

UNITED STATES
NUCLEAR REGULATORY COMMISSION

In the Matter of
Commonwealth Edison Company
Quad Cities, Units 1 and 2

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Docket Nos. 50-254 and 50-265
Licenses Nos. DPR-29 and DPR-30
EA 87-82

ORDER IMPOSING CIVIL MONETARY PENALTY

I

Commonwealth Edison Company (licensee) is the holder of Operating Licenses No. DPR-29 and No. DPR-30 issued by the Nuclear Regulatory Commission (NRC or Commission) on October 1, 1971 and March 13, 1972, respectively. The licenses authorize the licensee to operate the Quad Cities Nuclear Power Station, Units 1 and 2, in accordance with the conditions specified therein.

II

Special safety inspections of the licensee's activities were conducted on December 9, 1986 and during the period June 8 through July 28, 1987. The results of the inspections indicated that the licensee had not conducted its activities in full compliance with NRC requirements. A written Notice of Violation and Proposed Imposition of Civil Penalty (Notice) was served upon the licensee by letter dated October 20, 1988. The Notice stated the nature of the violation, the provisions of the NRC's requirements that the licensee had violated, and the amount of the civil penalty proposed for the violation. The licensee responded to the Notice by two letters dated November 21, 1988 and an additional letter dated December 19, 1988. In its response, the licensee made a qualified admission that a violation of 10 CFR 50.49 requirements occurred, but argued that the imposition of a civil penalty in this case would not be

consistent with the NRC's Modified Enforcement Policy because the licensee should not clearly have known of the violation. The licensee also requested that the NRC staff reconsider its analysis of the mitigation factors, as set forth in the Modified Enforcement Policy (Generic Letter 88-07). Finally, the licensee claimed that the proposed penalty is also inconsistent with the Modified Enforcement Policy because the NRC is penalizing Commonwealth Edison Company twice by issuing identical violations for Dresden and Quad Cities and the amount of the penalty is unfair because another licensee received a lower penalty for the same violation.

III

After consideration of the licensee's response and the statements of fact, explanation, and argument for mitigation contained therein, the Deputy Executive Director for Nuclear Materials Safety, Safeguards, and Operations Support has determined, as set forth in the Appendix to this Order, that (1) the violation occurred as stated, (2) the NRC has properly applied the "clearly should have known" test of the Modified Enforcement Policy, and (3) that the penalty proposed for the violation designated in the Notice of Violation and Proposed Imposition of Civil Penalty should be reduced by 50% of the base civil penalty.

IV

In view of the foregoing and pursuant to Section 234 of the Atomic Energy Act of 1954, as amended (Act), 42 U.S.C. 2282, and 10 CFR 2.205, IT IS HEREBY ORDERED THAT:

The licensee pay a civil monetary penalty in the amount of Seventy-Five Thousand Dollars (\$75,000) within 30 days of the date of this Order, by check, draft, or money order, payable to the Treasurer of the United States and mailed to the Director of Enforcement, U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555.

V

The licensee may request a hearing within 30 days of the date of this Order. A request for a hearing should be clearly marked as a "Request for an Enforcement Hearing" and should be addressed to the Director of Enforcement, U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, D.C. 20555, with copies to the Assistant General Counsel for Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555, the Regional Administrator, Region III, 799 Roosevelt Road, Glen Ellyn, Illinois, 60137, and the NRC Resident Inspector, Quad Cities Nuclear Power Station.

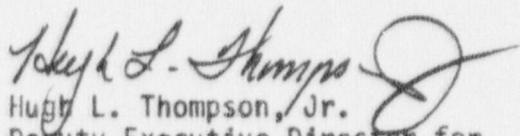
If a hearing is requested, the Commission will issue an Order designating the time and place of the hearing. If the licensee fails to request a hearing within 30 days of the date of this Order, the provisions of this Order shall be effective without further proceedings. If payment has not been made at that time, the matter may be referred to the Attorney General for collection.

In the event the licensee requests a hearing as provided above, the issue to be considered at such hearing shall be:

- (a) whether the licensee was in violation of the Commission's requirements as set forth in the Notice of Violation and Proposed Imposition of Civil Penalty referenced in Section II above and

- (b) whether, on the basis of the violation, this Order should be sustained.

