

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-341/84-14(DE)

Docket No. 50-341

License No. CPPR-87

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

Facility Name: Enrico Fermi 2 Site, Monroe, MI

Inspection Conducted: April 24-27, 1984

Inspectors: K. R. Naidu *C. C. Williams for:* 6/1/84
Date
A. Gautam *C. C. Williams for:* 6/1/84
Date
Z. Falevits *C. C. Williams for:* 6/1/84
Date
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Date
Approved By: *C. C. Williams* 6/1/84
C. C. Williams, Chief
Plant Systems Section
Date

Inspection Summary

Inspection on April 24-27, 1984 (Report No. 50-341/84-14(DE))

Areas Inspected: Corrective action taken on 50.55(e) items and previous inspection findings; installation and records for the main control board panels, instrument sensing lines and racks; fuses to protect electrical penetration assemblies; control/throttle valve position limit switches.

Results: The inspection involved 128 inspector-hours onsite by four NRC inspectors.

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DETAILS

1. Persons Contacted

Detroit Edison Company (DECo)

W. J. Fahrner, Project Manager
S. H. Noetzl, Assistant Project Manager
F. Agosti, Manager Nuclear Operations
L. P. Bregni, Licensing Engineer
R. L. Tassell, Field Engineer
G. W. Richardson, Field Engineer
J. Bunge, Field Engineer
P. L. Nadeau, Licensing Assistant
J. H. Plona, Technical Engineer
G. Trahey, Director, Nuclear Quality Assurance
G. Newton, Supervisor Quality Assurance
R. Silver, Task Force Leader
G. K. Sharma, Task Leader Electrical/Instrumentation

All the above attended the exit meeting on April 27, 1984. In addition to the above persons, other licensee and contractor personnel were contacted during the inspection.

2. Licensee Action on 50.55(e) Items

(Open) 341/83-02-EE: Questionable qualifications of L. K. Comstock (LKC) QC inspectors. (DECo Item 88) The licensee reported on April 20, 1983 that a recent change in the certifications of twenty-three (23) LKC QC inspection personnel had resulted in these individuals being declared unqualified for the work they had been performing. The licensee performed a scheduled surveillance of LKC records to verify that personnel doing the certifying (of the LKC QC inspectors) are/were certified. The surveillance reviewed the certificates of two individuals who were certified as Level III by LKC and determined the certification satisfactory.

(Closed) 341/83-12-EE: Failure of Ronan Annunciator Relays (RAR). (DECo Item 98) The licensee determined that the emergency diesel generator annunciator system is not a QA1 safety-related system. On this basis this 50.55(e) was withdrawn. The inspector reviewed Ronan drawing C2-1042, DECo drawings 6I72IN-2711-1B, 6I72IN-2711-20 for Diesel Generator #11 and determined the following: The RAR contact in series with other relay contacts illuminates a "EDG #11 NOT READY FOR AUTO START." The indication comes on when the normally closed relay contact opens. Failure of this relay also opens the contact and provides the signal. The other relays which provide indication are qualified to seismic category 1 requirements. Ronan Annunciator Relays have subsequently been replaced. The licensee's withdrawal of the 50.55(e) is acceptable.

(Closed) 341/84-04-EE (DECo Item 112): Defective crimping of vendor lugs in Emergency Diesel Generator (EDG) control panels. Nonconformance Reports (NCRs) 84-0098 and 84-0190 identified instances where the wires separated from the lugs. Corrective action recommended was to reterminate the wires. Corrective action has been completed on these NCRs. It was also reported that an extensive reinspection program has been completed on all EDG control panels. The inspectors inspected the completed corrective action and pull tested the following 30 terminations in EDG control panel R3000S005 after the panel was de-energized to ascertain the adequacy of the reterminations.

<u>Terminal Block</u>	<u>Wire No.</u>
TB-1	1, 5, 8, 12
TB-2	1 through 12
TB-3	1, 3, 8
TB-5	4, 8
TC-6	9, 10
TD-6	MXI
TA-6	10
Shunt #3	182
Switch #8	C-66

No apparent deficiencies were identified.

(Open) Noncompliance 341/78-10-02: A non-seismic fire main pipe was installed across Class 1E cable tray systems. The licensee reported as a 50.55(e) item (341/80-01-EE). (DECo Item No. 26), that non-seismic equipment was installed over seismic installations. This 50.55(e) item was closed in Inspection Report 341/82-17. During this inspection, the inspector reviewed the corrective action taken to address the fire main pipe spools P41-2296-31 and P41-2294-32 installation across redundant safety-related cable trays 1P068 (orange) and 2C095 (blue). Design Change Notice (DCN) 1265 was issued to upgrade the supports of the fire main spool pieces to seismic category 1. The inspections which were performed on these hangers identified unacceptable findings which were not subsequently verified and determined acceptable.

