#### U.S. NUCLEAR REGULATORY COMMISSION

### REGION III

Reports No. 50-237/89010(DRS); 50-249/89009(DRS)

Docket Nos. 50-237; 50-249

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Licenses No. DPR-19; DPR-25

Licensee: Commonwealth Edison Company Post Office Box 767 Chicago, IL 60690

Facility Name: Dresden Nuclear Power Station, Units 2, and 3

Inspection At: Dresden Site, Morris, IL 60450

Inspection Conducted: April 4 through May 24, 1989

Inspectors: A. S. Gautam

6-8-89 Date

Also contributing to this report is: J. McGee Idaho National Engineering Laboratories P.N Sar

Approved By: R. N. Gardner, Chief Plant Systems Section 6-8-89 Date

Inspection Summary

Inspection on April 4 through May 24, 1989 (Reports No. 50-237/89010(DRS); No. 50-249/89009(DRS))

Areas Inspected: Routine, announced safety inspection of licensee actions on previously identified findings, Part 21 report on melamine torque switches, unqualified terminal blocks, drain holes in electrical enclosures, hydrogen addition, sticking of ASCO solenoid valves and neutron monitoring system. (Modules 30703 and 62705).

Results: For the seven areas inspected, no violations of NRC requirements were identified. One unresolved item was identified (Paragraph 4) regarding physical walkdowns of installed environmentally qualified (EQ) equipment.

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DETAILS

# 1. Persons Contacted

# Commonwealth Edison Company

- \*E. D. Eenigenburg, Station Manager
- \*L. F. Gerner, Production Superintendent
- E. Netzel, QA Superintendent
- \*K. Peterman, Regulatory Assurance Supervisor
- L. Johnson, QC Supervisor
- \*D. Van Pelt, Assistant Superintendent, Maintenance
- R. Fablo, Regulatory Assurance Assistant
- \*W. Kapinus, EQ Coordinator
- \*Z. Boxer, EQ Engineer
- \*J. Silady, Licensing Administrator
- B. Viehl, SNED
- \*J. Coonan, Maintenance Improvement
- \*D. Barnett, Site Quality Assurance
- \*C. W. Schroeder, Technical Superintendent
- \*M. L. Reeds, BWRE Site Supervisor
- \*D. A. Schildgen, Site Quality Control
- \*C. Collins, BWRE
- \*J. Welch, Technical Staff

#### CECo Consultants

J. Sannappan, S&L \*E. Zacharias, S&L \*A. Behera, S&L

## US NRC

S. Dupont, Senior Resident Inspector

\*Denotes those attending the site exit interview on April 7, 1989.

# 2. <u>Previously Identified Findings</u>

a. <u>(Closed)</u> Unresolved Item and Violation (50-249/86015-01) (Closed) Unresolved Item (50-249/86009-01(DRS)) (Closed) Unresolved Item (50-237/86006-01(DRS))

The above items addressed deficiencies and failures regarding nylon AMP electrical butt splices. On December 5, 1986, the licensee notified Region III that Dresden Unit 3 would be shut down as they had confirmed that installed nylon AMP splices were unqualified for a harsh environment. The licensee applied environmentally qualified Scotch Brand tape to all the appropriate splices in the penetration enclosures. During this current review, the licensee reported that all appropriate corrective action regarding the unqualified AMP splices had been completed. The inspector reviewed selected work documents and found evidence of corrective action. Escalated enforcement action has been taken by the NRC in regard to this issue and is documented separately under EA-87-81.

No further concerns were identified.

added to the EQ binders.

 b. (Closed) Unresolved Item (50-237/86013-02(DRS) and 50-249/86015-02(DRS)): This item addressed the lack of file documentation to demonstrate that test results were acceptable for Dresden applications. Concerns were specifically related to leakage currents and insulation resistance (IRs). The item required that performance and acceptance criteria for Dresden applications be

The licensee added statements to each binder to specify performance and acceptance criteria for each identified application (5KV, 600V, and low voltage/control circuits.) In addition, test reports identifying IR measurements taken during simulated LOCA tests were added to each file. The IRs specified in the test file are within the performance and acceptance criteria, and Dresden added an analysis stating that any cables meeting the acceptance criteria will have no detrimental effects on the applicable circuits.

