

UNITED STATES
NUCLEAR REGULATORY COMMISSION

In the Matter of
Commonwealth Edison
Braidwood Station, Unit 1

Docket No. 50-456
License No. NPF-72
EA 88-91

ORDER IMPOSING CIVIL MONETARY PENALTY

I

Commonwealth Edison Company (licensee) is the holder of Operating License No. NPF-72 issued by the Nuclear Regulatory Commission (NRC/Commission) on July 2, 1987. The license authorizes the licensee to operate the Braidwood Station, Unit 1, in accordance with the conditions specified therein.

II

An inspection of the licensee's activities was conducted during the period March 1-17, 1988. The results of this inspection 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 was served upon the licensee by letter dated May 6, 1988. The Notice stated the nature of the violations, the provisions of the NRC's requirements that the licensee had violated, and the amount of the civil penalty proposed for the violations.

The licensee responded to the Notice of Violation and Proposed Imposition of Civil Penalty by letter dated June 20, 1988. In its response, the licensee denies Violations B, C.1, and part of C.2 and admits Violation A. In addition, the licensee takes issue with the proposed imposition of a Severity Level III violation and the civil penalty.

After reviewing the licensee's response, the NRC staff concludes that with regard to Violation B the licensee was correct in arguing that the violation was incorrect as stated in that testing performed on March 4 and 11, 1987 could not have detected a problem in a design change that was not fully implemented until a few weeks after the testing. In a letter dated September 7, 1988 the NRC staff informed the licensee of that conclusion and provided the licensee with a modification of Violation B which properly identified the time period of testing which, by the licensee's admission, was inadequate to identify the heater interlock logic switch deficiency. The licensee responded to the September 7, 1988 letter in a letter dated October 6, 1988. In that response the licensee did not take exception to the modified violation but rather provided additional information relative to system operability.

III

After consideration of the licensee's responses and the statements of fact, explanation, and argument for mitigation contained therein, the Deputy Executive Director for Regional Operations has determined, as set forth in the Appendix to this Order, that Violations A and C occurred as stated, that Violation B as amended in the NRC staff's letter of September 7, 1988 occurred as stated, that the violations are properly categorized at Severity Level III, and that the penalty proposed for the violations designated in the Notice of Violation and Proposed Imposition of Civil Penalty should be imposed.

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 penalty in the amount of Fifty Thousand Dollars (\$50,000) 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.

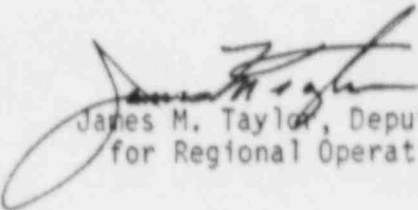
The licensee may request a hearing within 30 days of the date of this Order. A request for a hearing shall be clearly marked as a "Request for an Enforcement Hearing" and shall be addressed to the Director of Enforcement, U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555, with a copy to the Regional Administrator, Region III, 799 Roosevelt Road, Glen Ellyn, Illinois, 60137, and a copy to the NRC Resident Inspector, Braidwood 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 as amended referenced in Section II above, and
- (b) whether, on the basis of such violations, this Order should be sustained.

FOR THE NUCLEAR REGULATORY COMMISSION


James M. Taylor, Deputy Executive Director
for Regional Operations

Dated at Rockville, Maryland
this 19th day of October 1988

APPENDIX

On May 6, 1988, a Notice of Violation and Proposed Imposition of Civil Penalty (Notice) was issued for violations identified during an NRC inspection. Commonwealth Edison Company (CECo) responded to the Notice on June 20, 1988. In its initial response, the licensee admits that Violation A occurred as stated, but denies that Violations B, C.1, and part of C.2 occurred as stated in the Notice. In addition, the licensee takes issue with the proposed imposition of the Severity Level III violation and the civil penalty. The NRC staff's evaluation and conclusions regarding the licensee's arguments follows.

Restatement of Violation B

- B. 10 CFR, Part 50, Appendix B, Criterion XI, "Test Control," requires in part, that a test program be established to demonstrate that systems and components will perform satisfactorily in service.

Commonwealth Edison Company Quality Procedure No. 11-2, "Development, Performance, Documentation, and Evaluation of Preoperational and Start-Up Tests," in part implements 10 CFR, Part 50, Appendix B, Criterion XI. Section 3.2 of Quality Procedure No. 11-2 defines preoperational tests as tests to demonstrate the satisfactory mechanical and electrical operation of the systems involved including interlocks between systems.

