

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-341/85029(DRP)

Docket No. 50-341

Operating License No. NPF-33

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

Facility Name: Fermi 2

Inspection At: Fermi Site, Newport, MI

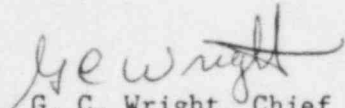
Inspection Conducted: June 1-30, 1985

Inspectors: P. M. Byron

M. E. Parker

D. C. Jones

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Approved by:   
G. C. Wright, Chief  
Projects Section 2C

7/26/85  
Date

Inspection Summary

Inspection on June 1-30, 1985, (Report No. 50-341/85029(DRP))

Areas Inspected: Routine, unannounced inspection by resident inspectors of licensee action on previous inspector identified items; independent inspection; maintenance; surveillance; operational safety - ESF system walkdown; fire prevention/protection program implementation; allegations, management meetings, SALP, and initial criticality. The inspection involved a total of 323 inspector-hours onsite by four NRC inspectors, including 82 inspector-hours onsite during off-shifts.

Results: Five open items, three license condition attachments (one of which was also an open item), and one noncompliance were closed. Two unresolved and one open item resulted from this inspection. Within the areas inspected, no violations, deviations, or significant safety issues were identified.

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## DETAILS

### 1. Persons Contacted

\*F. Agosti, Manager, Nuclear Operations  
\*L. Bregni, Licensing Engineer  
J. DuBay, Director, Planning and Control  
O. Earle, Supervisor, Licensing  
R. Eberhardt, Rad-Chem Engineer  
P. Fessler, Assistant Maintenance Engineer  
\*E. Griffing, Assistant Manager, Nuclear Operations  
W. Jens, Vice-President, Nuclear Operations  
W. Kaczor, Director, SAFETEM (DECo)  
R. Kunkle, Director, SAFETEM (UTS)  
S. Leach, Director, Nuclear Security  
J. Leman, Maintenance Engineer  
L. Lessor, Advisor to the Superintendent, Nuclear Production  
\*R. Lenart, Superintendent, Nuclear Production  
R. Mays, Director, Project Planning  
\*W. Miller, QA Supervisor, Operational Assurance  
S. Noetzel, Site Manager  
J. Nyquist, Assistant to Superintendent, Nuclear Production  
G. Overbeck, Assistant Plant Superintendent  
J. Plona, Technical Engineer  
E. Preston, Operations Engineer  
W. Ripley, Startup Director  
C. P. Sexauer, Nuclear Production Administrator  
G. Trahey, Director, Nuclear QA

\*Denotes those who attended the exit meetings.

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

### 2. Followup on Inspector Identified Items

- a. (Closed) Open Item (341/84003-06(DRSS)), and License Condition Attachment 1, B.2.b: Fabricate and install an intrinsic germanium detector system post-accident collimator prior to exceeding five percent power. The licensee fabricated several lead shield collimators for accident condition use with the detector system, and a calibration was performed for use with a multi-channel analyzer. The licensee demonstrated the use of the collimators for the inspectors. The inspectors also reviewed selected sections of Radiological Engineering Report No. 85-02, "Calibration of High Purity Germanium Detector for Use with Lead Collimators to Analyze High activity Post-Accident Samples."

- b. (Closed) Open Item (341/84039-01(DRP)), and License Condition Attachment 1, B.1.a: Accessibility of safety-related valves for serviceability and manual operation. This item identified numerous inaccessible safety-related valves that would require ladders or platforms to operate, inspect, and maintain the valves.
- (1) Concerning the manual operation of safety-related valves, the licensee conducted a program that reviewed 217 safety-related valves for accessibility. Of the 217 valves, 69 or 32 percent required some form of accessibility aid. The results of this accessibility program are as follows:
- ° Temporary scaffolding and ladders have been installed in several cases which will provide an interim resolution until permanent design changes can be implemented.
  - ° Portable stands, air hoists, and rolling platforms have been chained and locked in strategic locations for the other cases, which will provide a more permanent accessibility. All operators have a key to the locks and have been briefed on the operation and the locations of these devices.
- (2) Although the accessibility of safety-related valves for operation was the primary issue of concern, the licensee has developed a program which will address the issue of serviceability. The program will consider the same 217 safety-related valves as the operability program, but from a maintenance perspective. This will be accomplished through the Engineering Evaluation Request (EER) process which shall provide an evaluation and design for the permanent installation of serviceability aids. This item requires further review and evaluation and is considered an unresolved item (341/85029-01(DRP)) pending completion of the serviceability program and subsequent NRC inspection.

