SOE was not used in the procedure technical review process when the new 24.Series surveillances were established. Contributing factors to the failure to include a step to reset the 52XX relays involved (1) the fact that the SOE did not test the load shed feature in exactly the same fashion as the surveillance (thus, the surveillance was created independently of the SOE due to differences between the test methods) and (2) the EECW/EESW pump breakers have a unique control circuit design. These surveillance procedures were used for the first time on November 19, 1989.

Surveillance procedures 24.305.01 and 24.305.02 were revised to ensure that the 52XX relays will be reset for the EECW and EESW pumps. With this action, compliance with Tech. Spec. 6.8.1.d was established for this testing.

Other loads from buses 72B, 72C, 72E, 72F, 72EA, 72EC, and 72ED, which were affected by surveillances 24.305.01 and 24.305.02, were reviewed for similar conditions. No additional problems were identified for these other buses.

Corrective Actions Taken to Avoid Further Violations

The credibility of the Procedures Upgrade Program and Technical Specifications Improvement Program efforts were assured by an evaluation which concluded the following:

- o These 24.Series surveillances were the last ones of their kind remaining to be run.
- o The other related procedures had already been run successfully with no similar problems noted.
- o A review of the other related procedures found no similar deficiencies. The other 24.Series surveillances use physical changes or system/component actuations as test acceptance criteria. Also, it was re-verified that the other 24.Series procedures which test undervoltage relays were written correctly.
- o Given the unique EECW/EESW breaker logic for this feature, there were no generic implications for other safety systems.

Fermi 2 Technical Specification compliance was further reviewed and the results showed the following related to this event:

- o Required action statements had either been fulfilled or the affected systems were indeed able to perform their intended safety function(s).
- o Secondary Containment was in fact intact, although the operators did not confirm this within 12 hours since they were unaware at the time that the EECW and EESW systems were technically inoperable.
- o The Shutdown Cooling Mode of the Residual Heat Removal system was available and operating.
- o The EECW and EESW systems were capable of performing their intended safety functions in that (1) the plant was already in Cold Shutdown (which is the safety design basis for these systems), as required by Tech. Specs., (2) the auto-start feature for these pumps on High Drywell Pressure was not needed in Cold Shutdown, (3) the Loss of Offsite Power auto-start signal for these pumps was still available and fully operable, (4) RBCCW was functioning properly and running, as needed, (5) a loss of RBCCW without a loss of offsite power signal would have been well alarmed in the Control Room and procedures exist for restoration of RBCCW or starting EECW/EESW based on simple operator actions, (6) the plant operators are well trained on the Fermi 2 Simulator in recognizing a loss of EECW/EESW event, (7) the EECW and EESW system valve sequencing occurs from different logic circuits than the pumps' auto-start features and this function was not impacted by this event and (8) the manual start capability for the EECW and EESW systems was always available, if needed.

