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April 23, 1991

Mr. A. Bert Davis
Regional Administrator - Region III
U.S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Subject: Quad Cities Nuclear Power Station Units 1 and 2
Response to Two Level IV Violations
Inspection 50-254/91005
NRC Docket No. 50-254

Reference: Mr. P. Phillips letter to Cordell Reed dated March 25, 1991
Transmitting NRC Inspection Report 50-254/91005

Mr. Davis:

This letter is in response to the inspection conducted by Mr. I. T. Yin from January 28 through February 14, 1991 and March 21, 1991, of activities at Quad Cities Station. The referenced Inspection Report indicated that certain activities appeared to be in violation of NRC requirements. Commonwealth Edison (CECo) has reviewed the notice of violations and in all but one example agrees that the violations occurred as described. The attached Response to Notice of Violation provides response to the proposed violations 1.b., 2.a., 2.b. and 2.c.

CECo has reviewed proposed violation 1.a. and believes that this item does not represent a violation of 10 CFR 50, Appendix B, Criterion III. CECo concludes that an adequate design review was performed for modification M-4-1-88-019, and in light of the information contained in the Response to Notice of Violation for 1.a., CECo requests that the Staff reconsider this example of the violation.

If your staff has any questions or comments concerning this letter, please refer them to Rita Radtke, Compliance Engineer at (708)515-7284.

Very truly yours,

F. J. Kovach
Nuclear Licensing Manager

cc: L. Olshan, Project Manager, NRR
T. Taylor, Senior Resident Inspector
NRR Document Control Desk

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RESPONSE TO NOTICE OF VIOLATION

VIOLATION 1

10 CFR 50, Appendix B, Criterion III, requires in part, that design changes be subject to design control measures commensurate with those applied to the original design. This control includes the specification of design bases and that verification of the design be accomplished through a design review or adequate testing program. It also requires that the design basis be correctly translated into specifications, drawings, procedures, and instructions.

Contrary to the above, the following violations were identified:

This is a Severity Level IV violation (Supplement I).

EXAMPLE a.

An inadequate design review was performed for modification M-4-1-88-019, failing to include the seismic qualification reports regarding whether installed instrumentation would remain within calibration.

DISCUSSION

Quad Cities Station wishes to take exception to the above violation and provides the following statement:

A review of the seismic qualification report, "Power System SQ Test Report No. 11019," dated January 8, 1982, was performed by Sargent & Lundy Engineers (S&L). This report included documentation of the test results of component seismic testing from a structural and pressure integrity point of view, and was accepted by S&L. This report referenced a supplemental report, which would be issued to document the results of the functional tests. S&L concluded that a review of the supplement was not required, because the instruments are safety-related only in their passive ability to maintain lube oil pressure integrity. The supplement was issued on February 10, 1982.

The violation states "An inadequate design review was performed for modification M-4-1-88-019, failing to include the seismic qualification reports regarding whether installed instrumentation would remain within calibration." The instruments are used to provide indication and/or annunciation functions, which are non-essential. Based on the non-essential status, S&L determined that it was not necessary to review the functional testing report. CECo concurred with this evaluation and when the supplement was issued it was not transmitted to or required to be reviewed by S&L. In response to the NRC's question regarding the

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functional capability of the instruments, S&L performed a review of the supplemental report. The results of this review indicated that the instrumentation meets its design intent from both a pressure boundary/structural integrity and a functional standpoint. These results were documented in S&L letter dated February 15, 1991, and transmitted to the Station by letter, H.L. Massin to R.L. Bax, dated February 21, 1991.

Engineering and Quad Cities Station have thoroughly evaluated this design review. We believe that the initial design review was appropriate to verify system integrity, and it was not required based on their application and use to determine functional integrity for the instruments in question. We request that the NRC reconsider this example of the violation.

EXAMPLE b.

The maintenance work instruction associated with modification M-4-1-88-016 open limit switch/close indication rotor setup failed to appropriately translate the design specification that the rotor be set at a safe distance away from the full open position of the associated motor-operated valves. Furthermore, the associated procedure did not require documentation of the final setup.