The licensee has demonstrated adequate accessibility to all concerned safety-related valves. This satisfies the license condition for criticality and this item is considered closed.

- c. (Closed) Open Item (341/84043-05(DRSS)): Complete Installation of Standby Gas Treatment System (SGTS) sample line heat tracing prior to exceeding five percent power. The heat tracing has been installed, and the functional tests have been completed and reviewed. The inspectors verified the installation of the heat tracing.

- d. (Closed) Open Item (341/84043-10(DRSS)), and License Condition Attachment 1, B.2.c: Complete a comprehensive review of technical adequacy, commitment compliance, necessary corrective actions and associated training for the accident radioactive effluent release quantification program prior to exceeding five percent power. The licensee has completed the comprehensive review of technical adequacy and commitment compliance and taken corrective action by revising certain emergency response and plant procedures. These actions are described in a licensee internal document entitled "Accident Radioactive Release Quantification Program," which the inspectors reviewed. Also completed are the approval of revised procedures and the training of personnel on these revised procedures.
- e. (Closed) Open Item (341/85010-02(DRP)): Verification of the proper operation of 24 single coil Target Rock solenoid valves. The 24 single coil Target Rock valves consist of 16 valves in the Post Accident Sampling System, and 8 valves in the MSIV Leakage Control System. Preoperational Test Procedure PRET.P3323.001, "Post Accident Sampling System," included proper operation verification for 14 of the valves. Plant Operations Manual (POM) Surveillance Procedure 24.127.20, "MSIV Leakage Control System Local Valve Position Indication Verification Test," included proper operation verification for eight of the valves. POM Surveillance Procedure 43.401.383, "Local Leakage Rate Testing For Penetration X-215," included proper operation verification for two of the valves. All single coil Target Rock solenoid valves operated properly. This item is considered closed.
- f. (Closed) Noncompliance (341/85021-01(DRP)): Inadequate implementation and review of Engineering Design Package EDP-1996 and the accompanying Engineering Change Requests (ECR's) used to verify installation of test, vent, and drain connection caps. This resulted in: (a) the EDP verification sheet not adequately reflecting the EDP and its accompanying ECR's, (b) not all test, vent, and drain (TVD) caps being installed, and (c) Plant Operations Manual (POM) Procedure 47.000.77, "Test, Vent, and Drain (TVD) Cap and Plug Verification," omitting a penetration (X-220) which consists of eight TVD caps. The following licensee corrective action was implemented:
- (1) The EDP verification sheet was corrected to incorporate all revisions to EDP-1996 and the walkdown was reperformed. Also, the EDP Implementation Plan was revised as required by POM Procedure 12.000.64, "EDP Implementation." The individual who incorrectly implemented this procedure was instructed to read the procedure again and fully acquaint himself with all of its requirements.

- (2) Completion of PN-21 No. 992725 and the revised verification walkdown documents that all caps are now installed in accordance with EDP 1996 and ECF's 1996-1 and 1996-2. Surveillance Procedure 47.000.77 has been issued to administratively control the subject caps. Also, all associated plant drawings will be updated in accordance with proper procedure to reflect as-built conditions.
- (3) The preparer and the technical reviewer reanalyzed all information used to generate Procedure 47.000.77 and corrected the procedural deficiency. They were then instructed by their immediate supervisors of the importance of checking and auditing large amounts of technical data systematically and logically to preclude recurrence of this type of error. The licensee has guidelines to follow in writing procedures which are used to ensure correct technical and work content. The individual was also instructed to acquaint himself with all the requirements of this procedure.

The plant drawings shall be updated to reflect the as-built condition of the TVD connection caps by November 30, 1985. This item is considered closed.

- g. (Closed) License Condition 2.c.(12): Operability of the permanent liquid radwaste treatment system prior to exceeding five percent power. The licensee has completed the preoperational tests and demonstrated that the system is operable. The system has been turned over to operations. Several test exceptions which do not affect the operability of the system remain open. A selected review of preoperational test results (G1120.001 and G1125.001) was made by the inspectors. In addition the inspectors walked down several sections of the liquid radwaste system.
- h. (Closed) License Condition 2.c.(16): Operability of the Post-Accident Sampling System (PASS), TMI Action Item II.B.3. The SER, Supplement No. 5 dated March 1985, states that the applicant must demonstrate the capability of promptly obtaining a reactor water coolant sample in the case of an accident, and that the PASS meets all the requirements of Task Action Item II.B.3 and is therefore acceptable. Since the SER was written, the licensee has: demonstrated the PASS operable; approved POM procedure 78.000.14 which provides detailed instructions for the collection and analysis of samples obtained by the PASS; provided training in the required procedures; and performed a time and motion study to demonstrate that PASS samples can be collected, transported, and analyzed in accordance with NUREG 0737, Regulatory Guide 1.97, and GDC-19 dose criteria. Selected review of the procedures, training records, and the time and motion study was made by the inspectors.