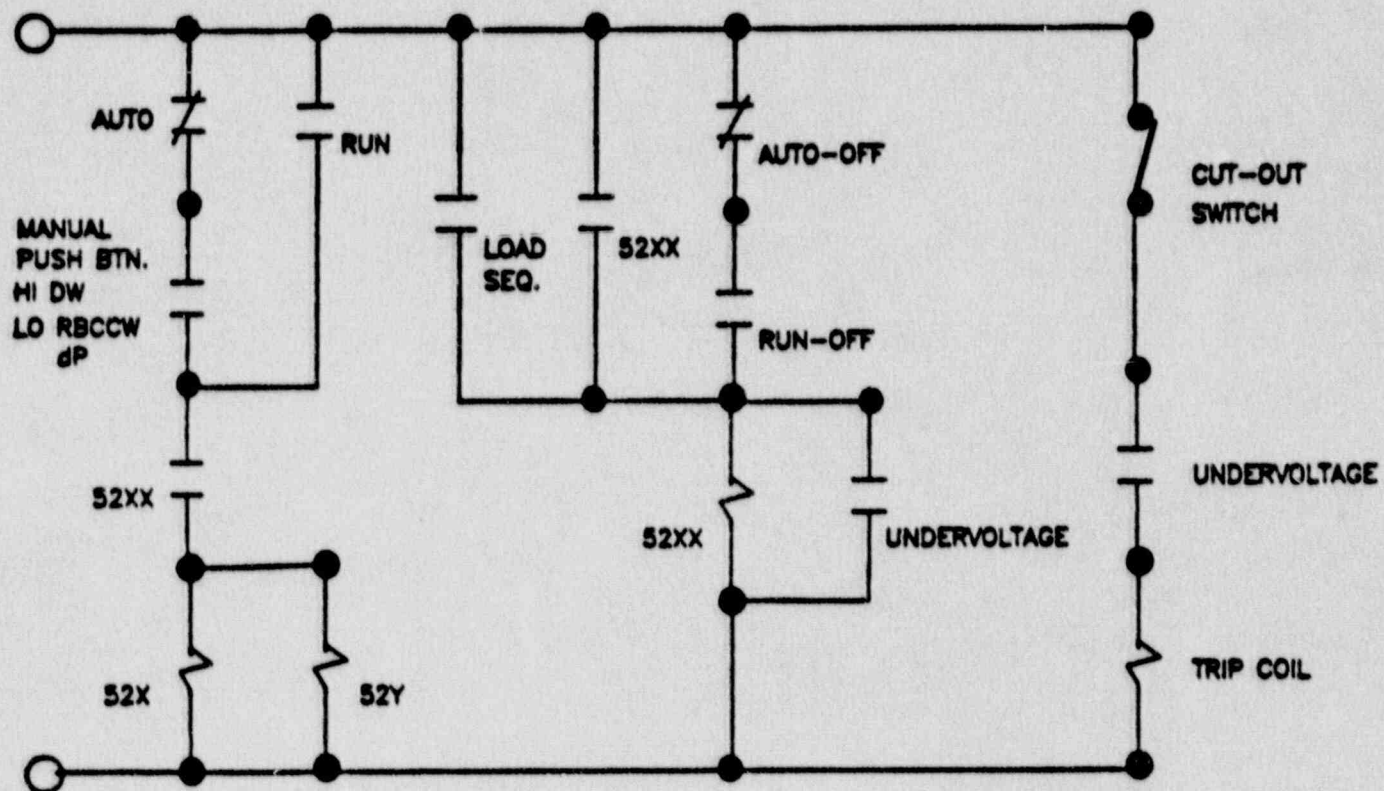
It should be noted that the degraded auto-start capability for the EECW/EESW pumps would have been restored via cycling of the "CMC" switches in the Control Room, which is conducted on a weekly routine basis. This action would have reset the 52XX relays and returned these safety systems to fully operable status as defined by the Tech. Specs. Given the shutdown/refueling outage status of the plant at the time of discovery of this condition, it is clear that the plant would not have changed modes before recovery from this situation. Also, the 480 Volt Load Shedding surveillances are conducted only during Cold Shutdown. Thus, given the status of the plant, the ability of the EECW and EESW systems to perform their intended safety functions, the availability of decay heat removal capability (with low decay heat loads) and well-defined, proceduralized and easily performed operator actions needed to start EECW/EESW, if needed, there was no impact on plant safety or public health and safety due to this condition.

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As noted earlier, Licensee Event Report 89-031-00 reported this event to the NRC via letter NRC-89-0255, dated December 20, 1989. No further actions are necessary to comply with Technical Specifications on this matter.

Date When Full Compliance Will Be Achieved

Based on the changes to Surveillance Procedures 24.305.01 and 24.305.02, Fermi 2 is currently in full compliance with the Technical Specifications.



EECW/EESW PUMP START LOGIC CIRCUIT