U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-341/86007(DRS)

Docket No. 50-341

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

Facility Name: Fermi 2

Inspection At: Fermi Site, Newport MI

Inspection Conducted: February 24-28, 1986

Inspector: Patricia L. Eng — Patricia L. Eng — 5 March 86 Date

Approved By: W. G. Guldemond — W. G. Guldemond, Chief, Operational Programs Section — 3/5/86 Date

Inspection Summary

Inspection on February 24-28, 1986 (Report No. 50-341/86007(DRS))

Areas Inspected: Routine, unannounced inspection of licensee action on previous inspection findings; review of licensee response to IE Bulletin 84-03; inservice testing program implementation and inservice testing instrumentation. The inspection involved a total of 40 inspector-hours onsite by one NRC inspector. During this inspection, Inspection Procedures 61700, 92701 and 92703 were used.

Results: Of the areas inspected, no violations or deviations were identified.

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DETAILS

1. Persons Contacted

*R. S. Lenart, ?lant Manager
*G. R. Overbeck, Superintendent, Operations
A. J. Banek, I and C Technician
*J. E. Conen, Licensing Engineer
R. C. Drouillard, Nuclear Fuel Handling Supervisor
R. J. Filipek, Acting I and C Engineer
R. -'. Mack, Plant Support Engineer
D. D. Merriman, Metrology Lab Specialist
B. J. Sheffel, ISI Programs Engineer
K. Speicher, Consultant NSS

* Denotes those who attended the exit meeting on February 28, 1986.

The inspector also interviewed others of the licensee's staff during the course of the inspection.

2. Licensee Action On Previous Inspection Findings

(Closed) Open Item (341/84046-02(DRS)) Determination of maximum allowed leak rates for category "A" and "A/C" valves. The inspector reviewed the licensee's Inservice Testing program for valves as well as selected valve leak test procedures and determined that valve specific maximum allowable leak rates had been set. This item is closed.

No violations or deviations were identified.

3. Review of Licensee Response to IE Bulletin 84-03

On August 24, 1984, the NRC issued IE Bulletin 84-03, "Refueling Cavity Water Seal", to all power reactor facilities. The IEB, which described the events surrounding a refueling cavity water seal failure at the Haddam Neck facility, required licensees to evaluate the potential for and consequences of a seal failure and submit a summary report supporting their conclusions.

The inspector reviewed the licensee's response to IE Bulletin 84-03 as provided by letter dated, November 5, 1984, pertinent drawings and both normal and abnormal fuel handling procedures. It was concluded that the Fermi cavity seal does not contain active components, is permanently installed and, therefore not susceptible to the type of failure described in the bulletin.

During the inspection the inspector noted the following:

a. The licensee does not use inflatable seals to retain water in the reactor refueling cavity. A permanently installed bellows seal is used which, on total failure, will result in a small leak rate limited by a backup flexible plate seal. Leakage from the seal area is directed to an alarmed flow meter which is verified operable and calibrated periodically.

b. The relative elevations of the spent fuel pool, the reactor core, and the seal are such that with a seal failure and associated draindown, only fuel suspended from the bridge crane and the two fuel preparation machines could be uncovered. All remaining active fuel would remain covered. Assuming both the loss of normal makeup supplies and a cavity seal failure, ample time is available to place fuel in a safe condition.

c. Procedures are in place requiring that fuel in transit be placed in a safe condition if leakage is indicated and makeup is insufficient. These actions can be completed before damage occurs or radiation levels become excessive.

d. The spent fuel pool does not have any drains, and potential siphon paths are defeated by installed vacuum breakers such that inadvertent valve opening or pipe failure can not result in draining the spent fuel pool below the level of the active fuel.

e. Two fuel pool level alarms, the flow rate alarms mentioned in paragraph 3.a, area radiation monitors and periodic visual inspection are available to initiate mitigating actions on a loss of pool inventory. Abnormal operating procedures are in place addressing safe placement of fuel, inventory makeup and evacuation of high radiation areas.

Based on the above, it is concluded that system design renders the probability of catastrophic seal failure acceptably low. In the event that such a failure occurs, fuel damage is not anticipated based on existing fuel handling procedural requirements and sufficient time to implement such requirements. It is, therefore, concluded that the licensee has adequately resolved the issues identified in IEB 84-03, and the IEB is considered closed.

A review of other potential mechanisms for loss of water was also conducted. Short of structural failure, no credible mechanism for loss of spent fuel pool inventory was identified. Evaluation of other potential leak paths for the reactor cavity such as instrument installations or access covers would result in a leak rate less than that associated with seal failure or would be discovered prior to removal of the reactor vessel head. In the event of such a leak through access covers with the reactor vessel head removed, personnel manning requirements assure sufficient time to place fuel in a safe condition.