### 3. Independent Inspection

#### a. Temporary Solid Radwaste System

The licensee intends to use a portable solid radwaste treatment system (NUS) to meet their technical specification requirements until the completion of the preoperational tests and final approval of the permanent solidification system. The system, which is located in the radwaste building, is operable and will be used by NUS contractor personnel in accordance with approved licensee procedures. The licensee tested the portable system by solidifying 88 cubic feet of mixed bed bead resin from floor drain and waste collector tanks to verify the system met the licensee acceptance criteria. Selected results of these tests were reviewed by the inspectors; no problems were noted. The inspectors also: discussed the results of a licensee conducted ALARA review of the temporary system with radwaste personnel; walked down the system to verify installation; and observed selected components to identify potential radiological problem areas. No significant problems were identified.

In a letter to the licensee from the NRC dated July 3, 1985, NRR approved the licensee Process Control Program (PCP) for the temporary radwaste system. Based on the acceptance of the PCP, the demonstration test of the system, and the inspector's review of the system, it appears the portable system will function as described in the vendor's topical report (NUS Topical Report PS-53-00378) which was submitted to the NRC by the licensee.

No violations or deviations were identified in the review of this program area.

#### b. Onsite Storage Facility (OSSF)

The licensee's onsite storage facility is described in Section 11B.1 of the FSAR. The facility is intended to provide interim storage capacity for an amount of waste which could be generated in five years of plant operation. During this inspection, and a previous inspection (Report No. 50-341/85017(DRSS)), tours and discussions concerning the OSSF were made. The tours were made to verify that selected systems and components (including area radiation and effluent monitors) were installed in accordance with the FSAR and to identify any potential radiological problem areas. No problems were noted.

During these tours and discussions with the licensee, special attention was given to the handling, decontamination, smearing, and surveying of dry active and solidified waste drums; to the HVAC

system; to the design features to ensure ALARA; and to the portable solid radwaste system located in the truck bay area of the OSSF. Radiation protection features of the OSSF include: protective barriers around the stored waste to prevent uncontrolled releases to the environment, remote handling of the waste drums, routing of all potentially contaminated drains from the OSSF to plant liquid radwaste system (the licensee verified each floor drain from the OSSF is routed to the liquid radwaste system), and monitoring and filtration of gaseous and particulate effluents.

One ALARA problem was noted in that no shielding had been provided in the radwaste barrel readout area, nor had provisions been made to read out the barrels remotely. The licensee stated they would review the read out system and make improvements where feasible. This program area requires further review and evaluation and is considered an open item (50-341/85029-02(DRP))

No violations or deviations were identified in the review of this program area.

c. SAFETEAM

The Office of Investigation (OI) reviewed the investigative results of SAFETEAM concerns based on issues raised during the licensing process of another utility. June 11-13, 1985, OI investigators reviewed the SAFETEAM investigators' packages for those concerns which had been identified as wrongdoing. The wrongdoing concerns had been forwarded to Region III as they had been identified. OI investigators expanded the scope of their review when they returned June 18-20, 1985, to include the completed investigative packages of those concerns which the investigators deemed as potential wrongdoing based on the description listed in the SAFETEAM computer printout. The review included listening to the tapes, reading the transcription, and reviewing the documentation in the packages.

The Director of OI, members of his staff, and NRR attended a briefing at the site on June 19, 1985, by the licensee and the OI investigators.

As a result of the OI concerns, a task force composed of individuals from NRR, I&E, and Region III were at the site June 27 and 28, 1985, to perform a more detailed investigation of SAFETEAM concerns for technical merit and a comparison of the SAFETEAM effort with that of a similar undertaking by another utility.

The inspectors supported the OI and task force efforts.

In conjunction with this effort, the inspectors and the licensee performed an inspection of the safety-related SAFETEAM findings at the request of Region III. The inspectors reviewed the SAFETEAM findings to determine if investigative effort adequately addressed the concern and if the corrective action had been completed.

