

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-341/82-11(DETP)

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 At: Enrico Fermi 2 Site, Monroe, MI

Inspection Conducted: July 21-23 and 27-30, 1982.

Inspector: *[Signature]*
K. R. Naidu

9/10/82

Approved By: *[Signature]*
C. C. Williams, Chief
Plant Systems Section

9/10/82

Inspection Summary

Inspection on July 21-23 and 27-30, 1982 (Report No. 50-341/82-11(DETP))
Areas Inspected: Licensee action on previously identified items, 50.55(e) reports; observation of electrical hanger re-inspections; review of quality assurance records; review of relay coordination activities and review of a Deviation Disposition Request. The inspection involved a total of 48 inspection hours onsite by one NRC inspector.
Results: No items of noncompliance or deviations were observed.

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DETAILS

Persons Contacted

Detroit Edison Company (DECo) Fermi II Site

*T. A. Alessi, Director, Project Quality Assurance
*W. J. Fahner, Project Manager
*D. Ferencz, Supervisor Construction QA
*G. Trahey, Assistant Director, Project Quality Assurance
*S. H. Noetzel, Assistant Project Manager
*G. Bosetti, Supervising Engineer, Electrical
*W. Wilson, Assistant to Project Manager
T. Began, Electrical Engineer
J. Nunley, Director, Project Design
W. M. Adair, Resident Engineer I&C
B. Kaupilla, Lead Electrical QA
D. Walker, Electrical QA
R. Ballis, I&C Engineer
R. Anderson, Systems Engineer
L. Collins, Administrative Engineer, Start Up
J. Taylor, Supervising Technician, Electrical
E. Halash, Start Up Engineer, Electrical
D. Hosta, QA Electrical Inspection

Detroit Edison Company Warren Service Center

L. R. Syrowick, Superintendant Relaying
C. R. Harris, Supervising Engineer, Transmission Engineering
L. C. Jackson, Senior Engineer
J. P. Wachlarz, Senior Engineer
K. J. Kujula, Associate Engineer

L. K. Comstock Company (LKC)

L. Hack, Supervisor, Quality Control

Wisner & Becker (W&B)

A. Benke, NDE Supervisor
D. Jantosik, Turnover Supervisor
P. Edmonton, QC Engineer
A. Rhode, QC Engineer

General Electric Company (GE)

R. F. Pratt, Resident Site Manager

*Denotes those who attended the exit meeting on July 30, 1982.

In addition to the above, other licensee and contractor personnel were contacted during this inspection.

Licensee Action on Previously Identified Items

(CLOSED) Noncompliance (341/79-03-01): It was previously identified that pipe-whip restraints were received on site with unacceptable welds and were therefore not in compliance with procurement documents. Corrective action was taken to repair the defective weld and verify that the repair was adequate.

(OPEN) Open Item (80-01-01): It was previously identified that cables were pulled using excessive tension and less than the minimum bending radii permitted by the manufacturer. The final report is expected to be complete by mid September.

(OPEN) Unresolved Item (341/81-12-02): It was previously reported that Balance of Plant (BOP) cables were run in Division I and Division II cable trays. Discussions with DECo cognizant engineers and review of relevant drawings indicate that there are eleven (11) physical points where BOP cables crossover and enter adjacent cable trays containing Division I and Division II cables. DECo proposes to install fire-barrier seals for crossover between BOP and divisional trays. DECo Specification 198, Revision A, specifies the technical requirements for installing the fire barrier seals. The proposed fire barrier seals are to provide at least 1-hour fire resistive rating at the crossovers and are to prevent propagation of the fire along the path of the crossover from one cable tray to the other cable tray for a minimum of one hour. The cold face temperature of the cables are not to exceed the IEEE 634-1978 criteria. The licensee classified the fire barrier seals as both seismic Category I and QA level I and necessary documentation on the inspections are to be generated. Additionally, the licensee has taken the following precautions:

1. For each fire stop installed, a sample of the fire stop material will be sent to DECo Engineering Research Department (ERD) for evaluation.
2. ERD will test/evaluate the test samples to determine whether
 - a. the samples are combustible,
 - b. the material would provide a minimum one hour fire resistance rating as installed,
 - c. the cold face temperature of the firestop system will not exceed IEEE 634-1978 criteria.