Discussions with the Nuclear Fuel Handling Supervisor indicated that no training or procedures are currently in place to address movement of fuel should a loss of off site power occur. Discussions with operators previously trained for fuel handling activities indicated that they were aware that non-powered fuel movement could be accomplished; however, the details of how to conduct such operations were not clear. A training request was promptly initiated to incorporate appropriate actions upon loss of off site power while moving fuel into fuel handlers' training. Verification of training completion and procedure revision to address placement of fuel in a safe condition with a loss of off-site power prior to the first refueling outage is considered an open item (50-341/86007-01(DRS)), and will be followed up in an inspection prior to the first refueling outage.

No violations or deviations were identified.

4. Inservice Testing Program Implementation

The licensee's inservice testing (IST) program has been reviewed and approved by the Commission in the facility Safety Evaluation Report. During the course of the inspection, the licensee requested copies of various memos which provide guidance related to interpretations of the ASME Code requirements for inservice testing. Copies of the pertinent memos are attached to this report.

The inspector reviewed the licensee's relief requests from the ASME Code requirements and initial program implementation, making the following observations:

a. Subsection IWV-3300 of Section XI of the American Society of Mechanical Engineers' Boiler and Pressure Vessel Code (ASME Code) requires that those valves with remote position indicators be observed at least once every 2 years to verify that valve operation is accurately indicated. Discussions with the ISI Engineer revealed that a program ensuring such was in place; however, valves which were indicated on plant remote shutdown panels had not yet been checked. The licensee agreed to initiate verification of remote position indicators on the remote shutdown panels and to complete such verifications within the ASME Code stipulations. Completion of position verifications will be tracked as an open item (50-341/86007-02(DRS)).

b. As stated in the approved IST program, the licensee is allowed to satisfy the vibration measurement requirements of the ASME Code by obtaining vibration data in terms of velocity rather than amplitude. It was noted that the licensee established a single vibration acceptance criteria for all IST vibration measurements. Review of the High Pressure Core Injection (HPCI) surveillance procedure and initial test data revealed that past vibration test data were unacceptably high. The licensee stated that upon completion of the surveillance test on the HPCI pump, major maintenance was performed on the pump, and that new reference values for HPCI pump vibration measurements as well as associated acceptance criteria would be formulated when sufficient steam was available to run the pump. In addition, the licensee stated that the decision whether to permanently install the vibration transducers or to use hand held instruments had not yet been made. Establishment of the method of vibration testing and appropriate acceptance criteria, and marking of the data points on the pump will be tracked as an open item (50-341/86007-03(DRS)).

c. The inspector noted that, in most cases, maximum valve stroke times had been set based on an evaluation of valve data provided by the manufacturer, the design engineer and plant test data. Review of the IST program revealed that a relatively small number of valves have the system response time defined as their maximum allowed stroke time. The licensee agreed with the inspector's observations and stated that valve stroke times would be reviewed and revised to reflect individual valve characteristics and test results. The definition of specific maximum valve stroke times which are more indicative of component degradation, is considered to be an open item (50-341/86007-04(DRS)). The licensee agreed to complete this effort by the first refueling outage.

d. A number of administrative procedures addressing the IST requirements delineated in the ASME Code were in place. The inspector reviewed the procedures for adequacy and consistency. The inspector determined that Code requirements were appropriately and clearly addressed.

No violations or deviations were identified.

5. <u>Inservice Testing Instruments</u>

A review of the adequacy of instruments used to obtain inservice testing data against established requirements was performed by the licensee prior to program implementation. The inspector evaluated a number of instruments and discovered that the equipment history file for the HPCI permanently installed tachometer defined the instrument as non-seismic and Quality Assurance (QA) level 3; however, the Master Instrument List (MIL) identified the same instrument as seismic category 1 and QA level 1. The licensee stated that this discrepancy was probably due to the fact that at the time of purchase, it was not clear as to how the tachometer would be used. The loop calibration procedure for the tachometer was not located during the course of the inspection; however, the inspector reviewed the calibration procedure for the tachometer sensor and noted that a one point calibration was performed. The licensee stated that a multi-point calibration for the loop was probably performed. The inspector also noted that the tachometer was overdue for scheduled calibration. Discussions with the licensee revealed that the tachometer had been used to obtain initial reference data for the HPCI pump; however, due to extensive pump modifications and the need to establish vibration acceptance criteria as discussed in paragraph 3 above, new reference values would have to be taken. In effect, data taken with the tachometer had not been used to verify pump operability under the auspices of the IST program. The licensee was unable to identify any other data taken with the tachometer. Resolution of the calibration status and requirements, and classification, both seismic and QA level, for the tachometer, as well as evaluation of the validity of any data taken using the tachometer, is considered an unresolved item (50-341/86007-05(DRS)).