Also, the licensee performed an independent inspection of the SAFETEA findings to verify adequacy of investigation and corrective action. Through discussions with the licensee, the licensee agreed to review fifty percent of the hardware and software safety-related concerns. The inspectors reviewed a sampling of the remaining fifty percent of the safety-related concerns. The results of these inspections will be documented in Inspection Report 50-341/85037.

No violations or deviations were identified in the review of this program area.

d. Operational Readiness

The licensee continues to make progress in its preparations for power ascension. Fire detector installation, fire door inspection, and the off gas system appear to be the most significant critical path items.

Senior Region III management met with licensee management twice during the inspection period to review the status of items affecting initial criticality and power ascension, license conditions and other areas of mutual interest.

No violations or deviations were identified in the review of this program area.

e. Independent Operational Readiness Assessment Inspection

A Region III team composed of experienced resident inspectors performed an operational readiness inspection at Fermi 2 during June 17-22, 1985. The purpose of the team inspection was to observe the licensee's operations and review procedures to identify strengths and weaknesses. The team concluded that there were no significant weaknesses observed and the plant was ready for power ascension. This inspection is documented in Inspection Report 50-341/85031(DRP).

No violations or deviations were identified in the review of this program area.

4. Fire Prevention/Protection Program Implementation

The inspectors observed the progress of License Condition 9.e. which requires that prior to exceeding five percent power, all early warning fire detectors shall be installed and all fire door assemblies shall be labeled or listed by a nationally recognized testing laboratory. The inspectors additionally performed a more detailed examination of the corrective action by the licensee on a sample basis to determine if the programmatic requirements were being met.

No violations or deviations were identified in the review of this program area.



## 5. Monthly Maintenance Observation

Station maintenance activities of 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; the procedures used were adequate to control the activity; 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.

The following maintenance activity was observed:

- ° Reactor Water Cleanup (RWCU) Recirculation Pump Rotating Assembly-Removal and Installation

Removal of RWCU recirculation pump "A" rotating assembly was performed to replace seals and the impeller. Plant Operations Manual (POM) Maintenance Procedure 35.000.68, Revision 1 dated February 21, 1979, "RWCU Recirculation Pump Rotating Assembly-Removal and Installation," was used to provide detailed instructions for removal, disassembly, inspection, assembly, and installation of the RWCU pump. The inspectors witnessed portions of this maintenance and identified several areas of concern.

- a. Sections 7.1.4.1 through 7.1.4.4 of Procedure 35.000.68 describe the steps used in draining the bearing housing oil. This was to be done prior to the removal of the back pull-out section of the pump. However, this was not done, resulting in the oil draining out onto the floor during transfer to the rolling cart, and oil draining out onto the rolling cart which, in turn, tracked the oil as it was rolled to the workshop.
- b. Sections 7.1.7 and 7.1.8 and Reference 3.10 (POM Procedure 32.000.06, "Rigging") of Procedure 35.000.68 provide instructions for the use of a chain hoist and suitable sling. The hoist and sling are used to support the back pull-out when the casing stud nuts are removed and to facilitate simplified removal of the back pull-out section. However, the maintenance personnel transferred the back pull-out section to the rolling cart by hand. This resulted in three men lifting and carrying the heavy and awkward pump to the cart with oil draining significantly (see preceding paragraph). Also, Procedure 35.000.68 requires that reference 3.10, POM Procedure 32.000.06 "Rigging," is to be "used". Section 3.0, "Rigging Preplanning," of this procedure states "...determine the weight of the load." The inspectors observed that the licensee did not observe this requirement of the procedure.

- c. The note on page 3 of Procedure 35.000.68 states, "Procedure steps may be performed out of sequence with the prior approval of the DECo Maintenance Foreman (as a minimum). This statement is applicable until fuel load." However, section 7.5.11 which states.. "to refill the bearing house with Shell Vitrea Oil," was performed after Sections 7.5.12 and 7.5.13. Therefore, the procedure was performed out of sequence which is a failure to adhere to procedural requirements.
- d. There is no procedural step requiring the removal of the casing studs. Removal of the back pull-out section is obstructed by the casing studs and might cause damage to the studs, the pump shaft, the motor shaft, or the coupling hubs. This item has been discussed with the licensee.
- e. There are two alignment screws on the pump that are used to align the pump shaft with the motor shaft. These screws, once the pump is properly aligned, are maintained in their proper positions during operation by tightening down the nut on each screw. However, the inspector observed that this had not been done and subsequently requested the maintenance personnel resolve the problem. In a discussion with the System Engineer and the Assistant Maintenance Engineer it was concluded that the vibration during operation could have shifted the alignment of the pump and, in turn, possibly caused damage to the pump.
- f. The RWCU pumps receive reactor water at a temperature of up to 575° F. This high temperature on the pump side may present a coupling alignment problem due to thermal expansion. This issue is not addressed in the coupling alignment section of Procedure 35.000.68. The licensee is performing an analysis that shall resolve this issue.