FOR THE NUCLEAR REGULATORY COMMISSION


Hugh L. Thompson, Jr.
Deputy Executive Director for
Nuclear Materials Safety, Safeguards
and Operations Support

Dated at Rockville, Maryland
this 3rd day of May 1989

APPENDIX

EVALUATION AND CONCLUSION

In its November 21, 1988, response to the October 20, 1988 Notice of Violation and Proposed Imposition of Civil Penalty (Notice) for the Quad Cities Stations, Units 1 and 2, Commonwealth Edison Company (CECo) admits that it was unable to demonstrate that the AMP splices were environmentally qualified, based on the results of testing conducted at CECo initiative in December 1986. The licensee does not agree that the documentation in its files as of December 6, 1986, was so inadequate that it should have clearly known that the AMP splices were not properly qualified in accordance with the DOR Guidelines by type testing and analysis. The violation is restated below, followed by a summary of the licensee's response, the NRC's evaluation, and the conclusion.

1. Restatement of Violation

10 CFR 50.49(f) requires each item of electrical equipment important to safety to be environmentally qualified by testing and/or analysis.

10 CFR 50.49(k) specifies that requalification of electrical equipment important to safety is not required if the Commission has previously required qualification in accordance with "Guidelines for Evaluation of Environmental Qualification of Class 1E Electrical Equipment in Operating Reactors," November 1979 (DOR Guidelines).

DOR Guidelines, Section 5.2.2, states that type tests should only be considered valid for equipment identical in design and material construction to the test specimen and any deviations should be evaluated as part of the qualification documentation.

Contrary to the above, from November 30, 1985 until December 6, 1986, AMP nylon-insulated butt splices, used in numerous items of electrical equipment important to safety, were not properly environmentally qualified in accordance with DOR Guidelines by type testing. While a type test was done, the tested splices were not demonstrated to be identical to the installed AMP splices and this deviation was not evaluated as part of the documentation in the qualification file.

2. Summary of Licensee's Response

CECo made a qualified admission that a violation of the requirements of 10 CFR 50.49 occurred, but CECo argued that the imposition of the proposed civil penalty in this case is not consistent with the NRC's "Modified Enforcement Policy Relating to 10 CFR 50.49" (Modified Enforcement Policy), principally because the NRC's staff's finding that CECo "clearly should have known" that the AMP splices were not qualified is largely based on impermissible hindsight. In addition, the licensee claimed that the proposed penalty is inconsistent with the Modified Enforcement Policy because the NRC is penalizing CECo twice by issuing identical violations for Dresden and Quad Cities; and that the amount of the penalty is unfair because Iowa Electric (Duane Arnold) received a lower penalty of \$50,000 for the same violation. The licensee stated that in the alternative, the amount of the proposed civil penalty should be reduced. This is because

the analysis in the NRC staff's October 20, 1988 letter of the four mitigation and escalation factors set forth in the Modified Enforcement Policy is flawed by the improper use of hindsight and by the failure to give any credit to CECO for its initiative in testing the AMP splices.

3. NRC Evaluation of Licensee's Response

a. Hindsight

In regard to hindsight, the licensee asks:

- (1) Did the NRC Staff Expect the AMP Splices to Fail the December 1986 Tests?

The NRC staff finds that considering whether it expected failures to occur during testing is not relevant to establishing whether the licensee clearly should have known of the AMP splice deficiency. The NRC staff concludes that the facts of the AMP splice issue, as detailed below, establish that CECO clearly should have known of the splice qualification deficiencies.

As documented in the Region III March 24, 1986 inspection, eighteen of three hundred Dresden Unit 2 splices were replaced in 1983 due to insulation embrittlement. In January 1985, further splice insulation degradation was observed in Dresden Unit 2 and in October 1985, all splices in Dresden Unit 2 were replaced due to embrittled insulation cracking and "falling off" when the splices were moved. The NRC's March 24, 1986 Inspection Reports No. 50-237/86006(DRS) and No. 50-249/86009(DRS) stated that the NRC was concerned that the AMP splices might have a shorter qualified life than calculated by the licensee and that future failures in Unit 3 could occur during plant operation.

The intent of the March 24, 1986, limited inspection at Dresden was to review the licensee's immediate corrective action in regard to the degraded AMP nylon splices in Unit 2. The documentation in the licensee's files at that time was confusing and not auditable. The inspectors identified EQ concerns and informed the licensee that a more detailed inspection would be performed during the upcoming NRC EQ team inspection in May 1986. The inspectors did not have any immediate safety concerns because (1) no degradation had yet been identified in Unit 3; and (2) the licensee insisted that the installed splices were in fact identical in material and construction to the tested splices, and that they could demonstrate through additional documentation that the AMP splices were qualified.

