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U.S. NUCLEAR REGULATORY COMMISSION

OFFICE OF INSPECTION AND ENFORCEMENT

REGION I

IE Inspection Report No: 50-289/75-09

Docket No: 50-289

Licensee: Metropolitan Edison Company
P. O. Box 542
Reading, Pennsylvania 19603

License No: DPR-50

Priority: -

Category: C

Location: Middletown, Pennsylvania (Three Mile Island 1)

Safeguards Group: -

Type of Licensee: PWR, 871 MWe (B&W)

Type of Inspection: Special, Announced

Dates of Inspection: April 15, 1975

Dates of Previous Inspection: April 9, 1975

Reporting Inspector: L. W. Gage, Reactor Inspector — 4-28-75 Date

Accompanying Inspectors: None — Date

Date

Date

Date

Other Accompanying Personnel: None — Date

Reviewed By: R. C. Haynes, Senior Reactor Inspector — 4/28/75 Date

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SUMMARY OF FINDINGS

Enforcement Action

A. Items of Noncompliance

None

B. Deviations

None

Licensee Action on Previously Identified Enforcement Items

Not applicable

Design Changes

Seismic Anchoring of AC Control-Rod-Drive-System Trip-Breaker Cabinets
(Reference: Licensee Nonroutine 30-day Report No. 74-02)

The design of the seismic anchoring of the AC control-rod-drive-system trip-breaker cabinets is being modified by the licensee. (Details, Paragraph 2)

Unusual Occurrences

1. Inability to Operate the 1A Decay-Heat-Pump Suction Valve
(Reference: Licensee Abnormal Occurrence Report No. AO 50-289/74-33)

The 1A decay-heat-pump suction valve, DH-V5A, from the borated-water storage tank, failed to close during a pretest valve line-up. (Details, Paragraph 3)

2. Failure of the 1C High-Pressure Injection Pump to Start on an ESAS Signal
(Reference: Licensee Abnormal Occurrence Report No. AO 50-289/75-01)

The 1C high-pressure injection pump failed to start on an automatic engineered-safety-features test signal, during a high- and low-pressure injection-logic and component-surveillance test. (Details, Paragraph 4)

3. Failure of the 1B Reactor-Building Emergency-Cooling River-Water Pump to Start on an ESAS Signal
(Reference: Licensee Abnormal Occurrence Report No. AO 50-289/75-02)

The 1B reactor-building emergency-cooling river-water pump failed to start on an automatic engineered-safety-features test signal, during a high- and low-pressure injection-logic and component-surveillance test. (Details, Paragraph 4)

Other Significant Findings

A. Current Findings

1. Acceptable Areas

The corrective actions taken by the licensee with respect to the equipment malfunctions experienced as listed under "Unusual Occurrences" above were inspected and found to be acceptable. (Details, Paragraphs 3 and 4)

2. Unresolved Item

Seismic Anchoring of AC Control-Rod-Drive System Trip-Breaker Cabinets

The licensee has developed a procedure for modifying the seismic anchoring of the AC control-rod-drive system trip-breaker cabinets. It is anticipated that this modification will be performed during the next scheduled plant shutdown. (Details, Paragraph 2)

B. Status of Previously Reported Unresolved Items

Not inspected

Management Interview

At the conclusion of the inspection, the inspector held a meeting at the site with the following personnel to discuss the inspection findings:

Metropolitan Edison Company

Mr. [illegible]. Herbein, Station Superintendent
Mr. [illegible]. Sheets, Engineer, Jr., Electrical

The following items were discussed, and the inspector's findings were acknowledged by the licensee.

A. Purpose of the Inspection

The inspector stated that the purpose of this special, announced inspection was to review the details and corrective action in the licensee's abnormal occurrence report numbers AO 50-289/74-33, /75-01, and /75-02; and 30-day report number 74-02.

B. Current Findings: Acceptable Areas

The inspector stated that his review of the licensee's corrective actions, in the following areas, revealed acceptable findings:

1. Inability to Operate the 1A Decay-Heat-Pump Suction Valve (Details, Paragraph 3)

2. Failure of the 1C High-Pressure Injection Pump to Start on an ESAS Signal. (Details, Paragraph 4)

3. Failure of the 1B Reactor-Building Emergency-Cooling River-Water Pump to Start on an ESAS Signal. (Details, Paragraph 4)

C. Unresolved Item: Seismic Anchoring of AC Control-Rod-Drive-System Trip-Breaker Cabinets

The inspector stated that the recent corrective actions of the licensee in preparing a procedure for modifying the design of the seismic mounting were found to be acceptable. However, this item will remain unresolved pending a subsequent review by an NRC inspector when the licensee has completed the modification. (Details, Paragraph 2)