The licensee committed to enhance file auditibility by revising the binders to further clarify the specific Dresden requirements. The inspector had no further concerns regarding this item.

c. <u>(Closed) Unresolved Item (50-249/86015-03(DRS))</u>: This item addressed the lack of file documentation to adequately establish qualification for the replacement of solenoid valve model C6948. Further, the file did not contain documentation qualifying nonmetallic parts of the replacement maintenance kit. No analysis in the file supported the facility's extension of the 12-18 month recommended maintenance interval to 10-12 years.

The licensee added Wyle test report 17514-1 to the EQ binder to establish the qualification of the replacement solenoid coil, C6948-110. This report, in conjunction with a similarity analysis contained in Calculation CQD-015004 (Quad Cities EQ binder), establishes the qualification of both the solenoid and the maintenance kit, KC 6948-110.

The test report (17514-1) also specifies a five year replacement schedule and a 12-18 month maintenance schedule for the solenoid. Dresden has implemented the recommended replacement and maintenance schedules and incorporated the recommended maintenance check sheets into station procedures. Dresden has also added a copy of the CQD-015004 similarity analysis to the AVCo binder, CDQ-019290. The inspector had no further concerns regarding this item.

d. <u>(Closed) Unresolved Item (50-249/86015-04(DRS))</u>: This item addressed the lack of file documentation to demonstrate that a PVC jacketed shunt wire had been replaced with a qualified wire, as specified in test results.

Dresden added a General Electric correspondence to the file which specifies that all solenoids manufactured since January 1980 have a silicon rubber jacketed shunt wire (rated at 150 degrees C). At the inspector's request, the facility provided work requests/ documentation which demonstrated that the solenoids for the eight affected safety relief valves were replaced with solenoids manufactured since 1980.

Additionally, Dresden modified the purchasing specifications for future solenoids to require specific materials (as specified in the test report and GE letter). The inspector had no further concerns regarding this item.

e. (Closed) Unresolved Item (50-237/86013-05 (DRS) and

<u>50-249/86015-05(DRS)</u>: This item addressed results of the physical inspection of six limitorque motor operated valves. The inspection indicated that the limitorque motor operators at Dresden were not being properly maintained due to improper installation and/or lack of surveillance practices, maintenance practices and training of personnel.

The inspector examined the work history of the valves and operators inspected previously and determined that identified discrepancies had been corrected. In addition, new (1986) procedures were reviewed to ensure that a maintenance program had been implemented to adequately maintain the qualification of the limitorque motor operators. Maintenance training requirements were also reviewed to ensure that the program in place had been sufficiently upgraded since the previous NRC inspection. No concerns were identified.

In addition, two limitorque operators were physically examined during the plant walkdown to verify the adequacy of the program. Both operators (including the associated switch compartment) were in excellent condition. The inspector had no further concerns regarding this issue.

f. (Closed) Unresolved Item (50-237/86013-06(DRS) and 50-249/86015-06(DRS)): This item addressed the licensee's failure to perform a semi-annual and annual review or prepare a report as required by administrative procedure DAP-11-14, Paragraph B.3.f. This report is intended to identify, to the plant management, equipment experiencing problems.



While the reviews/reports were performed as required in 1987 (annual report in June 1987 and semi-annual review in December 1987), neither reviews nor reports were performed in 1988 as required by DAP 11-14. The licensee has subsequently changed the computerized surveillance tracking and notification system, to ensure that the person responsible for conducting these reviews is notified by the system. In addition, the EQ coordinator is notified when the six-month and/or annual report is due. The station has committed to update these past due reports by May 15, 1989.

#### g. (Closed) Unresolved Item (50-237/86013-07(DRS)and

50-249/86015-07(DRS)): This item initially addressed both procedure implementation, adequacy and facility EQ training. The training issue was resolved and addressed in NRC Inspection Reports No. 50-237/87013; 50-249/87013. At the time of the 1986 inspection, a limited number of maintenance procedures had been prepared and issued for plant use.

Procedures have since been implemented for maintenance of specific EQ binders and include references to EQ binders and test documents. Maintenance checklists from test reports/vendor recommendations have been incorporated into procedures for maintenance and replacement of equipment included in the 10 CFR 50.49 requirements.

