

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-341/88026(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, Michigan

Inspection Conducted: September 1 through October 17, 1988

Inspectors: W. G. Rogers
S. Stasek
K. Ridgway

Approved By: *R. W. Cooper*
R. Cooper, Chief
Reactor Projects Section 3B

11/10/88
Date

Inspection Summary

Inspection from September 1 to October 17, 1988 (Report No. 50-341/88026(DRP))

Areas Inspected: Action on previous inspection findings; followup of events; operational safety; maintenance; surveillance; LER followup; startup; CAL followup.

Results: No violations were identified. One unresolved item was identified (Paragraph 6) and three open items were identified (Paragraphs 3 and 6).

DETAILS

1. Persons Contacted

a. Detroit Edison Company

- *S. Catola, Vice President, Nuclear Engineering and Services
- *G. Cranston, Director, Nuclear Engineering
- *D. Gipson, Plant Manager
- *L. Goodman, Licensing
- *W. Orser, Vice President, Nuclear Operations
- *T. Riley, Compliance Supervisor
- *R. Stafford, Director, NOA & PS
- *W. Tucker, Superintendent, Operations

b. U.S. Nuclear Regulatory Commission

- *W. Rogers, Senior Resident Inspector
- S. Stasek, Resident Inspector
- K. Ridgway, Inspector

*Denotes those attending the exit meeting on October 28, 1988.

The inspectors also interviewed others of the licensee's staff during this inspection.

2. Action on Previous Inspection Findings (92701)

(Closed) Open Item (341/88023-01(DRP)): No Preventative Maintenance (PM) is in place to verify proper wire connections on reactor protection system (RPS) K-14 and K-15 relays. The licensee has established PMs H004 and H005 to inspect the subject relays once per fuel cycle and includes a visual check, a pull test and an infrared inspection for each wiring connection. The inspector reviewed the maintenance index sheet, which specifies the PM requirements, including test scheduling, list of affected relays, and inspection details, and had no further concerns. This item is, therefore, considered closed.

(Closed) Open Item (341/88023-02(DRP)): Acceptance/Action criteria not incorporated within maintenance procedure to conduct infrared inspection. The licensee revised Maintenance Instruction MI-253 "Infrared Inspection" to require a photograph/sketch/temperature record if abnormal hot spots were encountered on equipment being inspected with a thermal data viewer. The determination as to what is abnormal is considered by the licensee to be within craft capability based upon completion of the on-the-job-training (OJT) course No. 10-23-05-00 by those individuals who operate thermal data viewers. The inspector reviewed MI-253 and OJT course outline 10-23-05-00 and has no further concerns. This item is closed.

(Closed) Open Item (341/88023-05(DRP)): Shift Technical Advisors (STAs) and Shift Operation Advisors (SOAs) not included in Urgent Required Reading (URR) Program. The licensee revised Administrative Procedure NPP-OP1-05 "Shift Turnover" and Plant Order EFO8059 "Required Reading Program" to specifically include the STAs. In addition, the Operations Engineer (OE) may designate other personnel to read the URR in addition to the STAs and licensed operators on a case-by-case basis. This would include the SOAs for the remaining time they are on shift. Since the licensee intends to eliminate the SOA position following completion of the startup test program, no specific reference to that position will be made in these procedure revisions. The inspector reviewed NPP-OP1-05 and EFO8059 and has no further concerns. This item is considered closed.

(Closed) Open Item (341/87012-02(DRP)): Post accident recorder failing to transfer to high speed. DECO engineering evaluated the preliminary modification to the recorder and determined that an additional design change was not warranted. This matter is considered closed.

(Closed) Unresolved Item (341/88021-05(DRP)): Failure to perform increased stroke time testing of a high pressure injection discharge valve per ASME Section XI test requirements. The licensee issued LER 88-031 within 31 days of the event discovery. The LER described the event and the licensee's corrective actions. The inspector reviewed the LER and considered that 10 CFR 2, Appendix C, Section G.1, criteria were met. Therefore, this situation is considered a licensee identified violation as discussed in 10 CFR 2 and no Notice of Violation will be issued.