(Open) Open Item 341/82-10-14: The qualification of L. K. Comstock (the electrical contractor) QC inspectors was identified to be inadequate. This item has been discussed under 50.55(e) Item 341/83-02-EE (DECo Item 88) and will be closed when the licensee completes an audit.

(Closed) Open Item (341/81-10-25): This item concerns reference points for various reactor vessel water level instruments which may have caused operator confusion.

FDDR KH1-749, Rev. 0 supplied the wrong meter scale for fourteen master trip units B21-N681A-d, N691A-D, N680A-D and N695A-B on panels H21-P080 through P087. FDDR KH1-749 Rev. 1 dated January 6, 1983, required replacement of the scales for the above instruments. G.E. issued Work Authorization WA 599 Rev. 1 on January 28, 1984 to implement the change.

Field Modification Request (FMR) No. 3817 Rev. A dated February 17, 1983 requests that meter scales be changed to correspond to the new fuel elevation of 366.31 inches as per FDDR KH1-749 Rev. 0 and 1.

Fourteen meter scale dials were replaced and the instruments were recalibrated as per testing reference 41.000.11 Rev. 5. The inspector reviewed the following related documents: Minor Deficiency Log 7.12 used to replace the meter scales contained Q.C. signatures and dates of change; and the startup form, checkout and initial operations procedure.

(Open) Open Item (341/83-20-02a): This item addresses determinated wires and cables without any tagging or identification. This was discovered when the review of preoperational test procedure PRET. E4100,001, Rev. 1, "HPCI System " was performed.

The inspector reviewed the licensee corrective action which included training of personnel to Interim Temporary Modification Procedure 12.000.2ST Course SU 12.549 Supplement #39. Training attendance sheets did not contain detailed information as to the dates of training, name of instructor and title of course. The inspector identified one training attendance sheet dated December 27, 1984 and one not dated but with one of the student's names changed, initialed and dated January, 1983, which is before the date of the original inspection.

No items of noncompliance or deviations were identified.

3. Functional Areas Inspected

a. Observation of Instrumentation Work Activities

During this audit inspectors reviewed field installation of instrumentation, associated piping, and related instrument racks.

Areas reviewed included verification of installed instrument specifications, calibration records, instrument supports and interfaces to instruments. Instrument sensing lines were reviewed for size, separation, slope, routing and damage.

Instruments and sensing lines reviewed are listed in Table 1, and were found to be installed in accordance with the drawings and specifications shown in Table 1, with no apparent deficiencies.

TABLE 1

Lines	Instrument	(Rack) Support Dwg.	(System) P&ID	Isometric	Manufacturers Dwg./Spec. Data Sheets
E51-L405	PXE No. 58A	(H21-P035)	(RCIC)	6DI-ES1-7220-1 Rev. D	163C1561 Sht. 1 Rev. 7
E51-L406	PXE No. 57A	5I721-2281-	6M721-2044	3WI-ES1-7385 Rev.	163C1561 Sht. 2 Rev. 6
	PXE No. 58C	26 Rev. B	Rev. P	3WI-ES1-7386 Rev. D	234A9310WH St. 27
		127DIS78		6WI-ES1-7436-1 Rev. A	Rev. 3
		Sht. 1 Rev. 2			
		Sht. 2 Rev. 0			
		Sht. 3 Rev. 1			
B21-L011	LXE No. 80C	(H21-P005)	Nuclear	6DI-B21-7266-1 Rev. C	163C1561 Sht. 1 Rev. 7
	LXE No. 95B	6I721-2281-	Boiler	6WI-B21-7071-1 Rev. D	163C1561 Sht. 2 Rev. 6
		5 Rev. F	System	3WI-B21-7306 Rev. D	234A9301WM Sht. 36
		127DIS78	6M721-2090		Rev. 6
		Sht. 1 Rev. 1	Rev. G		
		Sht. 2 Rev. 0			
		Sht. 3 Rev. 1			

b. Observation of Installed Electrical Equipment

During this audit walkdowns were performed on electrical switchgear, panels, cable trays, conduits, raceway supports and electrical terminations. Specific issues and questions identified to the licensee during these walkdowns are listed below. Verification of these issues could not be completed due to lack of time and shall be followed up in subsequent inspections.