In addition, procedural controls have been established for technical evaluation of parts used in environmentally qualified components and modifications. The station work request procedure also addresses the review of work packages by facility maintenance staff for EQ related materials and equipment. The inspector had no further concerns regarding implementation.

# 3. Melamine Torque Switch-10 CFR Part 21 Report

A 10 CFR 21 report issued by Limitorque alerted the NRC of potential functional failures of Melamine torque switches supplied by Limitorque in SMB-000 and SMB-00 actuators with serial numbers lower than 354839 and 233218, respectively. This report identified post mold shrinkage on the Melamine cams mounted on the torque switch shaft. This shrinkage can cause binding on the torque switches resulting in loss of power to the motor before the valve completes its stroke. The report also identifies the possible breaking of the cam lug which can result in a locked rotor and burn out of the motor.

Based on the licensee's review of January 26, 1989, the licensee reported that none of their Limitorque valves contained Melamine torque switches, and that Dresden had no Melamine torque switches in their parts inventory. According to the licensee, qualified Fibrite torque switches are used in all applications.

No further concerns were identified.

## 4. Unqualified Terminal Blocks

The licensee stated that, per plant procedure, all terminal boxes were required to have drain holes. Based on NRC questions, however, the licensee performed a walkdown and found eight 10 CFR 50.49 designated boxes in Unit 3 without weep holes. The licensee has since drilled holes in these enclosures.

As a result of NRC concerns, the licensee also performed a walkdown of four DC powered HPCI Motor operated valves. The junction box for MOV MO-3-2301-5 had terminal blocks but no weep hole. The licensee also could not determine the qualification of the terminal block, resulting in the station declaring the HPCI system inoperable and entering a LCO. The licensee has since drilled a weep hole in this terminal box and the terminal block has since been replaced with taped splices. The licensee reported that based on their Technical Specifications, operating time of equipment and available alternate systems, the safety significance of the lack of drain holes in the terminal boxes was considered to be minimal.

The licensee is reviewing all appropriate terminal boxes to confirm the installation of weep holes. In LER 89-005, the licensee attributed this event to a management deficiency. According to the licensee, during implementation of their EQ program, a complete walkdown and physical inspection of EQ equipment was not performed; consequently, the ungualified terminal blocks were not identified.

Based on their response in LER 89-005, the licensee is committed to a long term corrective action plan. The action plan consists of an inspection of all equipment terminations, junction boxes, and pull boxes in order to perform a review of splices, terminal blocks, and weep holes. All circuits will be physically walked down beginning at the sensing instrument or backwards from the actuation device until they either (1) exit the Reactor building or (2) are routed into the cable tray system. During the course of the inspection, any discrepant items will be evaluated in regards to applicability and appropriate work requests submitted. This EQ equipment review will be performed on both Unit 2 and Unit 3.

Pending further review of the licensee's findings and corrective action, this is considered an unresolved item (50-237/89010-01(DRS); 50-249/89009-01(DRS))

### 5. Lack of Drain Holes in Electrical Enclosures

The inspector reviewed electrical enclosures containing electrical cables, splices and terminal blocks for proper drain holes. The contents of these enclosures are postulated to be subject to moisture and water intrusion including submergence during an accident. The licensee stated the following:

- There are no taped splices in the drywell EQ circuits, with the exception of the Unit 3 penetrations. The enclosures for these penetrations, however, have an open bottom for drainage to prevent submergence.
- There are no taped splices in EQ instrumentation circuits in or outside the drywell. All such circuits have Raychem splices.
- There is no Butyl rubber cable installed in EQ circuits in the drywell. Butyl rubber cable outside the drywell will perform its function prior to submergence. There is no Butyl rubber cable in EQ instrumentation circuits in or outside the drywell.
- All other EQ cables are qualified for submergence.
- There are no splices in pull boxes or condulets.
- All boxes containing terminal blocks are required to have drain holes.
- All end use equipment enclosures not having drain holes contain circuits that perform their function prior to being submerged.

The NRC inspectors were concerned that EQ Butyl rubber cable could get submerged during an accident, and required the licensee to demonstrate the qualification of these cables for submergence.

