U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-341/83-21(DE)

Docket No. 50-341 License No. CPPR-87

Licensee: Detroit Edison Company
2000 Second Avenue
Detroit, MI 48224

Facility Name: Enrico Fermi Nuclear Power Plant, Unit 2

Inspection and Management
Meeting Conducted At: Enrico Fermi 2 Site, Monroe, MI

Inspection Conducted: August 3 through September 16, 1983

Management Meeting Conducted: October 5, 1983

Inspector: S. G. DuPont 10/20/83
Date

Approved By: L. A. Reyes, Chief 10/20/83
Test Program Section Date

Inspection Summary

Inspection on August 3 through September 16 and Management Meeting Conducted on October 5, 1983 (Report No. 50-341/83-21[DE])
Areas Inspected: Routine, unannounced inspection of preoperational test procedure review; preoperational test witnessing; preoperational test results review; preoperational test results verification;and management meeting held on October 5, 1983. The inspection involved a total of 150 inspector-hours onsite including 71 inspector-hours during off-shifts.
Results: Of the four areas inspected, no items of noncompliance or deviations were identified in three areas. Within the remaining areas, three apparent items of noncompliance were identified (failure to conduct adequate retest - paragraph 4b; inadequate procedures - paragraph 4b; failure to revise FSAR requirement - paragraph 4d.)

## DETAILS

1. Persons Contacted

*S. H. Noetzel, Site Manager
*F. E. Agosti, Manager, Startup
*R. S. Lenart, Supervisor, Nuclear Productions
*T. A. Alessi, Director, PQA
*W. F. Colbert, Director, Nuclear Engineering
*G. Gelletly, Supervisor, Startup Engineering Assistant
*T. Minton, Startup Director
*T. S. Nickelson, Startup Engineer
*G. M. Taahey, Assistant Director, PQA

The inspector also interviewed other licensee employees, including members of the quality assurance, technical, construction, and operating staff.

*Denotes personnel attending exit interview of September 16, 1983.

2. Preoperational Test Procedure Review

The inspector reviewed the following preoperational test procedure for technical adequacy and compliance with the FSAR, the SER, Regulatory Guide 1.68, the QA Manual, and the startup Instructions and found it satisfactory.

PRET T2306.001 Type C Local Leak Rate Testing

The inspector identified concerns to the licensee that the prescribed test duration of five minutes is ineffectual in establishing base data for future usage. The licensee agreed to extend the test duration to five consecutive readings at two minute intervals (test duration of ten minutes), even though ANSI standard N45.4-1972 does not prescribe an acceptance criteria for testing duration. Additionally, the licensee agreed to evaluate a test duration of 30 minutes.

No items of noncompliance or deviations were identified.

3. Preoperational Test Witnessing

The inspector witnessed the following preoperational tests to ascertain through observation and record review that testing was conducted in accordance with approved procedures. Additionally, the performance of licensee personnel was evaluated during the test.

a. PRET T2306.001 Type C Local Leak Rate Test

The inspector witnessed the local leak rate testing of primary containment pentetration XC-205C and associated butterfly type valves VR3-3013, VR3-3014, and V4-2061. Throughout the test, the startup engineer demonstrated a thorough knowledge of the test system. However, because of limited systems available for testing, the inspector will witness additional air and water tests during subsequent inspections.

b. PRET E1100.001 RHR/LPCI

The inspector witnessed the one pump operation portion of the pre-operational test and verified that the system functioned as designed with the exceptions as noted. The objectives of the test were to verify single pump operation at throttled flow rates of 3500, 5000, 7500, 10,0000 and 14,800 gpm including minimum and maximum flows. During the test, excessive cavitation was experienced and documented by the Startup Engineer. The resolution of the excessive cavitation will be pursued by the inspector during a subsequent inspection and is considered an open item (341/83-21-01[DE]). Additionally, the "B" RHR pump was visually and liquid penetrant examined after a check valve had failed to close during testing and the pump had rotated in the reverse direction. The results of the liquid penetrant examination revealed a one-half inch crack through the inpeller base. The review of the licensee's completed resolution will be pursued by the inspector during a subsequent inspection and is considered an open item (341/83-21-02[DE]).

The inspector observed the Startup Engineer (STE) throughout the test and noted that in addition to a thorough knowledge of the system, the STE coordinated well the testing efforts between testing and operating personnel. Prior to commencing the test the STE conducted a pre-test meeting. The inspector also observed that the preoperational and applicable operating procedures were closely adhered to throughout the test by operating and testing personnel. The inspector will observe further testing in this area during subsequent inspections.

c. PRET N2100.001 Reactor Feedwater Systems

The inspector witnessed the Reactor Feedwater Pump Turbine overspeed trip portion of the preoperational test. The inspector verified that the overspeed trip functioned as designed and that the operator observed the critical speed caution required by the procedure.