DISCUSSION

The Motor-Operated Valve (MOV) VOTES test results were reviewed and showed that the bypass switch settings and the close limit switch/open indication met the modification plan test acceptance criteria. The acceptance criteria for open limit switch/close indication, specified that the limit switch should be set 1/2 inch from the full open position for valves over 10 inches in diameter, and 1/4 inch from the full open position for valves under 10 inches in diameter. The settings were done in accordance with a site maintenance procedure which specified a setting within 1/2 inch or 1/4 inch from the full open position, respectively. This acceptance criteria in the maintenance procedure appeared to be unacceptable, because the possibility of the limit switch being set too close to the full open position (set at 0) was not precluded. This could cause valve damage during opening of the MOVs if the valve was backseated. However, all safety related MOVs are tested using VOTES methodology. MOV performance computer plots are recorded during VOTES testing and would reveal if a valve was in a back seated condition.

CORRECTIVE STEPS TAKEN AND RESULTS ACHIEVED

The station is currently reviewing procedure QEMP 600-1 "Electrical Maintenance of Safety-Related and Non Safety Related Motor Operated Valves" to add positive tolerances to the specified settings. This will preclude the possibility of the limit switch being set too close to the full open position. The procedure will be revised by July 1, 1991. The procedure change will also include a requirement to document the as left limit switch settings.

CORRECTIVE ACTION TO PREVENT FURTHER NONCOMPLIANCES

CECo believes the corrective steps taken above will prevent further non-compliance.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Full compliance will be achieved by July 1, 1991 when QEMP 600-1 is revised.

VIOLATION 2

10 CFR 50, Appendix B, Criterion XI, requires in part, that a test program be established to assure systems will perform satisfactorily in service. The test shall be performed in accordance with written procedures, which contain acceptance limits. Test results shall be documented and evaluated to assure that test requirements have been satisfied.

Contrary to the above, the following violations were identified:

This is a Severity Level IV violation (Supplement I).

EXAMPLE a.

Modification M-4-1-88-019 construction test failed to document the basis for concluding that the temperature gauge was satisfactory when the test results were outside of the acceptance limits specified by Engineering. The acceptance criteria were subsequently modified without proper test failure evaluation. Furthermore, the modification test procedure failed to incorporate the engineering instruction to monitor leakage of the Emergency Diesel Generator turbo oil pump into the modification test procedure.

DISCUSSION

The original testing criteria provided in the modification approval letter dated December 20, 1989, required that the temperature gauge accuracy be tested to within $\pm 1\%$ of full scale (300F). Following the calibration test for the temperature gauge performed on December 7, 1990 the Station informed Engineering that the Station instruments only allow for testing of $\pm 4F$ (1.3% accuracy), which does not

DISCUSSION (continued)

meet the acceptance criteria specified in the modification approval letter. Engineering discussed this with S&L, who evaluated the acceptance criteria and determined that $\pm 1\%$ was the vendor's published accuracy, which was conservative and unnecessary for this non-safety-related gauge (documented per telecon to L.T. Wright from J.W. Dingler dated 12-14-90). The S&L evaluation determined that changing the acceptance criteria from $\pm 1\%$ to $\pm 1.5\%$ of full scale would not alter the conclusions of the original modification approval letter or addendums, including the 10 CFR 50.59 safety evaluation. The FSAR, UFSAR, and Technical specifications were also reviewed, and did not require revision. This justification was in turn incorporated in modification approval letter addendum 4, dated December 14, 1990. Although addendum 4 was appropriately added to the modification package, the temperature gauge calibration documentation portion of the package was not changed to reference the addendum.

Additionally, during modification testing, a small leak was observed at the threaded fitting downstream of the 3 gpm turbo oil pump. CECo Engineering issued an addendum to the test specification on January 15, 1991, requiring the checking and monitoring of the leak. This addendum was not incorporated into the test procedure and no record was kept to document its implementation. However, the system engineer did monitor the leak, per the engineering addendum, for the first eight hours of diesel operation. Due to the uniqueness of the test criteria, "ensure that the leakage does not exceed the original observed leakage of one drop per minute," the engineer did not modify the modification test checklist to document these test results. He referenced the addendum letter and signed the test acceptance.