3. Operational Safety Verification (71707)

The inspectors observed control room operations, reviewed applicable logs and conducted discussions with control room operators during the period from September 1 through October 17, 1988. The inspectors verified the operability of selected emergency systems, reviewed tagout records and verified proper return to service of affected components. Tours of the reactor building and turbine building were conducted to observe plant equipment conditions, including potential fire hazards, fluid leaks, and excessive vibrations and to verify that maintenance requests had been initiated for equipment in need of maintenance.

The inspectors, by observation and direct interview, verified that the physical security plan was being implemented in accordance with the station security plan.

The inspectors observed plant housekeeping/cleanliness conditions and verified implementation of radiation protection controls. During the inspection, the inspectors walked down the accessible portions of the Standby Feedwater System (both trains), Reactor Recirculation System Motor-Generator Sets (A and B), Control Rod Drive Hydraulic Control Units (South Banks), 125V and 24/48 V DC Batteries and Chargers (Div I and II) and Emergency Diesel Generators No. 11 and 13 to verify operability by comparing system lineup with plant drawings, as-built

configuration or present valve lineup lists; observing equipment conditions that could degrade performance; and verifying that instrumentation was properly valved, functioning, and calibrated.

These reviews and observations were conducted to verify that facility operations were in conformance with the requirements established under Technical Specifications, 10 CFR, and administrative procedures.

On September 23, 1988, the inspector witnessed the response by operations personnel of the receipt of a fire alarm in the control room. When the alarm sounded indicating a possible fire in the Circulating Water Building Chlorination Room, a callout of the onsite fire brigade was immediately made. At the same time, a Nuclear Power Plant Operator (NPPO) was dispatched to investigate the validity of the alarm. The fire brigade was reported fully manned within approximately 3-4 minutes and, although, the fire alarm was reset within the same time frame, the brigade was not directed to stand down until the NPPO reported, first hand, that no fire existed in the Circulating Water Building. The inspector observed that all licensee actions were in conformance to fire response procedures and were performed in a very timely, expeditious manner.

During a control room walkdown on October 8, 1988, the inspector found the Division II Residual Heat Removal pump minimum flow valve (E11-F007B) in the closed position. When brought to the attention of the control room operators, the valve was immediately reopened. Apparently, earlier that same shift, surveillance testing of the Reactor Core Isolation Cooling (RCIC) system had been conducted, and, as part of that testing Division II of RHR was used in the torus cooling mode. Upon completion of the testing, RHR Division II was returned to its normal standby condition in accordance with System Operational Procedure (SOP) 23.205. This was done approximately one hour prior to the inspector's walkdown. However, although the operator who restored RHR Division II to a standby condition had followed the applicable section of SOP 23.205, the minimum flow valve was left in an abnormal configuration. It should be noted that E11-F007B, although left in an abnormal configuration, had as part of its control logic, an initiation sequence to open upon actuation of RHR Division II pumps. Therefore, the valve would have performed its intended function (barring component failure).

The error did, however, indicate three areas of weakness: (1) SOP 23.205 allowed the operator to restore an ECCS subsystem to a standby condition without all valves being left in an approved configuration, (2) the operator apparently assumed that once the appropriate section of SOP 23.205 was complete, the system was properly configured and did not visually inspect the panels to verify this to be true, and (3) once the evolution associated with RHR Division II was complete and the subsystem returned to standby, no independent check was made to ensure proper lineup, as Administrative Procedure (POM) 21.000.01 "Conduct of Shift Operations" seemed to indicate was required.

The licensee, in response, has taken substantial corrective actions. These included issuance of a revision to SOP 23.205 to upgrade the subject sections to better specify restoration of the system to standby, issuance of a night order to all shifts to document the event and to reiterate management expectations of all operators, inclusion of this type of situation into further operator training, and issuance of a revision to 21.000.01 to clarify the requirements for independent verification activities relative to situations of this type.

During review of process computer printouts that are routinely obtained/reviewed in the control room, the inspector noted that the On-Demand 3 program (OD-3) indicated APRM Gain Adjustment Factors (AGAFs) as high as 1.039. Technical Specifications requires an adjustment to the subject APRM at values greater than 1.02. When questioned about this, the Nuclear Engineer on-shift at the time responded that APRMs at Fermi experience substantial noise and that indications at approximately 100 percent reactor power vary approximately 4-8 percent. The process computer performs a periodic scan of all variables input to the OD-3 program and a particular "snap-shot" could indicate an excessively high or low APRM reading which would produce inaccurate AGAFs. He further stated that an average of each APRM reading (accounting for noise) was verified to be less than 1.02. Inspector review of the Nuclear Engineering monitoring methodology established a concern for the usefulness of the OD-3 in this area. This was expressed to plant management who indicated a review into the feasibility of installing a damping circuit in the APRM circuitry would be performed to make the OD-3 program more meaningful in establishing AGAFs. This will remain an open item pending the licensee's determination (341/88026-01(DRP)).

