

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-341/87002(DRP)

Docket No. 50-341

Operating License No. NPF-43

Licensee: Detroit Edison Company
2000 Second Avenue
Detroit, MI 48226

Facility Name: Fermi 2

Inspection At: Fermi Site, Newport, MI

Inspection Conducted: October 17, 1986 through February 3, 1987

Inspectors: W. G. Rogers

M. E. Parker

Approved By: *Edward G. Greenman*
E. G. Greenman, Deputy Director
Division of Reactor Projects

2/10/87
Date

Inspection Summary

Inspection on October 16, 1986 through February 3, 1987 (Report No. 50-341/87002(DRP))

Areas Inspected: Special, unannounced inspection by the resident inspectors of the events and circumstances surrounding the licensee's failure to meet five Technical Specification surveillance requirements and two Technical Specification Limiting Conditions for Operation.

Results: Two apparent violations were identified (failure to properly implement a periodic testing program - paragraph 2.f, and failure to meet the action statement of Technical Specification 3.0.3 - paragraph 3.c).

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DETAILS

1. Persons Contacted

a. Detroit Edison Company

- +* F. Sondgeroth, Licensing
- * S. Frost, Licensing Supervisor
- * R. Poche, Licensing
- +* S. Catola, Nuclear Safety Review Group
- +* R. May, Maintenance Engineer
- +* J. Leman, Maintenance Superintendent
- +* W. Orser, Nuclear Engineering Vice-President
- +* G. Ohlemacher, I&C Assistant Maintenance Engineer
- * L. Simpkin, Nuclear Engineering Director
- +* B. Sylvia, Group Vice-President
- +* F. Agosti, Nuclear Operations Vice-President
- S. Heard, Assistant Operations Engineer
- +* R. Lenart, Plant Manager, Nuclear Production
- +* E. Preston, Operations Engineer
- +* G. Trahey, Director, QA
- +* W. Tucker, Acting Superintendent, Operations
- + T. Randazo, Director Regulatory Affairs
- + K. Earle, Technical Engineer, Technical Engineer

b. U. S. Nuclear Regulatory Commission

- +* M. Parker, Resident Inspector
- +* W. Rogers, Senior Resident Inspector
- * D. Butler, Regional Inspector
- * M. Huber, Regional Inspector
- + M. Farber, Regional Inspector

*Denotes those attending the exit meeting on January 15, 1987

+Denotes those attending the exit meeting on February 3, 1987.

Other personnel were contacted as a matter of routine during the inspection.

2. Surveillance Program

The inspectors performed an inspection of five separate events interfacing with the surveillance test program. Each event followup is presented in its own subparagraph with the conclusions drawn from the event followups presented in the last subparagraph.

a. Noble Gas Radiation Monitor

Licensee surveillance procedure 24.000.02, "Shiftly, Daily, Weekly, and Situation Required Surveillances," specifies those instruments which are to be checked on a routine basis. Technical Specification

Section 3.3.7.12, Table 3.3.7.12-1, requires a daily check of the offgas noble gas radiation monitor, at the 2.2 minute delay pipe, be performed when a steam jet air ejector (SJAE) is in service.

On September 16, 1986, at 0000 hours an operator performing surveillance procedure 24.000.02 noted that the procedure called for checking the mechanical vacuum pump discharge line noble gas radiation monitors. The operator further noted that the SJAEs were in service and that the mechanical vacuum pump was secured. The operator proceeded to check the SJAE discharge line noble gas radiation monitor, which functioned properly, and then informed his supervisor of the apparent error.

The licensee's review determined that the procedure was in error and that the error had existed from the time the procedure was first issued. The licensee initiated action to correct the error and issued a condition adverse to quality report and a Licensee Event Report (LER 86-039).

10 CFR 50, Appendix B, Criterion XI, requires that a test program to assure that testing required to demonstrate that components will perform satisfactorily is identified and performed. The licensee's test program failed to identify that the SJAE discharge line noble gas radiation monitor was required to be checked on a daily basis, and therefore, the licensee is considered to be in violation of the stated requirement.

b. High Pressure Core Injection & Reactor Core Isolation Cooling

Licensee surveillance procedure 44.030.154, "ECCS - HPCI Condensate Storage Tank Level Calibration E41-N661B and E41-N061B and E41-N661D and E41-N061D," provided direction for the calibration of a set of level transmitters. The level transmitters and associated trip units are associated with the Division II interlocks for automatically transferring pump suction for the high pressure coolant injection (HPCI) and reactor core isolation cooling (RCIC) systems from the condensate storage tank (CST) to the suppression pool.