No items of noncompliance or deviations were identified.

4. Preoperational Test Results Review

The inspector reviewed the results of the following test procedure against the prescribed acceptance criteria and reviewed the licensee's test evaluation for adequacy and found them satisfactory unless otherwise noted:

a. PRET C1107-001 Rod Position Indication

b. PRET R3201.001 260/130 VDC System

The Division 1 spare battery charger (2A1-2) repeatedly tripped during the preoperational test and was subsequently repaired and the affected portion of the preoperational test repeated. The inspector discussed with the lead Startup Engineer (LSTE) requirements to retest generic CAIO after completion of corrective maintenance in accordance with Startup Instruction 8.4.2.10, Section 4.4.1. The LSTE had determined that, even though the CAIO was not performed, the retest requirement was accomplished by the preoperational test sections pertaining to charger 2A1-2 and Section 6.0 of the preoperational test procedure. However, the preoperational test does not accomplish the testing performed by CAIO.000.019. Additionally, Section 6.0 of the preoperational test does not require any additional testing other than those prescribed in the preoperational test. Section 6.0 states, "Any exceptions must be recorded in Appendix C, such as if adjustments are made to get alarms to initiate at the proper setpoints. Certain sections of the test may be completed before others upon the discretion of the STE", but does not require retesting. This is an item of noncompliance (341/83-21-03(DE) in that required retesting was not performed.

In addition to the above, the inspector discussed the imbalance of chargers 2A1-2 (Division I) and 2C-2 (Non-Safety Related Divisions)transformers. In both incidents, it was determined that corrective maintenance had been performed prior to commencing preoperational testing without verifying or adjusting transformer balance. The vendor technical manual (C&D Batteries) clearly cautioned that the chargers are to be re-balanced after completion of modifications or corrective maintenance. However, neither the preoperational test or CAIO.000.019 procedures included requirements to verify the balance of the chargers after modification or corrective maintenance. This is an item of noncompliance (341/83-21-04(DE)) in that Preoperational Test R3201.001 and CAIO.000.019 procedures are inadequate.

c. PRET R3202.001 48/24 VDC system

d. PRET R3100.001 Instrument and Control Power

During the review of the accepted preoperational test results, the inspector identified a deviation between the preoperational test and the FSAR acceptance criterion. FSAR Section 8.3.1.1.9 prescribes that the acceptance criterion for safety related voltage regulation from the Module Power Units (MPU) to Division 1 and 2 instrumentation shall be regulated to

±0.5 percent of the set output voltage. Contrary to the FSAR, the preoperational test procedure prescribed an acceptance criterion of ±0.5 percent for "No Load" conditions and ±1.0 percent at "Full Load" conditions.

The change in acceptance criterion was made on March 30, 1982, by Project Engineering in response to Startup Field Report, SFR No. R31-2, originated by the STE prior to commencing preoperational testing. SFR No. R31-2 identified fluctuations in the MPU's regulated output voltages greater than the FSAR values. Project Engineering's corrective action was to change the acceptance criterion for "Full Load" conditions because of a determined error in the FSAR values. However, Project Engineering and Licensing had not requested an official change in the FSAR from NRR.

Further review of Appendix "D" of the preoperational test revealed that even at the acceptance criterion of ±1.0 percent voltage regulation problems were encountered during the preoperational test with MPU's 1 (Division 1) and 2 (Division 2) in meeting the acceptance criteria for "No Load" and "Full Load" test conditions. The STE documented the failure to meet the acceptance criteria in the Test Analysis Report as test exceptions 16 through 20. Startup Engineering Assistance (SUEA) dispositioned the test exceptions with a engineering letter to C. R. Gelletly, from M. D. Feathau dated September 28, 1982. The disposition stated that engineering had reviewed the test results obtained during the preoperational test and that they were acceptable. Specifically, test exceptions 16 through 20 on the basis that the recorded voltage deviations were small and that all sensitive instrumentation has another level of voltage regulation furnished with the instrument. This disposition was accepted by the Technical Review Committee (TRC) without a full technical explanation from SUEA. Specifically, the technical supporting evidence to accept values recorded outside limits determined by the preoperational test and the FSAR. Additionally, the inspector identified a letter from SUEA to F. E. Agosti, TRC Chairman, dated October 5, 1982, (Enrico Fermi Unit 2 letter number F282-5290) which stated that engineering had reviewed the preoperational test results, analysis report, and the disposition of exceptions and had compared them to the requirements and standards, and had found the system's performance satisfactory. Specifically, FSAR acceptance criterion, Section 8.3.1.1.9, was satisfied. This is an item of noncompliance (341/83-21-05(DE) in that appropriate management controls had not been taken to ensure that the FSAR requirements had been revised and that the preoperational test results were adequately analyzed and evaluated by engineering. An additional example that appropriate management controls had not been initiated during the review of Preoperational Test R3100.001, is the failure of Project Quality Assurance (PQA) to identify inadequate acceptance of testing. CAIO.000.137 test data was audited by PQA prior to releasing the Instrument and Controls Power Supply System for preoperational testing. The inspector identified a letter dated May 11, 1982, from E. H. Newton, Supervisor of Operational Assurance, to G. M. Trahey, Assistant Director of Project QA, which stated that all required reviews had been completed and satisfactory response has been received by Startup. However, Operational Assurance had failed in its audit to identify questionable acceptance documented for MPU No. 1. The test form for test procedure CAIO.000.137 did not record the required initial MPU output voltage to be