- (1) Motor Control Center 72B-3A, El. 583' 6" was reviewed to verify that anchor bolts were installed in accordance with the MCC seismic bolting requirements. The cabinet was found bolted to channel rails with 3/8" anchor bolts. This configuration was reported by the licensee to be typical for other MCCs in the plant. Documentation to conform the size, spacing and tightness of these bolts is being compiled by the licensee and shall be verified during the next inspection.
- (2) During review of MCC 72F-5B and 72C-3B it was observed that welds on the gusset plates holding the MCC cabinet to anchor rails appeared to have excessive porosity. The licensee has issued an NCR 84-0627 on April 26, 1984 to review the quality of these welds. These welds were performed by a subsupplier of Rockwell at a vendor location. Further review of welds performed by the same supplier shall be performed during the next inspection.
- (3) Electrical raceways and cables were reviewed for separation requirements between redundant divisions and channels. Discussions were held with the licensee on exceptions taken to IEEE 384-1974 and Reg. Guide 1.75 in the FSAR. It was reported that all raceways and cable in the plant were routed so as to maintain redundancy between ESF divisions and RPS channels. Verification of this redundancy shall be performed by NRC inspectors in future inspections.
- (4) Termination and splicing of cables were reviewed in the RHR building panels R3000S005, S006, S007, and S008 installed in accordance with Bechtel Procedure 14124-FEP-2.0 Rev. 3. The inspector observed the gap between the insulation and bottom of lugs to be over 1/8". Paragraph 8.8.4 of the above procedure required that gap not to exceed 1/2". One (1) termination exceeding this criteria was identified in panel S008 and has since been controlled through plant notice PN-21 No. 585818. Further termination inspections are planned in other areas of the plant.

c. Review of the Main Control Room Panel Installation

The inspector reviewed the installation of the Main Control Room Panel known as Combination Operating Panel (COP) in the main control room. The COP is welded to embedded angle steel. Design Change Notice (DCN) 212 dated August 19, 1977 recommended the COP be welded to the embedded angle frame instead of stud-weld/bolting as was originally

shown on Section 1-1 of drawing 6C721-2341. Deviation Disposition Request (DDR) E-5248 was issued on October 7, 1980 to indicate that Section 1-1 of drawing 6C721-2341-"P" contained no information regarding the contents of DCN 212, even though Revision block "I" of subject drawing indicates that DCN 212 was incorporated in Rev. I. The DDR was dispositioned that DCN 212 Revision A will update the drawing 6C721-2341 Revision Q to show the proper weld detail. DCN 212 Revision A was issued. DCN 212 Revision B was issued on February 4, 1983, cancelling the Revision A because DDR E-5248 was written incorrectly and that DCN was not required against a civil drawing.

No items of noncompliance were identified in the above area.

d. Review of Plant Control Panel Installation Records

The inspector reviewed the records associated with the installation of the Main Control Board Panels also known as Combination Operation Panels (COP). The following documents for panels H11-01-P601 and P602 were reviewed:

- (1) QC installation check list for panels H11-01-P601 and H11-P602 dated March 30 and 25, 1981, respectively, indicate that the following attributes were inspected and determined acceptable:
 - (a) Equipment identification is correct.
 - (b) Checked for damage after offloading and moving into permanent pad/sill.
 - (c) Equipment installed and aligned per latest drawings.
 - (d) Vendor wiring installed.
 - (e) Equipment clean and free from debris.
 - (f) Grounding completed.
 - (g) Equipment checked for internal and external visible damage.
- (2) Weld inspection checklists indicate that the various sections of the panels were welded in November/December 1977, and that the following attributes were inspected and determined acceptable:
 - (a) Fit-up was checked prior to welding.
 - (b) Surface preparation and cleaning.
 - (c) Root pass was acceptable.
 - (d) The welds were cleaned before subsequent passes were started.
 - (e) Weaving did not exceed 5 times the diameter of the weld rod.