No violations or deviations were identified in this area.

4. Monthly Maintenance Observation (62703)

Station maintenance activities on safety-related systems and components listed below were observed to ascertain that they were conducted in accordance with approved procedures, regulatory guides and industry codes or standards and in conformance with Technical Specifications.

The following items were considered during this review: the limiting conditions for operation were met while components or systems were removed from service; approvals were obtained prior to initiating the work; activities were accomplished using approved procedures and were inspected as applicable; functional testing and/or calibrations were performed prior to returning components or systems to service; quality control records were maintained; activities were accomplished by qualified personnel; parts and materials used were properly certified; radiological controls were implemented; and fire prevention controls were implemented.

Work requests were reviewed to determine the status of outstanding jobs and to assure that priority is assigned to safety-related equipment maintenance which may affect system performance.

The following maintenance activities were observed:

W.R. No. 017B1006	Repair of Reactor Water Cleanup System Flange Leak
W.R. No. 003B0829	Installation of Sample Tap on Standby Feedwater Oil System

Following completion of maintenance on the Standby Feedwater System, the inspector verified that the system had been returned to service properly.

No violations or deviations were identified in this area.

5. Monthly Surveillance Observation (61726)

The inspectors observed surveillance testing required by Technical Specifications and verified that: testing was performed in accordance with adequate procedures, test instrumentation was calibrated, limiting conditions for operation were met, removal and restoration of the affected components were accomplished, test results conformed with Technical Specifications and procedure requirements and were reviewed by personnel other than the individual directing the test, and any deficiencies identified during the testing were properly reviewed and resolved by appropriate management personnel.

The inspectors witnessed portions of the following test activities:

24.307.14	Emergency Diesel Generator No. 11 - Start and Load Test
24.307.16	Emergency Diesel Generator No. 13 - Start and Load Test
24.609	Rod Sequence Control System Functional Test
27.106.05	Control Rod Timing Test and Adjustment for Rod 18-15
27.120	Generator Stator Cooling Water Pumps - Auto Start Test
44.010.167	Reactor Recirculation Flow Unit D Calibration
24.608	Rod Worth Minimizer Functional Test
43.401.510	Local Leakage Rate Test for T4803-F602

No violations or deviations were identified in this area.

6. Licensee Event Reports Followup (92700)

Through direct observations, discussions with licensee personnel, and review of records, the following event reports were reviewed to determine that reportability requirements were fulfilled, immediate corrective action was accomplished, and corrective action to prevent recurrence had been accomplished in accordance with 10 CFR, Technical Specifications, and administrative procedures.

(Closed) LER 87-09, Isolation of Residual Heat Removal (RHR) System due to probable instrument failure. On March 25, 1987, with the RHR in the shutdown cooling mode, the inboard isolation valve closed, tripping RHR Pump C. Prompt recovery was made. Cause of the isolation was attributed to intermittent failure of the master trip unit, Rosemount 510 DU. Since this model has been discontinued, it was replaced with a Rosemount 710 DU. The inspector verified that an approved Engineering Design Package,

EDP 2144 and Safety Evaluation Form and check lists for the substitution using the 710 DU model had been approved in 1985. Calibration and test procedures, Maintenance Instructions, MI-IC 0408 and 0409 had been revised to include model 710 DU.

(Closed) LER 87-18, Reactor Water Cleanup (RWCU) system isolations during troubleshooting and repair of steam leakage. On May 20, 1987, when the reactor was shutdown to determine the source of a large increase in unidentified leakage, the RWCU isolation valve isolated on two occasions due to latent heat immigration which was sensed as high effluent temperature. When the leak could not be positively identified, a shutdown was started and an Unusual Event was declared and reported per 10 CFR 50.72 (a)(1)(c). This leak was found to be a packing leak on the RWCU vessel bottom head drain valve which terminated the Unusual Event. The packing was repaired.