DETAILS

1. Persons Contacted

Metropolitan Edison Company

Mr. C. Hartman, Unit 1 Lead Electrical Engineer
Mr. H. Mitchell, Electrical Maintenance Supervisor
Mr. E. Sheets, Engineer, Jr., Electrical

2. Seismic Anchoring of AC Control-Rod-Drive-System Trip-Breaker Cabinets

The inspector examined the present seismic anchoring for the AC control-rod-drive system trip-breaker cabinets. The cabinets are in a dual or double-cabinet configuration. At present, the double cabinet is anchored to a steel-reinforced concrete mounting pad by four fillet welds (each approximately 1-inch long)--one at each corner. The inspector determined that this anchoring was not in accordance with the architect-engineer's drawing requirement, sketch DK-1 (revision 3), titled "Welds for Equipment Anchorage, Seismic Class I Equipment."

However, the design of the base of the double cabinet is such that it was not possible to follow the drawing requirement for welding the base to the steel imbedments in the concrete mounting pad.

The cabinet vendor (Babcock and Wilcox) informed the licensee[1] that they had found deficiencies in the anchoring of the cabinets at other sites. They recommended that the licensee examine the cabinet anchoring to determine if the following criteria were met: fillet welds between cabinet base and steel imbedments, one-inch long, every 4 inches. The licensee inspected the cabinet anchoring and determined that it did not meet the vendor's criteria. The licensee then generated a report to NRC[2] informing NRC of the findings of the anchoring inspection.

The licensee has prepared Work Request No. 6508, dated 1/6/75, which documents the procedure that will be followed to modify the anchoring and make it equivalent to the vendor's criteria. This modification will be performed during the next scheduled plant shutdown.

This item is unresolved, pending a review by an NRC inspector when the licensee has completed the modification.

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1. Letter of 10/28/74, from E. G. Ward (B & W) to R. W. Heward (GPUSCO), titled "TMI Nuclear Station, Unit #1, CRD System, AC Breaker Cabinet, B & W Reference NSS-5"
2. Nonroutine 30-day Report No. 74-02, dated 1/15/75

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3. Inability to Operate the 1A Decay-Heat-Pump Suction Valve
(Reference: Licensee Abnormal Occurrence Report No. AO 50-289/74-33

The inspector reviewed the abnormal occurrence with the licensee. The licensee indicated that, while performing a pretest valve line-up in preparation for a high- and low-pressure injection-logic channel and component-surveillance test, the 1A decay-heat-pump suction valve (DH-V5A) from the borated-water storage tank failed to close.

The licensee determined that the cause of the occurrence was a broken auxiliary contact in the opening motor-starter. The licensee replaced the contact and tested the system to assure its operability. The licensee also inspected the auxiliary contact in the opening motor-starter of the redundant system (the DH-V5B suction valve's system). It was satisfactory, as documented in licensee PORC meeting minutes, No. 264, for 1/6-10/75. The licensee indicated that this type of contact has no history of defects in their plant.

4. a. Failure of the 1C High-Pressure Injection Pump to Start on an ESAS Signal
(Reference: Licensee Abnormal Occurrence Report No. AO 50-289/75-01)

b. Failure of the 1B Reactor-Building Emergency-Cooling River-Water Pump to Start on an ESAS Signal
(Reference: Licensee Abnormal Occurrence Report No. AO 50-289/75-02)

The inspector reviewed the abnormal occurrences with the licensee. The licensee indicated that, while performing a high- and low-pressure injection-logic and component-surveillance test (a) the 1C high-pressure injection pump, and (b) the 1B reactor-building emergency-cooling river-water pump, failed to start on separate Engineered Safeguards Actuation System (ESAS) signals.

The licensee determined that the cause of the occurrences, in both instances, was loose electrical connections in the respective circuit breakers for the two pumps. The loose connections prevented the breakers from closing, which prevented the pumps from starting. The loose connections were found on a terminal block on the front of the breakers, in the upper left corner of the lower portion of the breakers. The breakers are manufactured by Westinghouse, and are identified as type 50 DH-P 350 air circuit breakers, rated at 4.16 kv.

The licensee tightened the loose connections and tested the systems to assure their operability. The licensee also prepared a Work Request, No. 6910, dated 1/15/75, which identified the other circuit breakers of this type in the plant and provided inspection procedures to check their attaching hardware. The licensee is presently completing the effort associated with this Work Request. The inspector examined licensee records. They indicate that, of the 28 circuit breakers of this type in the plant, 21 had been inspected and (where necessary) corrected to date.

(The licensee stated that he had contacted Westinghouse. They advised the licensee that lockwashers were not a design requirement on the terminal blocks where the loose connections were found, and they were not inadvertently omitted.)