- (f) Procedural requirements for initial preheat temperatures and interpass temperatures were observed during welding.
- (g) Welds were free from undercut cracks, surface porosity slag.
- (3) The inspector also reviewed Design Change Notice (DCN) S-1443 dated November 30, 1979, to assemble and mount four terminal boxes on concrete floor of panel HU-P601.
- (4) The inspector reviewed the following Deviation Disposition Request (DDR) associated with panels DDR E-3207A dated September 3, 1980, which indicates that several opened and closed backlighted display valve position indicating switches on panel P806 were falling off when depressed. The vendor was contacted and the cause was determined to be incorrect assembly. DECo initiated Field Modification Request (FMR) S-1830 on October 6, 1981, to replace all Master Specialties Model 10E and regular Model 10H indicating pushbuttons that have Microswitch contact clocks attached. Instructions were provided. Quality Control Inspection Record (QCIR) E-7.0-CC113 documents the inspections performed on FMR-S-1830 and indicates that the work was completed on July 26, 1982.
- (5) DDR-E-5346 dated October 30, 1980, identifies that several A504 and A502 inserts have bolt studs or guide studs which were defective. Corrective action was taken to replace or repair them. Corrective action was verified to be complete and acceptable on March 31, 1983.
- (6) DDR-E-4239 dated February 19, 1980, identifies that several 1" plates had 1/4" wide indications along the entire side of the plates. Corrective action taken was to reject the A-36 plates, scrap them and use ASTM-A-516 grade 70 type plates. Since the A-36 plates were scrapped no analysis was performed to investigate the deficiency.
- (7) The analyses for the seismic qualification were available for review.

No items of noncompliance were identified in the above area.

e. Observation of Qualification Tests

The inspector observed a qualification test performed on ambient compensated thermal overload relays and heaters. The test related to RCIC Turbine Gland Seal pump E5101-C004 thermal overloads which are located in MCC 2PA-1 position 1C. Field Modification Request (FMR) No. 6938 dated March 15, 1984 requested that overload relays be added to MCC 2PA-1 position 1B and 1C to agree with Design Calculation 969 Rev. A. The licensee test engineer used the following documents while performing the test on the overloads.

- (1) MCC Checkout and Initial Operation Test procedure CAIO.000.026 Rev. 12 dated August 26, 1983.
- (2) Maintenance Inspection Checklist (MIC) No. 84-0996 dated April 25, 1984 (which contained "HOLD" points).
- (3) PN-21 No. 569337 & 8 dated April 25, 1984 which is used when additional work has to be performed to an existing piece of equipment.
- (4) Schematic diagram drawing 6I7621-2231-1 Ref. J.

The above documents contained proper signatures, however, the test engineer appeared to be using design data tables for A. C. three phase thermal loads while he was testing two D. C. thermal overloads. The inspector, while reviewing the test documents, observed that the jumpers across the thermal overloads which were originally added per Reg. Guide 1.106 (RG 1.106) Rev. 1, option 1 requirements, have been removed and replaced with the ambient compensated thermal overload relays and heaters which appear to be option 2 requirements of RG 1.106. The licensee indicated that Design Calculation DCN No. 969 Rev. A is the one initiated to size the thermal overload heaters of the safety-related equipment by considering all uncertainties in their most conservative direction and assuring that the function of the motor is completed (see DCN No. 969 rev. A paragraph C.3.3.c). The inspector reviewed DCN 969 rev. A, which specified that the current rating of thermal overload heaters on motors is 140% or more of the full load current and also included numerous assumptions taken by the design engineer which appear to be somewhat general. For instance, assumption a. states that "the maximum safe stall time of the continuous duty for all D.C. motor sizes is 15 seconds. Also, assumption f. states that, "Motor ambient temperature variations do not have a sizeable influence on the trip setting of the thermal overload relays."

Paragraph B.3 of DCN #969 states, "Based on the calculation method for sizing the thermal overload heaters, 92 continuous duty motors or other equipment thermal overload heaters disagreed from the computer program to the MCC frontal and will be dispositioned per EF2-65012."

FSAR Section 8.3-19, revised by Amendment 55, dated March 1984, specified that motors fed from MCC's are protected by fused disconnect switches and thermal overloads which are to be set at 140% or greater of full load current for ESF loads and that thermal overload devices on ESF system motor operated valves (MOV) will be selected to allow at least four times the valve stroke time at full load current and at least one times the valve stroke time at two times the full load current.

The inspector reviewed FMR 6938 dated March 15, 1984 which indicated in Para. 2.2 that if needed, the field staff shall purchase adjustable ambient compensated overload relay heaters of Commercial Quality to be used in QA-1 system and seismic Category I items.

Pending further review and receipt of additional information this is considered an unresolved item (341/84-14-01).