During the NRC team inspection at Dresden in May 1986, the staff concluded that the tested splices were not sufficiently similar to the installed butt splices to qualify them. Unit 3 was not operating and the licensee committed to resolve the qualification issues prior to startup. Later the licensee informed the NRC that

similarity analysis qualified the splices prior to plant startup. This corrective action was to be reviewed by the NRC during a future inspection, as stated in the cover letter of NRC Inspection Reports No. 50-237/86013 and 50-249/86015. The licensee's corrective action was subsequently reviewed as part of an NRC inspection at Quad Cities Station during the period June 8, through July 28, 1987 and was found to be inadequate. If the NRC had reviewed this corrective action prior to the December 1986 tests, the NRC would have required the licensee to follow the requirements of Generic Letter 86-15.

In conclusion, a documented test and any necessary analysis was needed to determine if the AMP splices would perform as intended during an accident. Based on the inadequate documentation in the licensee's files at the time of the NRC Dresden EQ site inspections and based on the observed degradation of the splices during 1983 through 1985 in Dresden Unit 2, the NRC staff concluded there were significant questions as to whether these splices were qualified and that the licensee clearly should have recognized these questions.

(2) If the AMP Splices Had Passed the Tests, Would the NRC Staff Now be Proposing a \$150,000 Civil Penalty?

If the AMP splices had passed the tests, the enforcement action proposed in the Notice would have been the same. The NRC's policy in the EQ area has been presented in Generic Letters (GL) 85-15 and 88-07. Both GLs state that unqualified equipment means equipment for which there is not adequate documentation to establish that such equipment will perform its intended functions in the relevant environment. While in certain cases, the ability to quickly obtain documentation may result in a violation of reduced severity levels, this provision does not apply to testing. The NRC's position provided in GL 88-07 is that the results of testing done after deficiencies are identified would not be considered. The NRC staff's position is that 10 CFR 50.49 required licensees to assure that electrical equipment important to safety was qualified for its application prior to the November 30, 1985 deadline. Sufficient documentation to assure qualification was required to be contained in the EQ file prior to the deadline. As such, testing conducted after identification of the deficiencies after the deadline has no bearing on whether a violation occurred.

The NRC identified this deficiency in March 1986 and again in May 1986. Even if the AMP splices had passed the December 1986 tests, the licensee had not demonstrated the splices to be qualified prior to the November 30, 1985 EQ deadline or during or shortly thereafter the NRC inspections of March and May 1986. Any subsequent testing or analysis whether demonstrating qualification or not does not affect the application of the Modified Enforcement Policy.

b. Application of the Clearly Should Have Known Test.

The licensee argues that it is not reasonable to conclude that it clearly should have known that its EQ documentation was inadequate prior to December 1986. The following facts refute its argument.

- (1) The licensee's response referenced previous NRC inspection findings (Inspection Report 50-254 and 50-265/78-25). The licensee asserted that those findings accepted the environmental qualification of AMP pre-insulated butt connectors (nylon window splices). While it is correct that the inspector reached that conclusion, the basis of his acceptance needs to be considered. The qualification of the splices was accepted based on statements made in a General Electric letter dated April 28, 1978 and the fact that the test configuration was in accordance with the guidance of IE Circular 78-08. However, that test configuration did not include exposure to radiation and steam environments simultaneously, which was subsequently required by the DOR Guidelines (issued as an attachment to IE Bulletin 79-01B) to be included either during testing or by performing a separate analysis (testing combined with analysis). Therefore, after issuance of the DOR Guidelines the licensee clearly should have recognized that the inspector's basis for acceptance of qualification was no longer necessarily valid.
- (2) In January 1985, the licensee identified degraded nylon AMP splices in Dresden Unit 2. In September 1985, severe degradation was identified in all remaining Dresden Unit 2 nylon AMP splices, such that all the splices had to be replaced with Raychem Heat Shrink Tubing (HST). The licensee clearly should have known that qualification of these splices would need further review since they had degraded prior to their qualified life. Since the same splices were installed at Quad Cities the same questions should have been examined there as the NRC expects licensees to evaluate problems at one site for applicability at others. With respect to this argument, the discussion in the Appendix to the Order Imposing Civil Penalty for violations of 10 CFR 50.49 occurring at Dresden Station, Unit 3, issued this same date, is incorporated herein.
- (3) The DOR Guidelines identify nylon as degradable, and as a material that has a potential for significant aging within ten years under normal operating conditions. The licensee qualified its equipment to DOR Guidelines in both Dresden and Quad Cities Stations, and clearly should have known that these splices were degradable and needed special attention during qualification. The GE F01 penetration test report (R. M. Schuster, April 30, 1971) on which CECO relied to qualify the AMP nylon splice for radiation did not test the splices for radiation and did not test splices made by AMP. This matter was discussed in GE letter G-EBO-8-121 dated April 28, 1978. The AMP test report (No. 110-11004, February 1982) presented by the licensee to qualify the splices for radiation did not test any AMP nylon splices. Thus, the licensee clearly did not have valid EQ documentation to qualify these splices and did not