On October 5, 1986, with the reactor in operational condition 1, authorization to perform surveillance procedure 44.030.154 was granted by the shift supervisor; however, deficiencies in the procedure prevented the test from being performed. A revision to the procedure was made and the procedure was again submitted for performance authorization on October 9, 1986, with the reactor operating at 11% power. The nuclear assistant shift supervisor authorized the test to be performed but indicated that testing could only be conducted in two hour increments as Technical Specification 4.3.3 allows the instruments to be inoperable for up to two hours without tripping the instrument channel. Testing actually started at 0840 when the suction valves from the suppression pool to the

HPCI (E41-F041 and E41-F042) and RCIC (E51-F029 and E51-F031) systems were de-energized in the closed position per steps 5.7 through 5.10 of the procedure.

The requirements of procedure 44.030.154 were followed for the next two hours when, per the NASS's instructions, testing was suspended and the HPCI and RCIC systems were returned to a normal configuration. As the testing between 0840 and 1040 did not complete the test, testing was again started at 1255, when the previously listed valves were again de-energized and continued until 1455 when testing was completed for the day.

Technical Specification Section 3.5.1 requires that whenever the reactor is in operational condition 1, 2, or 3 and reactor dome pressure is greater than 150 psig, the HPCI system is to be operable and capable of taking a suction from the suppression pool. Technical Specification Action Statement 3.5.1.c allows the HPCI system to be inoperable provided, among other things, that the RCIC system is operable. Technical Specification Section 3.7.4 requires that for RCIC to be operable it must be capable of taking a suction from the suppression pool.

On October 9, 1986, between the hours of 0840 and 1040 and again between 1255 and 1455, the licensee unknowingly rendered both the HPCI and RCIC systems inoperable by de-energizing their respective suction valves from the suppression pool in the closed position. In this condition, as the Technical Specifications do not address the situation of both HPCI and RCIC being inoperable simultaneously, Section 3.0.3 of the Technical Specification requires that action be taken within one hour to place the unit in an operational condition where the specifications do not apply. As the licensee was, at the time, unaware of the situation, action was not taken within the one hour time frame.

It is noted that licensee personnel did identify the inoperable condition and that the Technical Specifications had been violated after completion of the test at 1455 hours.

10 CFR 50, Appendix B, Criterion XI, requires that test procedures include provisions for ensuring that testing is performed under suitable environmental conditions. The licensee's test program failed to ensure that the procedure was performed under suitable environmental conditions in that on October 9, 1986, when the reactor was in an operational condition which required both the HPCI and RCIC systems to be operable, authorization was granted to perform surveillance test 44.030.154 which rendered both systems inoperable.

c. Drywell Sumps

In October 1986 while following up on violation 341/86011-02, the resident inspectors reviewed the surveillance procedures associated with the drywell sumps. (Violation 341/86011-02 dealt with the

adequacy and completeness of surveillance procedures.) In response to questions from the resident inspectors, the licensee identified that the procedures did not test all of the required circuitry required by the Technical Specifications.

Technical Specification Section 3.4.3.1.b requires that the reactor coolant system leakage detection systems be operable and that the sump flow monitoring subsystem shall include pump run timers. The pump run timers actuate control room annunciators if the drywell sump pumps run for longer than a preset time. The circuitry is designed to give the operators early warning of small leaks such that appropriate actions can be taken to place the reactor in a safe condition. To ensure the timers' continued operability, Technical Specification Section 4.4.3.1.b requires both monthly and 18 month testing.

The licensee, via the residents' questions, identified that the surveillance procedures for the drywell floor and equipment sumps did not include the run timer testing required by Technical Specification 4.4.3.1.b. Subsequently, the licensee verified that all run timers performed satisfactorily.

10 CFR 50, Appendix B, Criterion XI, requires that a test program to assure that testing required to demonstrate that components will perform satisfactorily is identified and performed. The licensee's test program failed to identify, even during a review specifically addressing content, that the testing of the drywell equipment and floor drain sump pump run timers were not covered in the applicable surveillance procedure.

d. Rod Sequence Control System

As part of the normal startup activities, the licensee, on November 3, 1986, started performing control rod scram (insertion) time testing. With the reactor at 4% power, the licensee had to bypass portions of the rod sequence control system (RSCS) to allow movement of 'out of sequence' control rods. The RSCS controls on selected control rods were bypassed from 2200 hours on November 3, 1986, until 2215 hours on November 5, 1986.