Contrary to the above, the licensee's test program did not demonstrate that the Control Room Ventilation System would perform satisfactorily in that preoperational testing of the Control Room Ventilation Systems which was performed on March 4 and 11, 1987 on trains B and A respectively did not identify that heater interlock logic switches were wired incorrectly, that specified switch setpoints had not been adjusted, and that the Control Room Ventilation Systems were inoperable.

Summary of Licensee's Response to Violation B

The licensee denies the violation because the design error could not have been detected by initial preoperational testing of the Control Room Ventilation Systems (CRVS) performed on March 4 and 11, 1987. The design change was not completed until May 21, 1987. However, the licensee admits that testing required subsequent to the installation of the design change was incorrectly selected. It also points out that the Notice transmittal letter characterized the CRVS as a degraded system rather than an inoperable system as stated in Violation B.

NRC Evaluation of Licensee's Response

The NRC staff agrees that the design change occurred after the initial preoperational testing of the CRVS on March 4 and 11, 1987, and, therefore, the initial preoperational tests could not have detected the design error. However, the licensee admits that testing required subsequent to the installation of the design change was incorrectly selected. This testing is considered part of the required preoperational testing program and should have been adequate to identify the design error before the CRVS were declared operable at the time of initial criticality for Unit 1 on May 29, 1987; however, the design error was not identified by the licensee until November 6, 1987, during a review of CRVS startup test results. The NRC staff agrees with the licensee's statement that, for consistency, the Notice transmittal letter

characterization of the CRVS as a degraded system rather than an inoperable system is also appropriate for Violation B. In consideration of these comments, Violation B was amended in a September 7, 1988 letter to the licensee to read as follows:

- B. 10 CFR, Part 50, Appendix B, Criterion XI, "Test Control," requires in part, that a test program be established to demonstrate that systems and components will perform satisfactorily in service.

Commonwealth Edison Company Quality Procedure No. 11-2, "Development, Performance, Documentation, and Evaluation of Preoperational and Start-up Tests," in part implements 10 CFR, Part 50, Appendix B, Criterion XI. Section 3.2 of Quality Procedure No. 11-2 defines preoperational tests as tests to demonstrate the satisfactory mechanical and electrical operation of the systems involved including interlocks between systems.

Contrary to the above, the licensee's test program did not demonstrate that the Control Room Ventilation Systems (CRVS) would perform satisfactorily in that CRVS preoperational testing, which was completed before the CRVS were declared operable at the time of Unit 1 initial criticality on May 29, 1987, did not identify that heater interlock logic switches were wired incorrectly, that specified switch setpoints had not been adjusted, and that the CRVS were in a degraded condition.

The violation, as modified, focuses on the licensee's failure to adequately implement the CRVS preoperational test program, including tests required following system design changes but before the systems were declared operational, rather than the inability of the initial preoperational tests to identify the design error. The licensee responded to the September 7, 1988 letter. However, that response dated October 6, 1988 only provided further information relative to system operability and did not take exception to the modified violation. Therefore, the NRC staff has concluded that the violation, as rewritten for clarification, occurred.

Restatement of Violation C.1

- C. 10 CFR, Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires that activities affecting quality be prescribed by documented instructions, procedures, or drawings and be accomplished in accordance with these instructions, procedures, or drawings.

Contrary to the above, as of November 6, 1987, it was identified that activities affecting quality had not been accomplished in accordance with prescribed instructions or drawings, in that:

1. The Architect Engineer did not perform the interdisciplinary review of ECN 34446, to verify or check the adequacy of the design information, as required by procedures.

Summary of Licensee's Response to Violation C.1

The licensee denies the violation and contends that it is a restatement of Violation A.

NRC Evaluation of Licensee's Response

The NRC staff maintains that Violations C.1 and A are different. Violation A states that the licensee did not meet the requirements of 10 CFR Part 50, Appendix B, Criterion III because measures for coordination among design organizations were inadequate in that the measures failed to ensure that ECN No. 34272 was correctly incorporated into ECN No. 34446. The root cause of Violation A was ambiguous nomenclature used in the logic diagrams of ECN No. 34272. Violation C.1 states that the licensee did not meet the requirements of 10 CFR Part 50, Appendix B, Criterion V in that activities affecting quality had not been accomplished in accordance with prescribed procedural instructions. Specifically, the architect engineer did not follow the procedural requirement to perform the interdisciplinary review of ECN No. 34446 to verify or check the adequacy of the design information. The root cause of Violation C.1 was an individual's error which resulted in a procedural instruction being improperly implemented. Sargent & Lundy General Quality Assurance Procedure No. GQ-1.13, "Engineering Change Notices," states that the preparer shall forward the ECN for internal interfacing comments and if no interfacing comments are required, the ECN shall be forwarded directly to the reviewer. By incorrectly concluding that no internal interfacing comments were necessary, the preparer precluded the interdisciplinary review of ECN No. 34446 that could have caught the error that was made. This violation occurred independently of and in addition to Violation A.