(Closed) LER 87-24, Plant shutdown due to inoperability of a Reactor Recirculation System Loop. On June 24, 1987, observed wear between a worn brush and the anode slip rings on the B RRP motor-generator set exciter caused an immediate pump shutdown and later plant shutdown to make repairs. The brush had been in service only six months and the wear was considered excessive. For short term corrective action an exciter brush inspection frequency of three months has been established. For long term corrective actions the licensee has ordered replacement brushes made of a material recommended by the vendor to increase brush life. The inspectors verified that a Potential Design Change, a Minor Modification Form and Preliminary Evaluation Checklist had been approved for this change. Implementation of this design change, PDC 7599, is an open item (341/88026-02).

(Closed) LER 87-53, Exceeding LCO for Primary Containment High Pressure Channel caused entry into Technical Specification 3.0.3. On October 24, 1987, while performing a surveillance to prove operability of two Primary Containment Isolation Valves (T50-F450 and T50-F451), which had been disturbed during a modification, the allowable two hour surveillance grace period without placing the trip system in the tripped condition was exceeded. This was a violation of Technical Specification 3.3.1.a and 3.3.2.b for exceeding the two-hour surveillance grace period. The Drywell high pressure signal was bypassed at 1225 and was not returned to normal until 1537. This violation was reported in Inspection Report 341/87048-01 and is a part of a Notice of Violation to be issued. For corrective actions I&C Work Instruction 87-013, the Performance of Special Tests, was developed and approved. This work instruction provides a checklist to assure that surveillance tests which are being performed at a time other than their regularly scheduled time, or in an operational condition not specified in the procedure, or in a situation where only part of the procedure is to be performed, will be properly reviewed and approved by both the I&C group and Operations Supervision prior to initiating the surveillance. The checklist also provides a time log for the tripping, removal, restart, reset, and test completion of the special tests.

(Closed) LER 87-54, Isolation of Reactor Building during the performance of a surveillance due to poor equipment accessibility. On December 17, 1987, while performing a Reactor Building Ventilation Exhaust Radiation Monitor, Division I Calibration, an upscale radiation signal was received when the I&C Technician shorted out the power supply while performing the test. This caused the normal actuation of the Division I Standby Gas Treatment System and shutdown of the Reactor Building heating ventilation and air conditioning fans. After restoring power the calibration was successfully completed. Cause of the accidental shorting was attributed to poor accessibility of the terminal and the decision as to which test equipment needed to be attached. Short term corrective action included all 46 I&C Technicians reading about the event. Long term corrective action involves the installation of "star lugs" on terminal connections used for surveillance testing. EDP 1706 provided the engineering authorization to install the star lugs. The EDP was previously reviewed in Inspection Report 88003 and a number of problems noted. Deviation Event Report (DER) 88-0095 was issued to document the concerns of the inspector. The controlling mechanism for configuration control of the star lugs shall be reviewed in a future inspection and is considered an open item (341/88026-03).

(Closed) LER 87-55, Isolation of RCIC during return to service due to procedural inadequacies. On December 10, 1987, an isolation of the RCIC steam line occurred from a high differential steam line pressure trip, when the RCIC system was being returned to service following a maintenance outage. The isolation trip was attributed to inadequate instruction in the operating procedure for warming and pressurizing the cold RCIC steam line when at reactor operating pressures. The isolation signals were reset and the RCIC returned to operability. Fermi 2 System Operating Procedure NPP-23.206, Section 4.2.15, "Warm RCIC Steam Supply Line," was revised (Revision 25) to provide guidance in the opening of the isolation valves to prevent high steam line differential pressure trips.

(Closed) LER 88-014, Procedural error leading to an inadvertent start of the Division I Emergency Diesel Generators. The inspector verified that the procedural error was corrected.

DER 88-1235, Core spray megger test criteria not met. The inspector selected this DER to determine whether conditions potentially affecting equipment operability, discovered while the equipment was not in service, were being resolved prior to placing the equipment in service.

On June 30, 1988, the Division I core spray pumps were meggered under preventative maintenance activities and questions arose as to whether the acceptance criteria were met. On July 1, 1988, Division I core spray was returned to service but the resolution of this matter was not documented in the DER until July 29, 1988. The inspector reviewed the resolution of the DER and considered pump operability not adversely affected. However, the time frame and process utilized by the licensee to provide this resolution is of concern. This matter is considered unresolved (341/88026-04) pending further review of the DER resolution process.