The test procedures for performing the above evaluations will be developed by DECo ERD.

Review of 50.55(e) Reports

(CLOSED) Damaged Core Spray Pump Motors 79-02 (DECo No. 15) - This event was verbally reported to an NRC inspector onsite on February 23, 1979.

The inspector reviewed the following records:

General Electric Company generated FDDR-KHI-082 on September 11, 1978 that the casing of motor E21-01-C001-A was damaged during the installation of the motor half coupling. Wismer & Becker, the installation contractor, generated DDR 1818 on June 21, 1978 on the same subject evaluated the 50.55(e) reportability and determined that it was reportable.

The two core spray pump motors (motor E-21-01-C001D was damaged during unloading) were sent to General Electric in San Jose for repairs.

DECo inspection report #4 dated March 20, 1980, indicates that the DECo inspector witnessed several tests on motor E21-00-C001-A and released the motor for shipment.

Installation records indicate that the motor was installed and operated.

(CLOSED) Defective ITE Breakers 81-09 (DECo No. 54)

This item involves defective ITE Breakers rated for 1600 Amperes Type K-1600S and K-O-N 1600 S, also contained in NRC Information Notice 80-13. Review of package Nos. 3057E and 3058E in startup system R 1432, indicate that ITE circuit breaker serial numbers 33-48 309W8-1-4B and 33-48 309W11-1-4B, failed Step 7.29.5 of DECo procedure CA10.000.024 Revision 2. Deviation Disposition Request DDR 6902 was initiated and replacement parts were purchased. Receiving Inspection Report (RIR) 213129 indicates that the purchased material was inspected on receipt. The manufacturer's representative was onsite to change the defective parts. Corrective action was verified on October 19, 1981. Paragraph 7.30 of procedure CA10.000.24 specifically addresses the IE Information Notice 80-31 and outlines seven steps to be verified to ensure that this type of failure is detected and corrected in the future.

(OPEN) Rockbestos Coaxial Cable (DEC #45)

This item relates to the use of Rockbestos Coaxial Cable Type RSS-6 Series 100 through 112 at the Fermi site. Records indicate 4 lengths of Rockbestos triple shielded coaxial cable catalog #RSS-6-110 were used inside the containment in the Source Range Monitor circuit. DECo final report letter EF-2-54715 dated November 20, 1981 informed Region III that these cables will be replaced with environmentally qualified cable. DECo internal document dated April 13, 1982 (EG54 to EG64) indicates that based on the following reasons the cables were not replaced: (a) unavailability of an acceptable alternate with the required electrical characteristics, (b) the source range monitor (SRM) circuits are non-class IE, and (c) GE, the NSS supplier, specifies triple shielded cable for the accurate operation of the SRM.

The subject cables used in the SRM circuits are not classified as Class IE but are important to safe start up of the plant. As such the inspector requested the licensee to re-evaluate the qualifications, inside the containment for applications important to safety. The inspector requested the licensee to amend the final 50.55(e) report EF-2-54715 dated November 20, 1981 based on the final resolution.

(CLOSED) Improper Crimping in GE Panels 80-02 (DECo No. 27)

This item involves improper crimping in panels supplied by General Electric H 1100P601, P602, P603, P804 - P810, P812, P813, P816 and P817. DECo issued a final report on this matter EF2-55867 dated November 25, 1981 to Region III. Review of the Quality Control Inspection Record (QCIR) E-7.0-CC110 July 22, 1982 indicates that a QC representative verified that the replacement of the defective pins was acceptable. Selective review of the QCIR E-7.0-CC110 Volume 2 of 4 indicates that craftsmen were trained and qualified to replace the pins. Continuity checks were selectively made to verify adequacy of the rework.