perform adequate reviews to resolve the inadequacy of these documents. The GE FOI penetration test report and subsequent correspondence between GE and CECO indicated that GE did test a kind of nylon splice and that these splices did pass the test; however, this test only qualified a nylon splice for an environment where radiation and steam were not present simultaneously. The licensee should have known this test did not identify the formulation of the nylon tested and that the tests did not simulate the plant conditions at Quad Cities Station. Clearly, the licensee did not have vendor supplied documentation in its EQ file that demonstrated that AMP splices were qualified.

- (4) A GE Series 100 penetration test report, as described in GE letter G-EBO-2-031 was submitted by the licensee during the enforcement conference on June 5, 1987 and it was also discussed during the Region III Quad Cities EQ inspection of June 8-12, 1987. The licensee argued that the Series 100 report, which was in the licensee's files before November 30, 1985, adequately addressed the NRC staff's concerns about the earlier AMP (No. 110-11004) and GE (R. M. Schuster, April 1971) test reports relating to radiation qualification and therefore demonstrated the qualification of the installed splices. The licensee clearly should have known that the existence of the report in its files prior to November 30, 1985 did not demonstrate qualification of the installed splices. If prior to the deadline the licensee had adequately reviewed the references provided in the report, questions would have arisen concerning the adequacy of the report. One such reference was a GE letter (GE-EBO-2-192 dated 9/7/82) that forwarded to the licensee an electrical penetration environmental study, dated 8/27/82, conducted by GE for the Dresden and Quad Cities Stations. The list of components in this study identified shrinkable tubing and, under Note 2 listed as applicable to this item, indicated that the tubing was used as a "cover for insulated splice." The nylon splice vendors listed included AMP. It was not established which kind of splice used in production was actually tested and it appeared that the splice which had been tested had been protected from the harsh environment by the tubing (apparently intended to be installed on production penetration assembly splices as well). Thus, the tested splices were not only protected from some environmental degradation during testing, but also were prevented from causing electrical faults resulting from moisture intrusion or gross failure of their insulation under accident conditions. The splices installed in the penetrations in Quad Cities however, were unprotected.

Based on the above facts, the NRC staff concludes the licensee clearly should have known the AMP splices were unqualified.

c. CECo Penalized Twice For A Single Alleged Violation

The licensee argued that should the NRC staff conclude that CECo clearly should have known of the violation, a civil penalty should not be proposed for Quad Cities because the identical issue was cited at Dresden. In the licensee's view the assessment of two civil penalties for identical violations at two separate facilities is inconsistent with the Modified EQ Enforcement Policy.

The following shows that CECo has not been penalized twice for a single alleged violation. Each CECo nuclear facility is separately licensed and is required to follow 10 CFR Part 50 regulations and the conditions of its license. Therefore, as a matter of law, a CECo facility would not be exempt from an escalated enforcement action simply because it could be shown that a similar or identical problem or violation had occurred at another CECo facility. That the Dresden and Quad Cities EQ programs were largely developed independently leads the NRC staff to conclude that rather than one mistake this was the same mistake made twice. The NRC staff acknowledges that the licensee does have a corporate EQ engineering staff but the EQ staffs at the individual plants along with their consultants (Sargent and Lundy at Dresden and Bechtel and WESTEC at Quad Cities) made independent EQ decisions relating to the qualification of individual components and equipment. Furthermore, the Modified Enforcement Policy permits separate enforcement actions for violations occurring at separate facilities, whether these violations are independent or not. The Modified Enforcement Policy does not suggest that licensees are not responsible for identical violations occurring at two separate facilities. In short, what the NRC found at the Dresden and Quad Cities facilities was not a single violation, but two separate violations.