used as a base line for the acceptance criterion in the procedure. The test equipment serial number was recorded in the place of the output voltage. The inspector discussed the questionable documentation with the LSTE and determined that, with some assurance, the required set voltage was recorded in the procedure during the steps verifying the acceptance. However, this information was not readily available to the LSTE or any member of his staff during initial discussions, but was deduced from an interview with the engineer performing the test, and was not available during the audit conducted by Operational Assurance. This is an example of the noncompliance (341/83-21-05-(DE)) noted above.

No other items of noncompliance or deviations were identified.

5. Preoperational Test Results Verification

The inspector reviewed the results of the following preoperational test procedure against the acceptance criteria and reviewed the licensee's test evaluation for adequacy:

T3100.001 Reactor Building Crane

The procedure and evaluation was found satisfactory.

No items of noncompliance or deviations were identified.

6. 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 Paragraph 3.

7. Exit Interview

The inspector met with site representatives (denoted in Paragraph 1) at the conclusion of the inspection on September 16, 1983. The inspector summarized the scope and findings of the inspection noted in this report.

8. Management Meeting on October 5, 1983

a. Attendance

Detroit Edison (DECO)

D. A. Wells, Manager, QA
W. H. Jens, Vice President Nuclear Operations
W. J. Fahrner, Manager, Enrico Fermi 2 Project
F. E. Agosti, Manager, Startup Testing
W. Holland, Vice President

NRC

J. F. Streeter, Chief, Engineering Branch 1
L. A. Reyes, Chief, Test Program Section
S. G. DuPont, Reactor Inspector, Test Program Section
P. M. Byron, Senior Resident Inspector
M. E. Parker, Resident Inspector

b. Meeting Summary

This meeting was conducted at the request of Region III to discuss the growing NRC concerns relating to the licensee's conduct of the preoperational testing program. The NRC representatives stated that numerous examples have been identified by inspectors during the period September 1982 - September 1983 which indicate a less than desirable quality in the conduct of the testing program. The NRC representatives further stated that these performance indicators would likely result in a reduction in the SALP rating in this area during the upcoming SALP. The licensee was also informed that continued indications of poor performance in this area would likely result in escalated enforcement action by the NRC. The following specific examples were discussed:

| Item Description | Inspection Report Reference |
|---|---|
| Inadequate acceptance criteria for testing the Standby Liquid Control System. | 50-341/82-13, Paragraph 2 |
| Numerous deficiencies (19) in the testing method, equipment, and acceptance criteria for the Primary Containment Penetrations Leakrate Test. | 50-341/82-16, Paragraph 4 |
| Failure to follow preoperational test procedures. | 50-341/82-20, Paragraph 4 |
| Retesting of the Primary Containment Penetrations due to the inadequacy of the previous test conducted. | 50-341/83-01, Paragraph 4 |
| Inadequate control of lifted leads during the testing of one Emergency Diesel Generator. | 50-341/83-04, Paragraph 3.d |
| Failure to follow procedure and inadequate control of Test Change Notices (TCNs) during the conduct of the Flow Induced Vibration Test. | 50-341/83-05, Paragraph 6 |

| | |
|---|---|
| Failure to update FSAR system description of the 120V regulated power for instrumentation loads. | 50-341/83-21, Paragraph 4 |
| Inadequate cleanliness controls | 50-341/83-22 |

The NRC representatives emphasized the importance of verifying that system installation and test performance is accurately documented in the FSAR. It was also stated that deviations from the FSAR had to be properly documented and that equipment changes or FSAR changes had to be implemented before these systems were turned over for operations.

The NRC representatives summarized their concerns in the preoperational testing program by indicating that the above listed examples fall in the following areas:

° Procedure adequacy
° Adherence to procedures
° Review of test results
° Readiness for testing

The NRC representatives indicated that an increase of inspection activities in the areas discussed should be expected.

Other matters related to the current inspection program were discussed. The licensee stated their understanding of the NRC concerns and their commitment to address these areas.