

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-254/91002(DRS); 50-265/91002(DRS)

Docket Nos. 50-254; 50-255

Licenses No. DPR-29; DPR-30

Licensee: Commonwealth Edison Company  
Opus West III  
1400 Opus Place  
Downers Grove, IL 60515

Facility Name: Quad Cities Nuclear Power Station, Units 1 and 2

Inspection At: Quad Cities Site, Cordova, Illinois

Inspection Conducted: January 7 through January 11, 1991

Inspectors: F. J. Jablonski for M. J. Kopp  
M. J. Kopp

2/27/91  
Date

G. M. Hausman  
G. M. Hausman

2/27/91  
Date

Approved By: F. J. Jablonski  
F. J. Jablonski, Chief  
Maintenance & Outage Section

2/27/91  
Date

Inspection Summary

Inspection on January 7-11, 1991 (Reports No. 50-254/91002(DRS);  
No. 50-265/91002(DRS)).

Areas Inspected: Special announced safety inspection of previously identified unresolved items concerning environmental qualification (EQ) and the instrumentation system for assessing plant conditions during and following an accident as specified in Regulatory Guide (RG) 1.97, Revision 2 (Modules 2515/76 and 2515/087); SIMS Number 67.3.3.

Results: Two violations were identified in the EQ area as discussed in 2.a and 3. However, in accordance with 10 CFR Part 2, Appendix C, Section V.G., a Notice of Violation was not issued. The inspectors concluded that adequate actions had been taken to resolve 8 of the 12 unresolved items. The remaining items require further review by NRC.

## DETAILS

### 1. Principal Persons Contacted

#### Commonwealth Edison Company (CECo)

- R. Bax, Station Manager
- +R. Naylor, EQ Engineer
- \*+R. Robey, Technical Superintendent
- \*+K. Short, EQ Coordinator
- \*R. Stolz, Licensing
- \*+J. Wethington, Assistant Technical Staff Supervisor

#### Sargent and Lundy Engineers (S&L)

J. DeMarco, Consultant

#### Main Line Engineering Associates (MLEA)

- +G. Johnson, Consultant
- +J. Murphy, Consultant

#### U. S. Nuclear Regulatory Commission (NRC)

R. Bocanegra, Resident Inspector

+ Denotes those participating in interim site exit on January 11, 1991.

\* Denotes those participating in final exit on January 31, 1991.

Other persons were contacted as a matter of course during the inspection.

### 2. Licensee's Actions Regarding Previously Identified NRC Findings

#### a. (Closed) Unresolved Item (254/88015-03(DRP); 265/88015-03(DRP)):

On June 14, 1988, the licensee discovered that Raychem sleeves were missing from AMP nylon splices which connected the Unit 1 RG 1.97 drywell atmosphere thermocouples to the electrical penetrations. The licensee documented this event in LER 88-010.

The cause of the deficient splices was attributed to personnel not following work instructions, an incorrect reference contained in the work instructions, and a drawing error. The licensee's corrective action consisted of reworking the splices, providing additional training to personnel regarding the importance of following instructions, and reviewing the accuracy of the information contained in the modification packages.

The inspector noted that the licensee's corrective action response to a previous NRC Notice of Violation (NOV) concerning unqualified

AMP nylon splices stated, that as of December 6, 1986, the appropriate repairs were made to splices installed in EQ circuits. However, further review by the inspector led to the conclusion that the 1988 discovery of additional AMP splices was an isolated case because the splices were installed in a junction box and not electrical penetrations, which were previously inspected. As noted in paragraph 3 of this report, inspections were performed to verify that EQ terminations are acceptable.

The inspector concluded that this deficiency represented a violation of 10 CFR 50.49 requirements in that AMP nylon splices were installed in an unqualified configuration (50-254/91002-01(DRS); 50-265/91002-01(DRS)). However, as described in paragraph 4, this violation meets the tests of 10 CFR Part 2, Appendix C, Section V.G.1; consequently, a NOV will not be issued. This matter is closed.

b. (Open) Unresolved Item (254/88027-01(DRS); 265/88028-01(DRS)):

The NRC Safety Evaluation Report (SER) stated that the neutron flux monitoring system installed in the plant did not meet the RG 1.97 Category I requirements. The licensee committed to follow the Boiling Water Reactors Owner's Group (BWROG) recommendations for upgrading the neutron flux system. Pending further review by the NRC concerning the BWROG's recommendations, this item remains open.

