

Detroit  
Edison

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10CFR50.73



Nuclear  
Operations

February 28, 1992  
NRC-92-0022

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. 92-001

Please find enclosed LER No. 92-001, dated February 28, 1992, for a reportable event that occurred on February 5, 1992. A copy of this LER is also being sent to the Regional Administrator, USNRC Region III.

If you have any questions, please contact James Joy, Senior Compliance Engineer, at (313) 586-1617.

Sincerely,

Enclosure: NRC Forms 366, 366A

cc: T. G. Colburn  
A. B. Davis  
R. W. DeFayette  
S. Stasek  
P. L. Torpey

Wayne County Emergency  
Management Division

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LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 600 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (F-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

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Initial Plant Conditions:

Operational Condition: 1 (Power Operation)  
Reactor Power: 100 Percent  
Reactor Pressure: 1008 psig  
Reactor Temperature: 535 degrees Fahrenheit

Description of Event:

On February 5, 1992, at 1030 hours, during a planned preventive maintenance activity (calibration) on temperature switch (TS) E41N203 which provides local indication, control room alarm and readout via the sequence of events recorder for High Pressure Coolant Injection [(HPCI)(BJ)] Turbine Oil Cooler (CLR) Discharge Temperature, the pressure boundary of the turbine oil system was inadvertently breached. With this breach in the oil system pressure boundary, capability of the HPCI system to perform its safety function could not be ensured.

The maintenance activity was being performed with HPCI operable, in the standby mode. Plant documentation indicated that the sensor for temperature switch E41N203 was installed in a thermowell (TW) within the HPCI oil piping. For this calibration, maintenance supervision had amended the work instruction to require removal of the temperature sensor to perform a more accurate calibration since this could be performed without rendering HPCI inoperable. Following removal of the temperature sensor, the Instrumentation and Control Technician performing the work noticed oil on the exposed surface of the removed cylinder. He inspected the opening in the HPCI oil system piping and concluded that the thermowell shown on the drawing included in his work package was missing and that the pressure boundary of the system had been breached. (It has subsequently been determined that the technician had actually removed both the temperature sensor and thermowell as explained in detail later in this LER). Following this realization, the technician immediately replaced the sensor (and thermowell), thus restoring the oil system pressure boundary. It is estimated that the time the oil system pressure boundary was open to atmosphere was approximately 30 seconds. It should also be noted that there was no loss of oil from the system.

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Following restoration of the oil system pressure boundary, the I&C technician notified the control room Nuclear Supervising Operator (NSO) of his actions described above. Shift operating personnel documented entrance into Technical Specification Limiting Condition for Operation (LCO) 3.5.1, Action Statement c.1, for HPCI inoperability for the short duration the oil system pressure boundary was open to atmosphere. The Core Spray [(CSS),(BM)], Low Pressure Coolant Injection [(LPCI)(BO)], Automatic Depressurization [(ADS)(RV)], and Reactor Core Isolation Cooling [(RCIC)(BN)] systems were then verified to be operable throughout the event as required by the action statement.

At 1300 hours on February 5, 1992, the same Technical Specification LCO was intentionally entered to pressurize the HPCI oil system (utilizing the auxiliary oil pump (P) which renders the HPCI system inoperable) and verify leak tightness of the oil system pressure boundary. No leakage from the restored E41N203 was noted and HPCI was restored to standby service.

Cause of Event:

Investigation subsequent to the event has determined that a thermowell was installed in the HPCI oil system piping at E41N203, but inadequate work instruction resulted in the I&C technician removing both the temperature sensor and thermowell, thus exposing the oil system to atmosphere and rendering HPCI inoperable. Detroit Edison has determined the root cause of the inadequate work instruction to be inadequate documentation in that the design package for installation of E41N203 did not clearly represent the as-installed configuration.