Functional or Program Areas Inspected

1. Observation of the Electrical Hanger Inspections

The inspector verified the status of the commitments made by the Enrico Fermi Project Manager in the letter EF2-57501 dated July 12, 1982 to Region III office. As stated in the letter the "Stop Work" on new installation of safety related cable trays and tray supports is in effect. The inspector accompanied by licensee and electrical contractor personnel inspected the cable tray hold down welds at the following locations:

- a. Elevation 603' lower cable spreading room column line G-16
- b. Elevation 630' upper cable spreading room between column lines G-14 and G-15.
- c. Elevation 583' column line D9

The inspector stated and the cognizant personnel concurred that the welds do not meet the size and length of the weld specified in the design Standard EB-117-57. The inspector determined that it is very difficult to meet the specified weld length due to the curved shape of the cable tray. The minimum acceptance criteria for the weld had not been established. Mock cable tray to hanger welds were prepared in the L. K. Comstock fabrication shop to represent the most unfavourable conditions and subjected to destructive tensile strengths. Data is being collected for an analysis. A special test fixture was designed to test the strengths of cable tray hold down welds. The inspector witnessed the operation of the test device on some cable tray hold down welds and determined that it was suitable for the purpose.

No items of noncompliance were identified in the above area.

2. Review of Quality Assurance Records

The inspector reviewed the following quality assurance records:

a. 4.16KV Switchgear:

The turnover package release No. T035-2763E/E21-002 relates to the Core Spray Pump Motor E210C001C. 4.16KV breaker. The motor was manufactured and supplied by General Electric - 800HP, 3560 r.p.m., Model 5K6338XC61A. The following documents were reviewed:

- (1) Startup Form 7.2 conditional subsystem/component release to startup
- (2) Lists all the cables in the system
- (3) Lists punch list items
- (4) Report that mechanical tests were performed on 4.16KV breaker type 5HK to procedure CAIO.000.021 Revision 5.
- (5) Report that electrical tests were performed on breaker control to procedures CAIO.000.22, Revision 4
- (6) Reports that verification tests were performed on IAC 66 type relays to procedure CAIO.000.044, Revision 3.
- (7) Report that verification tests were performed on PJC-11 type relay to procedure CAIO.000.046, Revision 2
- (8) Current transformers were tested to procedures CAIO.000.028 Revision 3
- (9) Powers Cables 220090-1P to the motor were tested to procedure CAIO.000.016, Revision 5
- (10) Wiring check on schematic 6I-721-2211-3

b. 480 Volt Circuit Breaker

The startup system R 1432 for 480 volt breaker type K-1600S in the ESS Bus 72EC. The following documents were reviewed:

- (1) Relaying and control were verified to procedure CAIO.000.024, Revision 2.
- (2) Report that verification tests were performed on 52XX type relay to procedure CAIO.000.045, Revision 3.
- (3) Neutral Ground current transformer was verified to procedure CAIO.000.028, Revision 3.
- (4) The operation of the static trip device was verified to procedure CAIO.000.036, Revision 2.

- (5) The unit sub-station involving 4160/480 volt transformer, the voltage regulating transformer and the buswork was verified to procedure CAIO.000.025, Revision 2.
- (6) The operation of the Inverse Over Current Relays were verified to procedure CAIO.000.044, Revision 3.
- (7) The 480 volt bus potentiometer local and relay were verified to procedure CAIO.000.028, Revision 3.
- (8) The DC Control bus was verified to procedure CAIO.000.059, Revision 3.

c. Core Spray Pump and Motor Installation Records

The installation records for Core Spray Pump identified as E21-01-C001A are documented in Operation Process Traveller (OPT) 5045, Revision 3 and include the following information:

- (1) OPT 5045, Revision 3 documents that Steps 1 through 6 were performed and documented in OPT Revisions 0 and 1. Review of these travellers indicates that Step 6 was not signed off subsequent to March 24, 1978 when Step 5 was signed. The intent of Step 6 was to ensure that caps and seals on all openings were tight to prevent dust from entering the internals. Since this could not be verified, the NRC inspector reviewed the Equipment Maintenance Records and determined that surveillances were performed, subsequent to the installation, to verify that caps and seals on all pump openings were intact.