c. (Closed) Unresolved Item (254/88027-02(DRS); 265/88028-02(DRS)):

According to RG 1.97, the reactor water level should be measured from the bottom of the core support plate to the centerline of the main steam line. However, the installed instruments (263-73A and 263-73B) only measure the water level up to 57 inches below the centerline of the main steam line. The licensee stated that this range was acceptable because all required manual and automatic actions would be covered. The inspectors noted that the level above 57 inches was measured by an instrument (263-61), which was environmentally and seismically qualified. The licensee agreed to include this instrument in the RG 1.97 program. Based upon discussions with the Instrumentation and Control Systems Branch (SICB) at NRR, the inspectors concluded that the above instruments comply with RG 1.97 requirements. This item is closed.

d. (Open) Unresolved Item (254/88027-03(DRS); 265/88028-03(DRS)):

Reactor level indicators 263-73A and 263-73B provide accurate information to the operator only when the recirculation pumps are operating at minimum speed or when the pumps are tripped. During operation of the pumps the indicators are pegged high and consequently do not provide level indication to the operators. The licensee committed to perform an analysis to determine whether or not the indication required by RG 1.97 would be available to

the operator during accident and post accident conditions. Pending review of the licensee's analysis by SICB/NRR and Region III, this item remains open.

e. (Closed) Unresolved Item (254/88027-04(DRS); 265/88028-04(DRS)):

This item was about the lack of physical and electrical separation of existing post accident monitoring instrument channels. RG 1.97, Revision 2 states that the channels should be separated in accordance with RG 1.75, "Physical Independence of Electric Systems". However, the licensee took exception with this requirement because the station did not commit to RG 1.75 as part of the operating license. The licensee identified this exception in the "Summary Report, Quad Cities Station, Units 1 & 2, Compliance to Regulatory Guide 1.97, Revision 2," dated July 31, 1985. Based upon discussions with SICB/NRR, the inspectors concluded that the existing circuits were acceptable. This item is closed.

f. (Open) Unresolved Item (254/88027-05(DRS); 265/88028-05(DRS)):

This item was about the absence of maximum credible fault test data for the Moore Industries signal isolator, Model SCT/0-1V/0-1V/24Vdc (STD). The licensee has completed testing of this isolator and documented the results in Test Report CWE-3212P, Revision 2, dated November 4, 1988. The results of this test data are being reviewed by SICB/NRR. This item remains open pending completion of NRR's review.

g. (Open) Unresolved Item (254/88027-06(DRS); 265/88028-06(DRS)):

This item was about the RG 1.97 torus level indicator, torus level recorder and the containment pressure recorder that were not electrically isolated from the plant nonsafety-related computer system. The licensee provided interim corrective action by removing the connections between the instruments and the computer. The licensee stated that Moore Industries' isolators are scheduled to be added during the upcoming outages per Unit 1 modification M4-1-88-101A & 101B and Unit 2 modification M4-2-88-101A & 101B.

The licensee completed maximum credible fault testing of Moore Industries' isolators Model SCT/4-20mA/4-20mA/117Vac (STD) and Model MVT/80-160mV/4-20mA/117Vac (STD) and documented the test results in Test Report CWE-3480, Revision 0, dated October 12, 1989. Pending review of the test results by SICB/NRR, this item remains open.

h. (Closed) Unresolved Item (254/88027-07(DRS); 265/88028-07(DRS)):

This item was about the accuracy limitations of the containment and torus pressure indicators 2540-9A and 2540-9B. The indicators have a range of 10 inches of mercury to 70 psig with an accuracy

of  $\pm 2\%$ . The RG 1.97 required range for this variable is zero to design pressure (62 psig). According to Quad Cities Station General Abnormal procedures (QGAs), when drywell pressure is above 2.5 psig, manual operator action is required. Due to the accuracy limitations of the display instrumentation, the inspectors were concerned that operator action could be delayed until actual pressure reached 4.0 psig. The licensee informed the NRC inspector that there are three alarms that warn the operator when drywell pressure approaches 2.5 psig. The "PRIM CNMT HIGH PRESSURE" alarms at 1.55 psig, and "DRYWELL HIGH PRESSURE" and "AUTO BLOWDOWN SYSTEM DW HIGH PRESSURE" alarm at 2.5 psig. Based upon discussions with SICB/NRR, the inspectors concluded that the instruments comply with RG 1.97 requirements. This item is closed.

i. (Closed) Unresolved Item (254/88027-09(DRS); 265/88028-09(DRS)):

This item was about the seismic installation of suppression pool temperature recorders 1640-200A, 1640-200B, level/pressure recorder 640-27, and non-IE recorder 640-28.