6. Independent Inspection

- a. The inspector inspected motor control center MCC 2PB-1 and observed the following:
- (1) Cables 218670-2P and 218180-2P contained RayChem reducer adapters (splices). A review of the pull cards for these cables indicated that splices were documented and signatures indicated that QA/QC was performed.
 - (2) The inspector inspected trays IC-133 and 1P-031 located above MCC 72B-3A and observed approximately 10 large (3") nails, bolts and debris laying amongst the cables. The licensee subsequently informed the inspector that a cleanup program is in progress to remove all foreign items found in cable trays and that mentioned trays have now been cleaned.
 - (3) The inspector observed an unidentified cable cut across its diameter inside tray OC802 located at penetration NTO C005 at elevation 613' of the reactor building. The licensee indicated that this might have been an abandoned cable and that after review and verification the cut cable will be properly tagged and that all abandoned or unassigned cables will be tagged in the future.
- d. The inspector reviewed associated documents of the main turbine main steam stop valve limit switches 2N30N165C, -166C, -167C, and -168C, which activate when the valve is less than 90% open and transmit a signal to the scram logic of the reactor protection system. (Reference reactor trip logic Drawing 6I721-2339-5, Rev. D, and Schematic Diagram 6I721-2155-6, Rev. G.)

Instrument list dated March 15, 1984 specifies these position switches as non seismic Q.A. III.

The foregoing also applies to control valves position switches. Pending further review and additional information from licensee, this item is considered unresolved (341/84-14-02).

7. Observation of Installed Fuses

The inspector selectively inspected the implementation of fuse coordination to protect the electrical penetrations from overcurrent damage. The inspector that whether the fuses installed in the following MCCs and fuse panels correspond to those derived from design calculations.

Panel R1600S002F for 72B-4C MCC

<u>Compt.</u>	<u>Fuse Type</u>	<u>Service</u>
72B-4C-2A	FRS-R-60A Fustron	Rx Drywell Cooling Fan #6

Panel R1600S002E for 72B-3A and 72B-4A

<u>Compt.</u>	<u>Fuse Type</u>	<u>Service</u>
72B-4A-1C(R)	FRS-R-30A	B310SF023A Recirc pump A Suction Valve A V8-2001
72B-4A-1D(R)	FRS-R-30A	Rx. Bldg Floor Drain Sump Pump G11-02C-036A
72B-4A-1A	FRS-R-15A	

Panel R1600S004E for 72E-3A, 5A and 5B MCC

<u>Compt.</u>	<u>Fuse Type</u>	<u>Service</u>
72E-5A-SE	FRS-R-15A	T4901F602 Pneumatic Sup. Valve Prim Containment V42188
72E-5B-1A	FRS-R-60A	T4700C003 Rx Drywell Cool Fan #3
72E-3A-2AR	FRS-R-15A	G3352F100 CUR Loop Valve V8-2250

The inspector observed one circuit where a 60A fuse was installed at the fuse cabinet while the corresponding MCC compartment contained an 80A fuse and one circuit where a 30A fuse was installed at the fuse cabinet while the corresponding MCC compartment contained a 15A fuse. The licensee indicated the work has not been completed yet and that these discrepancies will be corrected.

The inspector observed that BOP cables and divisional cables are intermingled inside the fuse panels. Review of the FSAR indicates no specific separation requirement.

No items of noncompliance or deviations were identified.

8. Observation of Installed Instrumentation for Safe Shutdown

- a. The inspector examined instrument sensing lines No. LT-L401 and PT-L402 in the Reactor Core Isolation Cooling System and observed that on line No. PT-L402, Pressure indicator No. E51-R003 mounted on instrument rack H21-P017 had a calibration date of 02-20-84 on it but the calibration data sheet DS-011 showed a calibration date of 02-17-84.

The licensee representatives stated that the instrument was calibrated on Friday, February 17, 1984, installed on the rack Monday, February 20, 1984. On line LT-L401, the inspector observed that the heat sink fins on Level Transmitter E51-N010 mounted on turbine steam inlet drain pot have been damaged and that the identification tag on the

instrument was missing. The licensee initiated corrective action by writing an NCR No. 84-620 on 04-26-84.

- b. The inspector observed the installed instrument sensing Line No. LT-L011 and reviewed the relevant records of instruments and components on the sensing line. The inspector determined that an excess flow check valve No. V13-2322 on the sensing line had been replaced by valve No. V13-2396 per Detroit Edison Company change document form No. S-2729 dated 10/12/81 and a W&B DDR #2620A dated 7/8/81 was written to document the deviation. The QC records of removal of valve #V13-2322 and installation of valve #V13-2396 were not available for review during the inspection. Pending review of these records, this matter is considered unresolved. (341/84-14-03)

9. Unresolved Items

Unresolved items are matters about which more information is required in order to determine whether they are acceptable items, items of noncompliance, or deviations. Unresolved items disclosed during this inspection are discussed in paragraphs 5, 6.d and 7.

10. Exit Interview

The inspectors met with the licensee representatives (denoted in Persons Contacted) at the conclusion of the inspection on April 27, 1984. The inspectors summarized the purpose and findings of the inspection, which were acknowledged by the licensee.