Technical Specification Section 3.10.2 allows bypassing of the RSCS controls while performing control rod scram testing provided specific surveillance procedures are performed. The specific surveillances are stated in Technical Specification 4.10.2 and include verification that the rod worth minimizer is operable and that movement of control rods from 50% rod density to the RSCS preset power level is blocked or limited to the single notch mode. The specific surveillances are required to be performed within eight hours prior to bypassing the RSCS controls and every twelve hours after.

Between 2200 hours on November 3, and 2215 hours on November 5, 1986, the licensee only occasionally accomplished portions of the requirements of Technical Specification 4.10.2. The rod worth minimizer was verified operable on November 4, at 0435 and 1715, and on November 5, at 1903. Verification that movement of the control rods from 50% rod density to the RSCS preset power level is blocked or limited to the single notch mode occurred on November 4, at 1803 and November 5, at 1909. The non-uniform application of the surveillance requirements was due to misunderstandings and lack of knowledge of the Technical Specification.

10 CFR 50, Appendix B, Criterion XI, requires that test procedures include provisions for ensuring that testing is performed under suitable environmental conditions. The licensee's test program failed to ensure that the procedure for scram testing control rods was performed under suitable environmental conditions in that the surveillance did not indicate that Section 3.10.2 of the Technical Specifications was directly applicable and the appropriate implementation of Specification 4.10.2 was not accomplished.

e. Reactor Water Cleanup (RWCU)

As part of the leak detection system for the reactor water cleanup (RWCU) system, the heat exchanger room is monitored by thermocouples which are electronically combined to indicate differential room temperature. On an indication of high room differential temperature indicating a primary system leak in the room, the RWCU system is designed to isolate thus limiting the release of primary system water.

Technical Specification 3.3.2 requires that isolation of the reactor water cleanup system by one operable channel per trip system for high heat exchanger/pump area ventilations differential temperature be operable while the reactor is in operational conditions 1, 2, or 3.

On December 19, 1986, with the unit in operational condition 2, an operator observed what he considered an abnormal reading from the RWCU heat exchanger pump room differential temperature thermocouples. Initial troubleshooting by I&C personnel did not identify any problems but on December 20, the operations department requested a calibration and functional test on the differential temperature loop. During the resulting testing it was discovered that the leads for one of the differential temperature thermocouples were reversed. The leads were immediately returned to their normal configuration and the system tested satisfactorily.

The licensee determined that the leads had been reversed during restoration of the system following a surveillance procedure on December 3, 1986. The surveillance procedure only required the technician to compare readings before removing the thermocouple from service to readings after returning the thermocouple to service. No independent verification of proper termination of the leads was

required. With the unit in cold shutdown on December 3, 1986, the before and after readings were the same even though the thermocouple leads were reversed. With the leads reversed the differential temperature trip was effectively bypassed.

With the unit in cold shutdown no violations of the Technical Specifications were encountered; however, on December 18, 1986, the reactor was taken from operational condition 4 to 2. This maneuver placed the licensee in violation of Technical Specification 3.0.4 which requires that all applicable limiting conditions for operation be met without reliance on action statements before changing modes.

10 CFR 50, Appendix B, Criterion XI, requires that a test program to assure that testing required to demonstrate that components will perform satisfactorily is identified and performed. The licensee's test program failed to assure that the RWCU heat exchanger differential temperature isolation would perform satisfactorily in that adequate measures for verifying return to service were not provided in the surveillance procedure.

f. Summary

The five events described above were caused by various and diverse causes which included lack of knowledge of operations by instrument personnel, lack of attention to detail by the same personnel, and procedures which were lacking the basic information. Each of the events resulted in violations of various sections of the Technical Specifications including Sections 3.0.3 and 3.0.4. However, the common thread throughout all the events was that they were all related to and precipitated by surveillance activities.

Inspection report 50-341/86011(DRP) issued on June 13, 1986, identified problems with the licensee's surveillance program including the identical situation described in subparagraph 2.c above. The inspection report resulted in two severity level 4 violations against the surveillance program and an enforcement conference held in Region III on May 30, 1986. The licensee's corrective actions associated with the 50-341/86011 report should have corrected the situations previously described, but they did not.