Step 5 originally required the foundation studs to be tightened to 900 feet pounds +5%. This requirement was later changed to turn-of-the-nut method - one third turn.

- (2) OPT 21678 indicates that the sole plate anchor bolt nuts were removed, cleaned and retorqued to 620 ft lbs. The 620 ft lbs torque valve was supplied by a DECo engineer. The bolts were torqued with torque wrench identified as WB-802 on July 15, 1982; the calibration due date on the torque wrench was August 12, 1982.
- (3) Page 1-2 of Byron Jackson (the pump manufacturer) Manual 8020 recommends the nut on cover-to-case stud be torqued to 360 ft lbs. Step 13.0 of revision 3 of the above traveller indicates that the torque (360 ft lbs) on the case stud nuts were verified on May 5, 1982 with a torque wrench identified as WB-690 with a May 27, 1982 calibration due date.
- (4) The torque on the motor hold down cap screw was verified with the same torque wrench on May 9, 1982.

- (5) The direction of motor rotation, and the shaft alignment were verified.
 - (6) The final installation was verified on May 21, 1982.
 - (7) OPT 5174-14 was initiated to upgrade the operation of the core spray pump on March 9, 1981. During inspection and clean up it was observed that the pump shaft was bent.
 - (8) W&B DDR 2312 was initiated and the pump shaft was replaced.
 - (9) Nonconformance Report 82-0107 dated June 13, 1982 identified that during reassembly the impeller was inserted upside down.
 - (10) OPT-21633 indicated that the pump was reassembled correctly on June 15, 1982.
 - (11) RIR 329 dated October 6, 1977 indicates that 4 core spray pumps were received by Wismer & Becker on site without any damage. The documentation on the pumps was reviewed and accepted on March 20, 1980.
- d. Core Spray Pump-Manufacturer's Documentation. General Electric (GE), the NSS supplier furnished the core spray pump and motor. The pump was manufactured by Byron Jackson and the motor by G.E. A GE QC checklist identifies the various procedures and test reports reviewed and tests witnessed. Product QC checklist from GE indicates the following:
- (1) Pump casing, serial number P-4978 was fabricated from carbon steel A-216 grade WCB material with heat number 933-1 by Lynn McLeod Foundry, Canada.
 - (2) Cover, serial number P-4975 was cast from carbon steel A-216 grade WCB material with heat number 942-1.
 - (3) Shaft, serial number P-4951 was fabricated from stainless steel A-479 type 316 material with heat number FF-5307.
 - (4) Impeller was cast from stainless steel A351 Grade CA-15 material with heat number 365.
 - (5) Deviation Disposition Request (DDR) 5572 dated November 7, 1972 identifies that the outside diameter of the suction nozzle weld preparation was .002" less than the specified 12.863" +0.10" - .000" dimension. The disposition was to use as-is since it was less than .002" of the lower limit.
 - (6) Book 1 of 5 of the quality records contains the quality control checklists, procedures and DDRs associated with the core spray pump.

- (7) General Electric Product list dated July 27, 1971 indicates that the various attributes were checked on four motors serial numbers DJ-421001, 421002, 428001 and 428002. Report of routine tests dated August 8, 1971 indicates that running current, locked rotor current at 25% voltage and resistance were measured. The stator windings withstood 9000 volts AC for one minute.

The inspector informed the licensee that the following documents were not available.