Restatement of Violation C.2

- C. 10 CFR, Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires that activities affecting quality be prescribed by documented instructions, procedures, or drawings and be accomplished in accordance with these instructions, procedures, or drawings.

Contrary to the above, as of November 6, 1987, it was identified that activities affecting quality had not been accomplished in accordance with prescribed instructions or drawings, in that:

2. The heater interlock logic switches for the Control Room Ventilation Systems had not been modified in accordance with the instructions or drawings of ECN No. 34272 which was issued December 16, 1986 or in accordance with the differential pressure switch setpoint specifications for Switches OPDS-VC059 (Sheet No. PS631) and OPDS-VC060 (Sheet No. PS633) which were promulgated on February 9, 1987.

Summary of Licensee's Response to Violation C.2

The licensee denies the first part of the violation because it contends that the heater interlock logic switches for the Control Room Ventilation Systems (CRVS) had been modified in accordance with the instructions and drawings of ECN No. 34272 on May 20 and 21, 1987. The licensee admits that the differential pressure switch setpoints specifications had not been implemented in a timely fashion, per the Station Review Program, because of a work backlog.

NRC Evaluation of Licensee's Response

The NRC staff maintains its position that the CRVS had not been modified

in accordance with the instructions or drawings of ECN No. 34272. The modifications which occurred in May 1987 were in accordance with ECN No. 34446, not ECN No. 34272. The instructions and drawings of ECN No. 34272 correctly specified the modifications to the CRVS heater interlock logic switches. Due, in part, to the licensee's failure to follow design control procedures, ECN No. 34272 specifications were incorrectly incorporated into ECN No. 34446.

Summary of Licensee's Arguments Regarding Severity Level

The licensee acknowledges that there were specific deficiencies which required corrective action, but believes that no programmatic defects exist warranting the imposition of a Severity Level III violation and civil penalty. The licensee presents the following arguments to support this assertion.

1. The failure to coordinate mechanical and electrical design requirements was an isolated occurrence, resulting from one individual's misinterpretation of nomenclature.
2. A 100% review of safety-related differential pressure switch applications at the four Byron and Braidwood units revealed no similar discrepancies, thus demonstrating that adequate measures were established to control design interfaces.
3. The failure to conduct a proper test of the change in heater design resulted from an individual (rather than general) failure to judge accurately the complexity of the change.
4. A review of 2,176 preoperational testing "deficiencies," resulting from changes in design after completion of preoperational testing but before the systems were released to plant operations, showed that the proper tests had been conducted in all but five cases (only three in addition to CRVS tests for which licensee was cited). The licensee asserts this demonstrates that the test control program was, in general, fundamentally sound and properly implemented.
5. A review of violations identified during the last SALP period indicated that those items should not be considered symptomatic of the items presented in the Notice.

NRC Evaluation of Licensee's Response

The NRC staff maintains that the violations should be categorized collectively as a Severity Level III problem in accordance with 10 CFR Part 2, Supplement I.C.2, in that the violations resulted in systems (CRVS) designed to prevent or mitigate a serious safety event not being able to perform their intended function under certain conditions. In Attachment C to its June 20, 1988 response, the licensee responds to NRC concerns regarding its safety significance assessments. The licensee provides additional information in its October 6, 1988 letter. The licensee concludes that while thyroid dose in an accident could be increased due to the degraded CRVS, that dose would remain below the design criterion of 10 CFR Part 50, Appendix A, GDC-19 (23.7 rem versus 30 rem). The NRC staff review of the licensee's submittals indicates that although some of the NRC concerns have been resolved, the licensee assessment remains speculative, especially the filter efficiency assumption for 100% relative humidity.

conditions. Moreover, although the staff and the licensee disagree on some assessment assumptions, there is agreement that the Control Room Ventilation Systems were in a degraded condition and the accident thyroid dose would be increased due to the degraded conditions. NRC's concerns are based not only on the degraded systems but also, and more importantly, on the underlying design control and testing problems which permitted a safety system to be operated for several months in a modified condition without appropriate verification to assure it met design requirements. Although the design and test control problems appear to be primarily due to personnel errors, the failure to reset the heater interlock switch setpoints was due to a programmatic backlog problem which caused significant delays in making setpoint adjustments. The series of problems represented by the violations exacerbated the initial design error by delaying its discovery. As a result of this delay, the Control Room Ventilation Systems (CRVS) were degraded from May 29, 1987 until November 21, 1987.