No violations 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 and 4.

7. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, open items, deviations, or violations. Unresolved items disclosed during the inspection are discussed in Paragraph 5.

8. Exit Interview

The inspectors met with licensee representatives (denoted in Paragraph 1) on February 28, 1986, to discuss the scope and findings of the inspection. The licensee acknowledged the statements made by the inspectors with respect to items discussed in the report. The inspector 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.

# A T T A C H M E N T S

MAR 17 1980

SSINS No. 6025

MEMORANDUM FOR: R. C. Lewis, Acting Chief, RO&NS Branch, Region II

FROM: Samuel E. Bryan, A/D for Field Coordination, DROI, IE

SUBJECT: OPERABILITY REQUIREMENTS FOR PUMPS (AITS NO. F02-700028-H07)

As we understand them, the questions in your February 1 memo are:

1. Do the Technical Specification ACTION statement time perios run consecutive or concurrently with the data evaluation time (96 hours) given in IWP-3220 of Section XI of the ASME Boiler and Pressure Vessel Code, 1974 Edition with Addenda thru the Summer 1975, and

2. When should the test results be reviewed and, if out-of-specification, the associated pump declared inoperable?

The answer to the first question is the Technical Specification ACTION statement time period starts after the determination is made that the pump is inoperable as defined in Section XI, IWP-3230(c). If the data is within the Required Action Range of Table IWP-3100-2 and it is decided to recalibrate the instruments and rerun the test, as provided for in IWP-3230(b), the Technical Specification ACTION statement time starts when the determination is made that the data is within the Required Action Range. The reasoning behind the preceeding statement is that once the determination is made that the data is within the Required Action Range the pump must be declared inoperable. The provisions in IWP-3230 to recalibrate and rerun the test to show the pump is still capable of fulfilling its function are interpreted by us as an alternative to replacement or repair, not an additional action that can be taken before declaring the pump inoperable.

The answer to the second question is that as soon as the data is recognized as being within the Required Action Range the pump must be declared inoperable. Section XI, IWP-6230, "Inservice Test Plans", states that the test plan shall include "The reference values (Table IWP-3100-1), limits of $P_i$ and $T_b$ (Table IWP-3100-2), and any other values required by this Subsection." This statement

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CONTACT: J. C. Stone, IE
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then requires the acceptance criteria to be included in the test plan. With that information available, the shift supervisor should be able to make the determination as to whether or not the data meets the requirements. The important point is that once the data becomes available that shows the pump cannot meet the inservice inspection requirements and by definition cannot fulfill its function then the pump must be declared inoperable.

We have discussed the above interpretations with DOR personnel and the Standard Technical Specification Group and they agree. If you have any further questions, please call.

Samuel E. Bryan
Assistant Director
for Field Coordination
Division of Reactor
Operations Inspection, IE

cc: N. C. Moseley, IE
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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

APR 18 1985

Docket No.: STN 50-483

MEMORANDUM FOR: Richard L. Spessard, Director
Division of Reactor Safety
Region III

FROM: Hugh L. Thompson, Jr., Director
Division of Licensing
Office of Nuclear Reactor Regulation

SUBJECT: CLOSURE VERIFICATION OF NORMALLY CLOSED CHECK VALVES DURING PREOPERATION TESTING AT CALLAWAY (TIA 83-117)

REFERENCE: Letter from R. L. Spessard to D. G. Eisenhut on the above subject, dated November 8, 1983.

The referenced letter requested the staff position regarding testing of normally closed check valves for closure capability during preoperational testing and during plant life. The staff position is that normally closed check valves, that have a safety function in the closed position, should have the closure function verified both during preoperational testing and periodically throughout the plant life. In addition, the staff verifies that closure verification testing is specified in their normal review of the IST program, and if not, measures are taken to see that the program is revised.

In an attempt to have the ASME clarify ambiguities within Section XI of the ASME Code regarding valve categorization and leak testing, the staff submitted an inquiry to the society. The response time from the society (approximately one year) was a major factor in the delay of this response to you. Enclosed is a more detailed staff evaluation of the subject.

Frank J. Miraglia
for Hugh L. Thompson, Jr., Director
Division of Licensing
Office of Nuclear Reactor Regulation

Enclosure: As stated

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