The existing recorders are scheduled to be replaced with seismically supported and qualified recorders. The inspector noted that minor changes were written and scheduled to be implemented during future outages. This item is closed.

j. (Closed, Unresolved Item (254/88027-10(DRS); 265/88028-10(DRS)):

RG 1.97, Revision 2, states that instruments designated Categories 1 and 2, Types A, B, and C, should be specifically identified on the control panels so that the operator can easily discern that they are intended for use under accident conditions.

The licensee utilizes a black dot located near the lower right hand corner of the RG 1.97 instruments to meet this requirement. This method of identification has been approved by the Human Factors Engineering Coordinator. The inspectors performed a control room walkdown and observed that the licensee's identification of the RG 1.97 instruments comply with this requirement. This item is closed.

k. (Closed) Unresolved Item (254/88027-11(DRS); 265/88028-11(DRS)):

This item was about the location of the RG 1.97 suppression pool temperature recorders 1640-200A and 1640-200B, as a human factor concern. The recorders are located on instrument panel 901(2)-36, which is behind the main control boards. This requires the operator to walk around the panels to view the temperature recorders. The inspectors concluded that access to view suppression pool temperature status from control panel 901(2)-36 was readily available to the operator in the main control room. This item is closed.

1. (Closed) Unresolved Item (254/88027-12(DRS); 265/88028-12(DRS)):

Operators had not received RG 1.97 training and the emergency operating procedures (QGAs) did not address the use of RG 1.97 instrumentation.

The inspector determined that all licensed personnel completed training on the Quad Cities QGAs during Session 2 of the 1989 License Retraining Program (February 28 through April 7, 1989). This training addressed the identification and use of RG 1.97 instrumentation during accident conditions.

The licensee added a caution statement to the QGAs. This caution statement stated how to identify RG 1.97 instruments and that this instrumentation is the preferred instrumentation used during accident conditions. This item is closed.

3. EQ Walkdown Results

Based on NRC findings at the Dresden plant the licensee inspected EQ terminations in junction boxes, conduit fittings, and pull boxes. The licensee identified 6 junction boxes and 14 taped splices that were installed in an improper EQ configuration. In addition, 35 Marathon 1500/1600 terminal blocks were not on the EQ equipment list and the EQ files did not contain test documentation for 8 General Electric and 7 Marathon 6000 terminal blocks.

The licensee reworked equipment configurations to comply with the EQ requirements and the EQ files were revised to include the appropriate data. The original reviews, prior to November 1985, failed to include this equipment in the EQ program.

The NRC inspector concluded that this was a violation of 10 CFR 50.49 requirements due to the configuration deficiencies and the lack of the EQ data required for qualification (50-254/91002-02(DRS); 50-265/91002-02(DRS)). However, as described in paragraph 4, this violation meets the tests of 10 CFR Part 2, Appendix C, Section V.G.1; consequently, a NOV will not be issued.

4. Violations for Which a NOV Will Not be Issued

The NRC uses the NOV as a standard method for formalizing the existence of a violation of a legally binding requirement. However, because the NRC wants to encourage and support licensee's initiatives for self-identification and correction of problems, the NRC will not generally issue a NOV for a violation that meets the tests of 10 CFR 2, Appendix C, Section V.G.1. These tests are: (1) the violation was identified by the licensee; (2) the violation would be categorized as Severity Level IV or V; (3) the violation was reported to the NRC, if required; (4) the violation will be corrected, including measures to prevent recurrence, within a reasonable time period; and (5) it was not a violation that could reasonably be expected to have been prevented by

the licensee's corrective action for a previous violation. In addition, Section V.A states that for isolated Severity level V violations, an NOV normally will not be issued regardless of who identifies the violations, provided the licensee has initiated appropriate corrective action before the report ends. Violations of a regulatory requirement identified during the inspection for which a NOV will not be issued are discussed in Paragraphs 2.a and 3.

5. Exit Interview

The Region III inspectors met with the licensee's representatives (denoted in Paragraph 1) on January 11, 1991, at the conclusion of the inspection and discussed their findings by telephone on January 31, 1991. The inspectors discussed the likely content of the inspection report with regard to documents or processes reviewed by the inspectors. The licensee did not identify any such documents or processes as proprietary.