- (8) A certificate of compliance that the gaskets used for cover to case, bearing chamber seal flange to cover made of ASTM-D-2000CL 1BA810 C12 F17 would successfully withstand a maximum radiation dose rate of 1.4×10^4 rads/hour and integrated dose of 7.9×10^5 rads (180 days) without deterioration. The inspector requested the licensee to provide additional information on the shelf-life of this gasket which is a rubber product and ascertain the time frame within which it has to be replaced to maintain the environmental qualifications current.
- (9) The environmental qualification report on the core spray pump and motor.
- (10) The seismic qualification report. Pending review of the above items (8), (9) and (10), this matter is considered unresolved. (341/82-11-01)

3. Review of Relay Co-ordination Activities

The inspector visited DECo's office in the Warren Service Center where the relay settings for the various switchgear at Fermi II are calculated. Discussions with the cognizant engineering personnel and review of the records indicate the following:

- a. Trained engineering personnel with adequate electrical engineering background perform the relay coordination calculations.
- b. The methodology of calculations, starting with the impedance on the 345 KV bus and continuing with the calculations of the short circuit currents on the 132/4-16/0.48 KV buses is acceptable.
- c. The literature of vendors who supplied the relays, motors and switchgear were used to derive the relay settings.
- d. A system has been established to transmit the calculated relay settings to the Fermi site. After physically setting the relays, at Fermi and verification, a copy of the transmittal is returned to the Warren Service Center which permits the relevant records to be updated indicating that the relays are set.

- e. Copies of these documents are stored in a different location known as the National Defense Center to provide the necessary information in case of an accident at Fermi and Warren Service Center.
- d. The relay settings for a 4.16KV breaker and 480 volt breaker were verified and determined acceptable.

No items of noncompliance was identified in the above area.

4. Review of Deviation Disposition Request (DDR)

The inspector reviewed DDR 2323 initiated by Wismer & Becker, the piping contractor. The DDR identifies that the Authorized Nuclear Inspector's (ANI) hold point on weld traveller E11-3152-5W0 in the Residual Heat Removal System was bypassed and the next step was performed. The specific area of interest in the traveller are the following sequential steps:

Step 12: Final visual inspection by the W&B engineer and W&B QA after grinding the inner diameter of the weld.

Step 13: Nondestructive examination (NDE) of the ground area utilizing Penetrant (PT), Ultrasonic (UT), and Radiography (RT) for which the ANI established a hold point to witness.

Step 14: Final NDE reports.

After step 14 was performed, and during the final documentation review, W&B QA observed that the "ANI Hold Point" was bypassed.

The DDR identifies that the above condition is a violation of W&B Procedure WB-E-109. W&B tracks violators of this procedures. For the first and second violations, the offenders are given on the job (OTJ) training. A third violation results in a field supervisor being demoted to a journeyman and a journeyman being terminated. To date 13 DDRs have been initiated from February 1981.

The proposed disposition recommended was to obtain the ANI concurrence for suitability of ASME code requirements being met through review of reports and denote concurrence by his signature.

Action taken to prevent recurrence was to hold OTJ for the cognizant field supervisor who permitted the "Hold Point" to be bypassed and the QA reviewer for signing the traveller before initiating the DDR.

The Liquid Penetrant Report 119919 dated February 26, 1981 identifies no unacceptable indications.

The ultrasonic Test Report NEW-1T-880 dated January 22, 1981 identifies four locations where the wall thickness is below the minimum of 0.329". DDR 2169 dated February 13, 1981 identifies this condition. Based on a recalculated minimum wall thickness of 0.18", the DDR was closed.

The Radiography Report 7629 dated January 26, 1981 indicates that W&B procedure Q110 was used with Iridium Ir-192 source, strength 90 curies; exposure time 3 1/2 minutes, 0.010 thick lead screens were used. No unacceptable indications were identified.

No items of noncompliance were identified in the above areas.

5. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance or deviations. One unresolved item disclosed during this inspection is discussed in Paragraph 2.d(10).

Exit Interview

The inspector and the resident inspector met with the licensee representatives (denoted in Persons Contacted) at the conclusion of the inspection on July 30, 1982. The inspectors summarized the purpose and findings of the inspection, which were acknowledged by the licensee.

It was emphasized that DECo should issue final 50.55(e) reports after verifying that the corrective action has been completed and verified. In one instance involving Rockbestos coaxial cables even though the licensee informed Region III that these cables would be replaced in a final 50.55(e) report, it was determined that subsequently a decision was made not to replace the cables and the licensee did not issue a revised 50.55(e) final report.