The NRC staff has reviewed the specific arguments made by the licensee and concludes that an argument may be made that no programmatic deficiencies existed. However, the fact remains that in this case a series of errors resulted in a safety related system being in a degraded mode and, as such, the violations most appropriately fit example C.2 of Supplement I of 10 CFR Part 2, Appendix C.

Summary of Request for Mitigation of Civil Penalty

The licensee contends that an adequate basis exists for mitigation of the proposed Civil Penalty. In support of this position, it presents the following arguments which address the five civil penalty adjustment factors contained in Section V(B) of 10 CFR 2, Appendix C:

1. Prompt Identification and Reporting

Summary of Licensee's Argument

Under the circumstances, the length of time to discover the design error was not unreasonably long and, as such, should not be the basis to discount the licensee's prompt reporting.

NRC Evaluation

Under the NRC Enforcement Policy, the reasonableness of the length of time to discovery depends on the opportunities for discovery and ease of discovery. In this case, from the time ECN No. 34446 was prepared on December 16, 1986 until the design error was discovered, during a review of CRVS startup test results on November 6, 1987, the licensee missed numerous discovery opportunities, including: (1) interfacing comment reviews of ECN No. 34446, if the ECN preparer had properly followed the procedure; (2) the required review of the ECN by the reviewer and the approver; (3) the testing of the heater switch design change in May 1987, if the correct test type had been chosen; (4) switch setpoint verifications, if the setpoint had been adjusted as required before the CRVS were declared operable on May 29, 1987; (5) various CRVS surveillance and startup tests between May 29 and November 6, 1987, if the setpoints had been adjusted as required; and (6) the CRVS startup test on October 2, 1987, if startup test personnel had been fully cognizant of the system

operability implications of the zero heater current measurements. It is the NRC staff's position that it is reasonable to have expected the licensee to have discovered the design error earlier and, therefore, mitigation of the proposed civil penalty for prompt identification and reporting of the event is not warranted.

2. Corrective Action to Prevent Recurrence

Summary of Licensee's Arguments

The licensee contends that prompt and comprehensive corrective actions have been taken.

NRC Evaluation

Although the design changes were quickly corrected after the errors were identified, it was 15 days before the heater interlock switch setpoints were corrected. Furthermore, although the licensee conducted a review to verify no other safety-related errors were associated with design changes which occurred after completion of system preoperational testing but before the systems were released to the Operations Department, the review was conducted after concerns were raised by the NRC during the enforcement conference. It is the NRC staff's position that the licensee's corrective actions were not sufficiently prompt to warrant mitigation of the proposed civil penalty for corrective action to prevent recurrence.

3. Past Performance

Summary of Licensee's Arguments

The licensee believes that this incident is distinct from other issues addressed in the last Braidwood SALP. The licensee maintains that, although prior violations have occurred in the Braidwood Startup Test Program, and that this program is significant to the safe operation of Braidwood Station, the remedial review done of the results of the program, as they relate to detection of design errors, has identified no prior occurrence for which prior corrective action was either inadequate or ineffective.

NRC Evaluation

The NRC maintains that the design control problems are indicative of the previous performance problems identified during the SALP 7 assessment period. The SALP 7 Inspection Report (No. 50-456/88001(DRP); No. 50-457/88001(DRP)) findings are symptomatic of the items presented in the report in that they are indicative of a need to reduce personnel errors, increasing personnel alertness and sensitivity to plant conditions and requirements and to improve design control, test control, and adherence to procedures.

4. Prior Notice of Similar Events

Summary of Licensee's Arguments

The licensee contends that there was no prior notice of similar events.

NRC Evaluation

The NRC staff agrees that the licensee had no prior notice. However, because a lack of prior notice does not serve as a basis for mitigation under the Enforcement Policy, the base civil penalty is unaffected by this factor.

5. Multiple Occurrences

Summary of Licensee's Arguments

The licensee contends that comprehensive reviews of design changes did not identify multiple occurrences of the problems identified in the Notice.

NRC Evaluation

The NRC staff agrees that there were no multiple occurrences. However, because a lack of multiple occurrences does not serve as a basis for mitigation under the Enforcement Policy, the base civil penalty is unaffected by this factor.

NRC Conclusion

The NRC staff concludes that the violations, as amended with respect to Violation B, occurred as stated in the Notice of Violation and Proposed Imposition of Civil Penalty. Moreover, the NRC concludes that the violations are appropriately classified as a Severity Level III problem. Further, the NRC staff has also concluded that a sufficient basis has not been provided by the licensee for the reduction of the Severity Level, or remission, or mitigation of the proposed civil penalty. Accordingly, the civil penalty in the amount of Fifty Thousand Dollars (\$50,000) should be imposed.

Commonwealth Edison Company

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