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GGC-94-067

April 18, 1994

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, D. C. 20555

Subject: Quad Cities Power Station Units 1 and 2;
NRC Docket Number 50-254 and 50-265;
NRC Inspection Report Numbers 50-254(265)/94004

Reference: Edward G. Greenman letter to R. Pleniewicz dated March 17, 1994, transmitting Notice of Violation. Inspection Report 50-254/94004; 50-265/94004

Enclosed is Commonwealth Edison's response to the Notice of Violation (NOV) transmitted with the referenced letter. The NOV cited four Level IV violations. and involved; 1) the failure to verify design adequacy, 2) the failure to take adequate corrective action, 3) three examples each of procedural non-compliance and inadequacies, and 4) ineffective 10 CFR 50.59 evaluations.

The following commitments are being made by this letter:
This response references the Quad Cities Management action plan which contains the actions necessary to correct the deficiencies identified by the DET. The action plan defines the programs for improving station performance, however, dates set in the management action plan are based on current plans and may need to be revised based on priorities and schedules. A current listing of completion dates will be maintained by Regulatory Assurance for NRC review.

If there are any questions or comments concerning this letter, please refer them to Nick Chrissotimos, Regulatory Assurance at (309) 654-2241 ext 3100

Respectfully,

for Guy G. Campbell
Station Manager
Quad Cities Station

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Attachment

cc: J. Martin, Regional Administrator, RIII
C. Miller, Senior Resident Inspector
C. Patel, Project Manager, NRR
Letterbook

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VIOLATION 50-254/265-94004-13a&b:

10 CFR 50, Appendix B, Criterion III, "Design Control," requires in part that regulatory requirements and the design basis for systems are correctly translated into specifications and design control measures shall be provided for verifying the adequacy of design.

a) Contrary to the above, as discussed in Section 2.1.1 of the DET report, the licensee, failed to verify that the Unit 2 diesel generator field exciter cabinet was seismically mounted as required by design specifications.

b) Contrary to the above, as discussed in Section 2.3.3.2 of the DET report, the licensee failed to evaluate loading time of the "B" control room air conditioner compressor onto the Unit 1/2 emergency diesel generator (EDG) in a design basis accident. Additionally, the licensee failed to validate the additional loading of the Unit 1/2 EDG.

This is a Severity Level IV Violation.

REASONS FOR THE VIOLATION:

CECo acknowledges the above violation. The cause of the above events were:

a) LER 93-021, determined the reason for this violation to be the omission of relevant information in the design drawing during original construction and inadequate instructions provided by the manufacturer. This situation occurred during the plant's original construction.

b) The omitted compressor motor load was discovered during the DET. The apparent cause appears to be a miscommunication over the load addition between the engineering organization involved in the design of the Control Room Train 'B' HVAC System modification and the engineering organization responsible for maintaining the electrical power system records.

CORRECTIVE STEPS TAKEN AND RESULTS ACHIEVED:

a. 1) The Station Support Engineering developed weld maps for repairing the 2-2252-10 and 2-2252-12 cabinets. Repairs to the cabinets were completed under work requests Q09621 (2-2252-10) and Q09620 (2-2252-12) during September 1993.

2) The station inspected the cabinets for the Unit 1 and 1/2 Emergency Diesel Generator cabinets and found them to be welded in place. The station also performed additional walk-down inspections of safety-related panels. The station found two additional mounting concerns which were corrected under station work requests Q09965 and Q09663.

b. Upon discovery of the omitted load (Control Room Train 'B' HVAC compressor motor), an evaluation was performed. The evaluation concluded that the 1/2 EDG is capable of starting and running the Control Room HVAC Train 'B' compressor motor. The evaluation took into account the voltage dip and recovery from the starting transient of the motor, and the total load on the EDG (the loading on the 1/2 EDG remains within its 2000 hour rating).

CORRECTIVE STEPS TAKEN TO AVOID FURTHER VIOLATION:

a) The seismic adequacy of cabinets and panels required for safe shutdown will be addressed by the Seismic Qualifications Utilities Group (SQUG) Program. This program is underway and is scheduled for completion by 06/30/96.

b. 1) The miscommunication of the compressor load occurred in the mid-1980 timeframe. Since that time, additional engineering controls have been implemented which should prevent further recurrence. The current design modification process requires that any electrical load changes be evaluated prior to installation and that the Electrical Load Management System database be updated. Additionally, a formal communication tool Parameter Assessment Request for the transfer of technical information between engineering organizations has been established. This communication process also fosters a proactive involvement by the responsible CECo engineering personnel in that their approval is needed for the issuance of the PAR.

2) The 1/2 EDG loading calculation will be revised to incorporate the compressor load. It is expected that this revision will be completed in August 1994.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED:

Full compliance was achieved with the completion of the weld repairs to the cabinets and was achieved with the load evaluation of the 'B' HVAC Compressor.