CORRECTIVE STEPS TAKEN AND RESULTS ACHIEVED

Regarding the construction test, a discussion will be held with the individual(s) involved regarding appropriate annotation of addendum changes by May 15, 1991.

Regarding the modification test, this appears to be a unique case and the system engineer was counselled to be more careful when reviewing the addendums for incorporation into the work packages relating to the modifications.

CORRECTIVE ACTION TO PREVENT FURTHER NONCOMPLIANCES

Regarding the construction test, CECo believes the corrective step to be taken above will prevent further non-compliance.

Regarding the modification test the Technical Staff will discuss the importance of attention to detail when reviewing addendums for incorporation into work packages relating to modifications with all the system engineers at a tailgate meeting.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Full compliance regarding the construction test was achieved on December 14, 1990, when Addendum 4 to the modification approval letter was issued to change the acceptance criteria for this construction test.

Regarding the modification test, full compliance was achieved when Engineering issued the addendum to the test specification on January 15, 1991.

EXAMPLE b.

The testing associated with Modification M-4-0-89-066 was inadequate to assure adequate air-operated containment valve leakage in that the test did not specify a minimum leak rate but rather evaluated a leakage time irrespective of initial testing pressure.

DISCUSSION

As a part of the modification design basis review, the inspector evaluated the licensee's response to NRC Generic Letter (GL) 88-14. The leak test for containment valves in response to GL 88-14 was considered unacceptable. Test acceptance criteria stated that air pressure shall be maintained at 65 psig for a 15-minute holding period. The inspector reviewed several valve test results and noted that depending on the initial instrument air (IA) system pressure, the same leakage rate would fail a valve in one test, but allow it to pass in another test. For example, suppression chamber isolation valve A01601-60 failed with a leak rate of 0.53 psig/min., but the reactor building vent exhaust valve 5642B passed at a higher initial IA system pressure with a leak rate of 0.787 psig/min. Procedure QTS 105-9 "Pneumatic Accumulator System Pressure and Fail Safe Test," was deficient since the pressure decay portion of the test did not include a firm system starting pressure requirement. The acceptance criteria for the test required a final pressure of 65 psig after a valve actuation and a 15 minute waiting period.

CORRECTIVE STEPS TAKEN AND RESULTS ACHIEVED

The station has revised the test procedure QTS 105-9 to include a starting pressure. Acceptance criteria for the accumulator system leakage now depends on the system leak rate and is not affected by system operating pressure.

CORRECTIVE ACTION TO PREVENT FURTHER NONCOMPLIANCES

CECo believes the corrective steps taken above will prevent further non-compliance.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Full compliance was achieved on April 8, 1991 when test procedure QTS 105-9 was revised and approved.

EXAMPLE c.

Although minor design change 04-1-91-009 specified that functional verification testing for the Motor-Operated Valves would be performed using the VOTES method, no testing acceptance criteria were specified.

DISCUSSION

The inspector selected one Minor Design Change (MDC), P04-1-91-009, for review. This MDC was to replace reactor core isolation cooling (RCIC) system Motor-Operated Valves (MOVs) 1-1301-22 and 26 spring packs. The spring packs had been too stiff to meet the licensee engineering MOV thrust window requirements. A review of the 10 CFR 50.59 design change evaluation and systems interaction studies was completed and no deficiencies were identified. However, during the inspection the following concerns were identified:

The MDC work package specified that functional verification testing would use the VOTES method, but failed to specify the acceptance criteria (thrust windows). Test acceptance criteria had previously been determined by licensee Engineering in a December 7, 1990, letter to the station.

CORRECTIVE STEPS TAKEN AND RESULTS ACHIEVED

Acceptance criteria was added to the work package for the MDC on February 14, 1991. This corrected the deficiency.

CORRECTIVE ACTION TO PREVENT FURTHER NONCOMPLIANCES

The Minor Design Change Program is being reviewed and changes will be made to ensure test acceptance criteria is specified in MDC work packages. These changes will be made by July 1, 1991.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Full compliance was achieved February 14, 1991 when test acceptance criteria was added to the MDC work package.