This was the first time that the calibration of E41N203 was attempted while maintaining HPCI in an operable status. Operations personnel (utility, licensed) and Maintenance personnel (utility, non-licensed) preparing the work instruction for the February 5, 1992 calibration recognized the need to verify the presence of a thermowell in the HPCI oil system piping. The vendor manual for the HPCI pump/turbine (skid mounted equipment) provided reference to the original installation design documentation (Field Modification Request (FMR) Number S5853) for E41N203. A sketch showing the proposed installation details for E41N203 was extracted from this documentation and attached to the preventive maintenance work package utilized on February 5, 1992.

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U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMR NO. 3150-0104

EXPIRES 6/31/86

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Investigation since the February 5, 1992 event has determined that the sketch extracted from FMR S5853 does not represent the installed configuration at E41N203 and led the I&C technician to remove the thermowell from the HPCI oil system when he thought he was removing the sensing element only. Further review of the FMR and implementing documentation has determined that a configuration, which is different than the extracted sketch, was utilized during original installation of the temperature switch. During implementation of the FMR, fabrication of the thermowell was required to ensure material qualified for pressure boundary use was utilized (since it could not be purchased from the temperature switch manufacturer with material certifications). The thermowell was manufactured in a manner which, although allowed by the FMR, altered the fitting configuration shown in the installation sketch from the FMR. During the February 5 event, the I&C technician selected the fitting to remove just the temperature sensor according to the sketch extracted from the FMR, but due to the difference between the installation sketch and the actual installation fitting configuration, removal of that fitting actually resulted in removal of the thermowell (and temperature sensor).

It should be noted that the FMR did allow for this alternate field fabrication. However, the field fabrication allowance and the option to deviate from the proposed installation sketch is not made in a clear fashion within the FMR. Following deviation from the proposed installation sketch in the FMR, the vendor manual update to reference the revised temperature switch installation should have included a correct drawing.

Analysis of Event:

Unintentional removal of the thermowell for E41N203 resulted in HPCI being declared inoperable for approximately 30 seconds. The I&C technician involved was aware of the need for HPCI oil system integrity and most likely would have restored the oil system pressure boundary (by reinstalling the thermowell) without impacting the safety function of HPCI if it had been called upon to perform its safety function. However, conservatively, HPCI was declared inoperable for the period that the oil system was exposed to atmosphere. While HPCI was inoperable, other operable Emergency Core Cooling Systems (ECCS) were available to perform the safety function of HPCI. The Automatic Depressurization System (ADS) was available to reduce reactor pressure



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to the point where LPCI and Core Spray could have been used in the event emergency core cooling was required. RCIC was available to provide reactor water inventory control at normal operating reactor pressure.

Based upon the likelihood that the HPCI oil system could have been restored without preventing HPCI from performing its safety function, the brief time the oil system was exposed to atmosphere, availability of all other ECCS systems and RCIC, and that there was no demand for HPCI, this event did not impact the safe operation of the plant or the health and safety of the public.

Corrective Actions:

Detroit Edison reviewed other similar applications to E41N203 installed by FMR for the HPCI and RCIC oil systems and determined that adequate documentation of the installed configuration for these applications is available.

An accountability meeting was held regarding this event.

Detroit Edison will take the following actions to prevent recurrence of this type of event:

- 1) A drawing will be created and posted against the appropriate vendor manual detailing the installation of E41N203 and associated thermowell. This action will be complete by April 6, 1992.
- 2) The Preventive Maintenance Event instruction for calibration of E41N203 will be revised to reference the drawing and vendor manual referenced in item 1. This action will be complete within 30 days after completion of item 1.
- 3) To emphasize the need for careful review of documentation utilized to provide instruction during the conduct of maintenance, this LER will be issued as required reading for Licensed Operators, Maintenance personnel, Nuclear Engineering personnel and Systems Engineers by April 6, 1992.
- 4) A review of lessons learned from this event will be included in continuing training for Instrumentation and Control Technicians.

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Previous Similar Events:

The following reportable event was the result of HPCI being declared inoperable due to problems during planned maintenance:

LER 85-041: Inadequate Procedure Implementation Results in Blockage of HPCI Lube Oil Line

Failed Component Data:

There were no failed components involved in this event.