Violation 50-254/265-94004-18a&b:

10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," requires in part that conditions adverse to quality, such as failures, malfunctions, deviations, deficiencies, defective material and equipment, and nonconformances be promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition.

a) Contrary to the above, as discussed in Section 2.1.2(1) of the DET report, the licensee failed to promptly identify and correct the feedwater flow nozzle instrument inaccuracies. Accurate feedwater flow is an important input parameter for on-line reactor power calculations. Failure to accurately measure reactor power is a condition adverse to quality.

b) Contrary to the above, valve vibration problems affecting safety system reliability, a condition adverse to quality, were not adequately evaluated to identify root cause or corrective actions. Specifically:
- The licensee failed to correct cavitation induced vibration problems on Residual Heat Removal (RHR) 36A/B valves.
- The licensee failed to identify the root cause of four broken yoke-to-actuator bolts on the Unit 1 RHR 36B valve.
- The licensee failed to identify the root cause for a degraded condition on the Unit 2 RHR 28B valve.
- The licensee failed to perform root cause determinations for 12 yoke-to-actuator bolts on the Unit 2 RHR 28B valve which were found loose.
- The licensee failed to evaluate the failure modes of a cracked casing and grease degradation on the Unit 2 RHR 34A valve.
- The licensee failed to identify the repetitive failures of two cracked welds at the yoke-to-bonnet joint on the Unit 1 RHR 36B valve.
- The licensee failed to evaluate repetitive failures of the Unit 2 RHR 36A valve stem.

This is a Severity Level IV Violation.

REASONS FOR THE VIOLATION:

CECo acknowledges the above violation.

a) In LER 94-004, the exact cause of the event could not be determined. Several possibilities were investigated and are included below. The station believes the most probable cause of the event to be a combination of causes in varying degrees. The causes are described below:
- Possible erosion and damage to the flow nozzles;
- Plant FW flow instrumentation inaccuracy and calibration techniques;
- Design Configuration and Analysis: The FW Flow nozzles were originally installed

with less reliable means of measuring the flow coefficient;
- The FW Flow nozzle discharge coefficient may have been inadequately applied in 1974.

b) The apparent cause for the above valve vibrations was an ineffective Root Cause process.

CORRECTIVE STEPS TAKEN AND RESULTS ACHIEVED:

a) Based on Nuclear Fuel Services operability evaluation, Quad Cities Station management issued special instructions that Reactor Thermal Power for Unit 1 & 2 shall not exceed 97%, and the APRM's/RBM was set down 1% to ensure an adequate margin to the Technical Specifications and Fuel Thermal Limits. The station is evaluating the need for further inspection and testing and is planning on recalibrating the FW Flow instrumentation to the calculated flow coefficients determined from finalized test data. Additionally, the station is evaluating recent industry information (GE SIL 452 revision 1) pertaining to feedwater flow transmitter calibration issues for potential actions.

b) As a result of the issues related to the RHR 36 valves:
- anti-cavitation trim will be installed in the Unit 1 valves (36A/B) during Q1R13, and in the Unit 2 valves (36A/B) currently planned for during Q2R13;
- upgraded (higher strength) yoke-to-actuator bolts were installed in the valves (36A/B) for both units
- The weld cracks at the yoke-to-bonnet joint on the Unit 1 36B valve were weld repaired (note, the yoke will also be replaced as part of the previously mentioned trim installation); and
- a new stem was installed in the Unit 2 RHR 36A valve in 1988 and 1993 (note, stem will be upgraded as part of the previously mentioned trim installation).

As a result of the issues related to the Unit 2 RHR 28B:
- the worm gear and worm were replaced for the Unit 2 28B valve in 1992; and
- upgraded (higher strength) yoke-to-actuator bolts were installed in the RHR 28 valves (A&B) for both units.

For the Unit 2 RHR 34A valve, the motor operator was rebuilt in 1992 upon discovery of the grease degradation. As a result of the subsequent differential pressure testing (for Generic Letter 89-10) on the RHR 34 valves (A&B), extensive upgrades (e.g., larger actuator and motor; stronger yoke, disc, and stem) are being installed on the Unit 1 and Unit 2 valves during Q1R13 and currently planned for Q2R13 respectively.

In addition to the above actions the station plans the following:

2) A site MOV team has been formed to address Generic Letter 89-10, as well as, pursue enhancements to the MOVs which will improve safety margins and

performance. (Management Plan Objective 1.09).

3) A multi-disciplined site vibration team has been formed to address vibration related conditions (e.g.: cavitation induced vibration, etc.). The team will evaluate equipment/system vibration problems, provide recommendations, and assess the effectiveness of those actions following implementation. The team has reviewed the known vibration issues, and identified the "high priority issues". Actions on these issues will be implemented during the upcoming outages for each unit. (Management Plan Objective 1.08).

CORRECTIVE STEPS TAKEN TO AVOID FURTHER VIOLATION:

The station is working to provide high quality and consistent Root Cause determinations. In order to make effective improvements, root cause analysis training will be provided for station personnel, indoctrination guides will be provided for the Event Screening Committee (ESC), a process will be established to monitor and trend recurring events, and clear and concise expectations will be developed for use by personnel performing root cause analysis. (Management Plan Objective 2.01).