The inspector will perform additional inspection of this program area to determine if there is a widespread problem. This shall be accomplished by further inspection of the adequacy of the licensee's maintenance supervision and performance of maintenance activities. The above concerns in this program area are considered to be an unresolved item (341/85029-03(DRP)) pending further evaluation as to whether these items are isolated cases or are more widespread.

#### 6. Monthly Surveillance Observation

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 also witnessed portions of the following test activities:

- ° Local Leakage Rate Testing for Penetration X-13A
- ° RHR Pressure Isolation Valve Leakage Test
- ° Local Leakage Rate Testing for Penetration X35B,C,D,E,F

No violations or deviations were identified in the review of this program area.

#### 7. Operational Safety Verification

The inspectors observed control room operations, reviewed applicable logs, and conducted discussions with control room operators during the period from June 1 to June 30, 1985. 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.

During the inspection period the inspectors verified that surveillance tests were conducted, containment integrity requirements were met, and emergency systems were available as necessary.

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 Low Pressure Coolant Injection System and Core Spray System to verify operability by comparing system lineup with plant drawings, as-built configuration or present valve lineup lists; observed equipment conditions that could degrade performance; and verified 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.

No violations or deviations were identified in the review of this program area.

#### 8. Allegation

An anonymous allegation was made to Region III stating that frequent door checks by security personnel increase the potential for radiation exposure and therefore are contrary to ALARA guidelines.

This allegation was discussed with licensee personnel, who walked down each vital area door which is routinely checked by security personnel. The results of the licensee's review indicated that of all vital area doors which are routinely checked by security personnel, only one is located in a potential radiation area (between the auxiliary and off-gas buildings), and none are located in high radiation areas. Entries into areas posted and controlled as radiation areas are routine and are not normally cause for significant ALARA concerns. No significant ALARA concern was identified in this case.

This allegation was not substantiated.

No violations or deviations were identified in the review of this program area.

9. Systematic Assessment of Licensee Performance (SALP)

A mid-term SALP was performed prior to the Commission briefing for the full power license. The assessment period was from October 1, 1984, to June 30, 1985. Major activities which occurred during the assessment period were the completion of preoperational testing, initial fueling and initial criticality. The SALP Board met on June 28, 1985, to review the assessments, rate each functional area, and make recommendations as to both licensee and NRC attention. The mid-term SALP will be presented on July 2, 1985, at Newport, Michigan, and documented in Inspection Report 50-341/85027.

No violations or deviations were identified in review of this program area.

10. Initial Criticality

The licensee achieved initial criticality on June 21, 1985, at 5:19 a.m. EDT. The event was witnessed by the Deputy Regional Administrator - Region III, the assigned Section Chief, and a regional inspector in addition to the Senior Resident Inspector. Criticality was achieved within two steps of the predicted step of the rod pull sequence.

Additional details of this event are documented in Inspection Report 50-341/85036(DRS).

No violations or deviations were identified in review of this program area.

11. Management Meetings

A management meeting was held at Region III on June 14, 1985, at the request of the licensee. The licensee discussed their proposed reorganization of Nuclear Operations. The current organization is considered to be structurally flat in that all organizations, with the exception of Quality Assurance, report directly to the Manager of Nuclear Operations. The licensee determined that the current organizational

structure was unwieldy to manage and has proposed a more streamlined organization. The new organization has been segregated into four functional groups, Plant, Engineering, Services, and Regulation and compliance, all reporting to the Manager of Nuclear Operations. This should result in a more manageable and responsive organization. In addition, the new organization incorporates "institutional memory" in the proposed staffing.

The licensee plans to implement the new organization after the issuance of the full power license.

12. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, violations or deviations. Unresolved items disclosed during the inspection are discussed in Paragraphs 2.b.(2). and 5.

13. 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. An open item disclosed during the inspection is discussed in Paragraph 3.b.

14. Exit Interview

The inspectors met with licensee representatives (denoted in Paragraph 1) on June 24, 1985, 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 inspector during the inspection. The licensee did not identify any such documents/processes as proprietary. The licensee acknowledged the findings of the inspection.