No violations or deviations were identified in this area.

7. Startup Test Observation (72302)

The inspectors reviewed portions of startup test procedures, toured the areas containing system equipment, interviewed personnel, and observed test activities. While observing startup tests the inspectors verified that the established testing prerequisites were met, testing was performed in accordance with adequate procedures, limiting conditions for operation were met, test personnel were knowledgeable of the test, data was accurately taken, and special test equipment required by the procedure was calibrated and in service.

The inspector observed the performance of the following startup tests:

STUT.06B.030 Supplement 2	Recirculation System-One Pump Trip
STUT.06B.033	Piping System Vibration-Dynamic Response Testing (Section 8.1)

The results of these tests as observed were satisfactory.

No violations or deviations were identified in this area.

8. Followup of Events (93702)

During the inspection period, the inspectors pursued several events, some of which required prompt notification of the NRC pursuant to 10 CFR 50.72, with licensee and/or other NRC officials. In each case, the inspectors verified that the notification was correct and timely, if appropriate, that the licensee was taking prompt and appropriate actions, that activities were conducted within regulatory requirements and that corrective actions would prevent future recurrence.

The specific events are as follows:

July 31, 1988	Reactor Water Cleanup water hammer event.
August 31, 1988	Unplanned ESF actuation containment isolation valve G33 F004 closure.
September 24, 1988	Loss of emergency notification system phone.
October 2, 1988	Loss of north cooling tower lights.
October 3, 1988	Turbine building ventilation radiation monitor isolation.
October 5, 1988	Unplanned ESF actuation, reactor scram on scram discharge volume high level while in cold shutdown.

No violations or deviations were identified in this area.

9. Followup on Confirmatory Action Letter (92703)

(Open) Confirmatory Action Letter, CAL-RIII-88-20: This CAL, issued July 15, 1988, dealt with two events of compression fitting failures in a Reactor Water Cleanup (RWCU) instrument line in May and July 1988. The CAL documented agreements with the licensee on eight points which included: determination of the cause of the failure and any generic problems; that an inspection program be established with hold points for NRC review of any corrective actions; that this startup test program should include similar testing of safety or safety-related systems and fittings, and that failures and corrective actions be documented and a formal report on the status of the program be submitted in 30 days.

The licensee responded by letter on August 12, 1988, addressing the points brought up in the CAL. The fitting failures were caused by subjecting deficiently assembled fitting to fluid transient loads. Procedures were changed to control the isolation, filling, venting and pressurization of the RWCU System. During an examination of the RWCU System piping, two snubbers were found to be damaged during the subject transients and were replaced. An inspection program has been established for nine systems that meet the criteria of pressure greater than 200 psig, temperature greater than 212 degrees, and lines containing reactor coolant where pressurization events are possible. The inspection program is basically a visual inspection for mixed parts (Swagelock and Parker Hannifin) and correct tightening (no-go gauge). Mixed-part fittings are corrected. The inspection program outlined in the CAL is ahead of schedule; the first three systems have been completed and half of the fourth. At this time fittings have been inspected and left in an acceptable condition. This item will remain open until the inspection program is completed.

10. Regional Request

On September 16, 1988, the inspectors were requested to verify licensee awareness of an issue that was found at Virginia Electric & Power Company's Surry Unit 1, concerning a potential of overloading emergency diesel generators following a postulated Loss-of-Coolant accident and a subsequent loss of offsite power. From discussions with the Director of Plant Safety, it was determined the licensee had received notification of the subject issue via INPO's Nuclear Network and that Deviation Event Report (DER) No. 88-1707 was being initiated to track the evaluation/resolution specific to Fermi 2.

11. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, violations or deviations. An unresolved item disclosed during the inspection is discussed in Paragraph 6.

12. Open Items

Open items are matters which have been discussed with the licensee, which will be reviewed further by the inspector, and which involve some action on the part of the NRC or licensee or both. Open Items disclosed during the inspection are discussed in Paragraphs 3 and 6.

13. Exit Interview (30703)

The inspectors met with licensee representatives (denoted in Paragraph 1) on October 28, 1988, 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.