Therefore, having reviewed all the above considerations, the NRC staff concludes that separate violations and proposed civil penalties are appropriate.

d. Proposed Civil Penalty Unfair Given the Civil Penalty Proposed in A Similar Case

The licensee claimed that the \$150,000 proposed penalty is unfair, given that Iowa Electric received a proposed civil penalty of only \$50,000 for the same violation. As with all enforcement actions, the nature of the particular violation merely establishes the severity level at which it will be considered. Once the severity level is determined, the escalation and mitigation factors must be applied to the base civil penalty. Thus, given the same violation under different circumstances it is probable that a different proposed civil penalty will result. Both the Quad Cities and the Duane Arnold enforcement actions were categorized as Category B violations under the Modified EQ Enforcement Policy. In the Quad Cities case, CECo was aware of the severe nylon AMP butt splice failures at Dresden Unit 2 early in January 1985 which resulted in the Dresden Unit 2 splices being replaced in October 1985. In spite of this awareness, CECo did not question its EQ testing program or replace splices at

Quad Cities Units 1 and 2. Iowa Electric, however, was not aware of the Dresden Unit 2 1985 splice failures, and when alerted to the AMP test failures in December 1986, Iowa Electric immediately replaced all AMP splices inside and outside the drywell at Duane Arnold, including the AMP Kynar splices. (Kynar splices were later found to be also unqualified). Therefore, once Iowa Electric learned of the problem it was significantly more responsive to immediate safety concerns regarding its plant than CECo was when it first had reasonable indication of a problem.

4. Other Mitigation/Escalation Arguments

The licensee questioned the NRC's failure to give credit to CECo for the corrective actions taken, including taking the initiative in testing the AMP splices. The corrective actions mitigating factor, as defined in Generic Letter 88-07, places emphasis on (1) the time taken to make an operability or qualification determination; (2) the quality of any supporting analysis; and (3) the nature and extent of the licensee's efforts to come into compliance. The licensee's performance in the first two of these areas was unacceptable. Earlier in this Appendix the NRC staff established that CECo should reasonably have known of the problem at Quad Cities and acted to correct it based on the NRC's concerns at Dresden. Although the licensee did take the initiative in testing the AMP splices, this was not fully accomplished until more than a year after the EQ deadline for qualification. Moreover, CECo tested the AMP splices only in response to the NRC's questions about qualification of the splices. When the splices subsequently failed during testing, the corrective actions necessary following this self-disclosing event were obvious. Additionally, following the NRC inspection at Dresden, the licensee's efforts to come into compliance by supporting its analysis were found unacceptable and the NRC staff's concerns relating to the adequacy of the analysis were made known to the licensee at various times after the deadline.

The licensee incorporated into its answer to the Notice other arguments regarding the mitigation and escalation factors that it made in its answer to the Notice of Violation and Proposed Imposition of Civil Penalty that the NRC issued to the licensee for violations at Dresden, Unit 3. With respect to these other arguments, such as the NRC considering this a minor documentation deficiency, the discussion in the Appendix to the Order Imposing Civil Penalty for violations of 10 CFR 50.49 occurring at Dresden Unit 3, issued this same date, is incorporated herein. In summary, although the extent and nature of the licensee's efforts to come into compliance ultimately resulted in the problem being corrected, the NRC staff finds no basis for mitigation for corrective actions.

In reevaluating the application of the mitigation and escalation factors in this case, the NRC has determined that escalation for the failure to identify the violation at Quad Cities is not appropriate. While the licensee's staff at Quad Cities should reasonably have identified the AMP splice problem well before CECo's test made the problem self-evident, the NRC did not identify the AMP splice problem at Quad Cities. Accordingly, the NRC finds that neither escalation nor mitigation based on identification is warranted and the NRC's proposal to escalate the proposed civil penalty by 50% is withdrawn.

5. Conclusion

This violation occurred as stated, and an adequate basis for withdrawing the violation has not been provided. After reconsidering the escalation and mitigation factors, it has been concluded that the previous escalation of the civil penalty by 50% because the licensee failed to identify the violation was inappropriate. Consequently, the proposed civil penalty in the amount of \$150,000 should be reduced by 50% and a \$75,000 civil penalty should be imposed.

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Commonwealth Edison Company

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