10 CFR 50, Appendix B, Criterion XI, states that a test program shall be established to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service. The situations described in section 2.a through 2.e of this report are considered collectively as one violation (341/87002-01(DRP)), namely, the licensee's failure to properly implement a testing program required by 10 CFR 50, Appendix B.

3. Limiting Conditions For Operations

The inspectors performed a followup on the events and conditions surrounding the identification and restoration of an improperly reading

reactor core isolation cooling (RCIC) flow meter. The inspection and conclusions drawn from the inspection associated with potential escalated enforcement are presented in the following subparagraphs. Potential non-escalated enforcement issues will be documented in routine inspection report 50-341/86039(DRP).

a. Events of December 24, 1986

While in mode 2 during the performance of the routine monthly channel check of remote shutdown instrumentation on the midnight shift on December 24, 1986, operations personnel identified the RCIC flow meter reading 100 gpm with the RCIC pump not running. The licensee entered into the action statement for an inoperable remote shutdown system instrumentation channel (Technical Specification 3.3.7.4.) and initiated a work request to troubleshoot the circuitry. At 1250 on December 24, 1986, I&C began surveillance procedure 44.110.04, "Remote Shutdown - RCIC Flow Indication Calibration; E51-N003, C35-R006 and E51-613," to perform the troubleshooting of the circuitry following approval to perform the surveillance by the NASS and the NSO. I&C determined that the transmitter was out of tolerance and stopped the surveillance at 1720 on December 24, 1986. A work request was activated to calibrate the transmitter.

Surveillance procedure 44.110.04 involved the valving out of the flow transmitter, inputting simulated signals into the transmitter to be read at the remote shutdown flow indicator and valving in the flow transmitter. The prerequisites section of the surveillance procedure clearly identified that performance of this surveillance rendered RCIC inoperable. A part of the NASS's and NSO's responsibilities when they signed approval for the surveillance procedure was to identify such conditions, declare RCIC inoperable, and take the appropriate Technical Specifications actions. The licensee did not declare RCIC inoperable when surveillance procedure 44.110.04 was performed.

b. Events of December 26, 1986

At 1015 on December 26, 1986, with the unit in mode 2, I&C received operations authorization to perform the RCIC flow transmitter recalibration and initiated the appropriate Technical Specification actions. Upon the successful completion of the transmitter calibration operations personnel declared RCIC operable and stopped performing the Technical Specification actions at 1330 on December 26, 1986.

During the swing shift NASS turnover/control room panel walkdown at 1550 on December 26, 1986, the RCIC flow controller was found to be set at 505 gpm instead of 605 gpm. During the calibration activities of dayshift the NSO changed the RCIC flow controller setpoint to zero to assist I&C efforts in checking the zero gpm flow

signal. Upon completion of those activities, the NSO reset the controller setpoint at 505 gpm instead of 605 gpm. This action was performed prior to declaring RCIC operable at 1330. Technical Specification 3/4.4.7.4.a.3 states that the RCIC system shall be demonstrated OPERABLE at least once per 31 days by verifying that the pump flow controller is in the correct position.

The improperly set controller rendered RCIC inoperable since RCIC could not have achieved 600 gpm flow under automatic initiation as required by Technical Specification 3/4.4.7.4.

c. Summary

The Technical Specification 3.7.4 action statement states that with the RCIC system inoperable, operation may continue provided the HPCI system is operable while in operational conditions 1, 2, and 3 with reactor steam dome pressure greater than 150 psig. Technical Specification 3.0.3 states that when a limiting condition for operation is not met, except as provided in the associated action requirements, within one hour action shall be initiated to place the unit in an operational condition in which the specification does not apply.

On December 24 and continuing throughout December 26, 1986, the HPCI system was inoperable. Therefore, while in operational condition 2 with reactor steam dome pressure greater than 150 psig, RCIC and HPCI were both inoperable from 1250 to 1720 on December 24, and from 1330 to 1550 on December 26, 1986. During these two time frames the licensee failed to initiate action within one hour to place the unit in an operational condition where RCIC is not required. This is a violation (341/87002-02(DRP)) of Technical Specification 3.0.3.

4. Exit Interview (30703)

The inspectors met with licensee representatives (denoted in Paragraph 1) on January 15, 1987, February 3, 1987, and informally throughout the inspection period and summarized the scope and findings of the inspection activities. The inspectors also discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspectors during the inspection. The licensee did not identify any such documents/processes as proprietary. The licensee acknowledged the findings of the inspection.