The licensee stated that no EQ Butyl rubber cables would be submerged during an accident. Their basis for this conclusion was that no EQ equipment connected to Butyl rubber cables was installed in the drywell and that no EQ equipment connected to Butyl rubber cables outside the drywell had an operability time of more than two minutes. Based on the equipment location and the accident conditions outside the drywell, the licensee determined that in this short duration the cable would not be submerged. The NRC inspectors had no further concerns in this area.

The licensee committed to performing ongoing inspections/surveillance for drain holes, and stated that holes will be drilled in appropriate enclosures not having proper drainage.

- 6. During this inspection, the following additional concerns were identified by the NRC and addressed by the licensee.
  - a. Hydrogen Addition

Hydrogen addition has been installed and is currently operational on Dresden - Unit 2. This is a trial program, supported by EPRI, which has the goal of demonstrating the reduction of crack growth in primary system stainless steel piping. Hydrogen addition is not operational on Dresden - Unit 3, Quad Cities - Units 1 and 2, and LaSalle - Units 1 and 2. Hydrogen addition creates an increase in the radiation levels of main steam exiting the reactor vessel. NRC inspectors questioned what effects the increased radiation levels have on the qualification of Butyl rubber cable located in the steam tunnel and other affected areas.

The licensee stated that Sargent and Lundy (S&L) has performed a preliminary assessment of cable qualified life due to the increased radiation levels. Preliminary conclusions are that the Simplex Butyl rubber cables are qualified beyond the next 10 years. No GE Butyl rubber cables exist in the areas mentioned above and, therefore, are not exposed to the increased radiation levels due to hydrogen addition.

Upon finalization of the S&L assessment, all effected EQ binders will be updated to reflect the decreased qualified life of the cables.

All other EQ equipment exposed to the increased radiation levels, due to hydrogen addition, has been evaluated by S&L and found to have no significant effect on replacement schedules for the equipment.

# b. Information Notice 88-43, Sticking of ASCO Solenoid Valves

Information Notice 88-43 described past failures of main steam isolation valves to close because of sticking of associated ASCO solenoid valves. Suspected causes included degradation of the EPDM elastomers, and the thermal degradation due to high ambient temperatures of the lubricant applied during the assembly of the solenoid valves.

In regard to ASCO failures identified in IE Notice 88-43, the licensee stated the following:

None of the EQ ASCO solenoid valves currently have EPDM elastomers. The EQ solenoid valves having EPDM elastomers have been replaced with Viton elastomers.

There are 26 safety-related (non-EQ) ASCO solenoid valves with EPDM elastomers at Dresden - Units 2 and 3. These safety-related ASCO solenoid valves are located in the reactor building and do not experience an elevated ambient temperature environment.

# c. Neutron Monitoring Systems (NMS)

CECo is reviewing neutron flux monitoring systems currently available so as to upgrade their existing system to Category 1A of Regulatory Guide (RG) 1.97. Current RG 1.97 guidance specifies a Category 1 (full seismic and environmental) level of qualification for the neutron monitoring system (NMS). The licensee stated that Commonwealth Edison, through efforts of the BWR Owners' Group, is working with the NRC staff in an attempt to establish a justifiable level of qualification for the NMS. The licensee also stated that it is the industry's position that no valid accident scenario exists which would require a Category 1 qualification for the NMS and that this industry position was clearly stated in a recent meeting with Wayne Hodges (Chief, NRR Reactor Systems Branch) during the week of March 6, 1989. According to the licensee, Mr. Hodges agreed that the staff needs to further clarify this concern and that they would review possible scenarios and would address this issue in their forthcoming questions regarding the Owners' Group topical report. Until they receive further information from the NRC staff, the licensee's position continues to be that the existing NMS is adequate for all valid scenarios. The NRC is continuing to review this issue.

## 7. Unresolved Item

An unresolved item is a matter about which more information is required in order to ascertain whether it is an acceptable item, an open item, a deviation, or a violation. An Unresolved Item is discussed in Paragraph 4.

# 8. Exit Interview

The Region III inspectors met with the licensee's representatives (denoted under Paragraph 1) during an exit on April 7, 1989, and discussed their findings by phone at the conclusion of the inspection on May 24, 1989. The inspectors summarized the purpose and findings of the inspection and the licensee acknowledged this information. The licensee did not identify any documents/processes reviewed during the inspection as proprietary.