The station believes that the improvements proposed to the root cause program will improve the quality of the investigations as well as improve the corrective actions taken. These improvements will also lead to improved trending which will allow for prompt identification of ineffective corrective actions and overall improvement in the quality of work performed at Quad Cities.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED:

a) Full compliance will be achieved with the completion of the recalibration of the FW Flow instrumentation.

b) Full compliance will be achieved with the completion of the trim upgrade to the RHR 36 A&B valves.

Violation 50-254/265-94004-22a&b:

Quad Cities Technical Specification 6.2.A.1 stated the applicable procedures recommended in Appendix A of Regulatory Guide 1.33, Revision 2 dated February 1978, shall be established, implemented and maintained. Regulatory Guide 1.33 Appendix A included administrative procedures, general plant operating procedures, maintenance procedures, and procedures for startup, operation, shutdown of safety-related systems, and radiation protection.

a) Contrary to the above, three examples of procedural non-compliance were identified in the area of plant operations:
- On September 1, 1993, Quad Cities Operating Procedure (QCOP) 1000-5, "Shutdown Cooling Operation," was not adhered to when the operators deviated from the procedure while starting a residual heat removal system in shutdown cooling mode on Unit 2.
- On August 29, 1993, operators failed to follow Quad Cities Operating Annunciator Procedure (QOA) 900-55 and 56 while inerting the Unit 1 drywell.
- On September 22, 1993, an operator failed to follow Quad Cities Operating Surveillance Procedure (QCOS) 1100-6, "Monthly SBLC Pump Test," in that the operator did not complete prerequisites of the procedure before testing the standby liquid control system.

b) Contrary to the above, three examples of procedural inadequacies were identified in the area of plant maintenance:
- In May 1993 Work Request Q 07434 failed to incorporate required torque of the indicator side cap screws for core spray check valves 9A and 9B.
- On August 26, 1993 an incorrect weld procedure was used to make a seal weld on 2B regenerative heat exchanger outlet isolation valve resulting in the need for entries into a radiation area.
- On August 28, 1993, maintenance personnel replaced the wrong drywell equipment sump pump due to erroneous plant drawings resulting in the need for multiple drywell entries.

This is Severity Level IV Violation.

REASONS FOR THE VIOLATION:

CECo acknowledges the above violation.

a) In the Shutdown Cooling event the station acknowledged that personnel error was the cause in the response to NRC Inspection Report 93-031 NOV (254/265-93-03101). The station also agrees with the assessment that procedure adherence was the cause of the other two events.

b) In the three inadequate procedure examples, the station agrees with the assessment that procedural and drawing inadequacies were the cause of the events.

CORRECTIVE STEPS TAKEN AND RESULTS ACHIEVED:

a) Upon discovery, the station took immediate actions to return the system to the proper line-up in accordance with the applicable station procedures. In addition, the station has revised the procedure for normal control room inspection and shift turnover panel checklist (QOS 005-1) to include a checklist for shutdown conditions. The station has also revised the procedure governing procedure adherence (QCAP 1100-12) to clarify guidance concerning craft capability. In addition, the station also implemented procedure QCAP 210-4, which governs shift change for NSOs and has attachements for conditions greater or less than 212 degrees.

b) Upon discovery, the station either rectified the condition (e.g., the correct drywell sump pump was replaced, the seal weld on the RWCU '2B' regenerative heat exchanger outlet isolation valve was corrected) or performed an evaluation for acceptability (e.g.; core spray check valves 9A&B).

CORRECTIVE STEPS TAKEN TO AVOID FURTHER VIOLATION:

In order to improve personnel performance and eliminate performance traps, the following comprehensive actions will be taken:

1) The station is conducting a Level 2 investigation on the trend of personnel errors at the station. Upon completion of the investigation the station will review and implement recommendations of the team. The investigation is scheduled for completion by April 20, 1994.

2) The station's management action plan has all departments conducting and developing a "safety culture" for each department. The purpose of the "safety culture" is to promote an attitude which finds equipment deficiencies and poor personnel performance unacceptable. (Management Plan Objective 1.16)

3) The station is developing and implementing a Human Performance Program which will include the Human Performance Enhancement System (HPES) to improve overall plant operations by improving human performance reliability. (Management Plan Objective 2.02).

4) The station will improve the accuracy of the station's drawings in order to increase the effectiveness and efficiency of plant personnel in completing work. (Management Plan Objective 2.07).

5) The station will revise the self-check program. (Management Plan Objective 2.03). This will include using a multi-disciplinary team to develop the program, incorporation of the program into all departments, and training of the program via the Nuclear General Employees Training (NGET).

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED:

Full compliance was achieved with the immediate corrective actions taken upon discovery of the problem.

Violation 50-254/265-94004-54

10 CFR 50.59 requires written safety evaluations when making changes to the facility as described in the safety analysis report which provides the bases that the changes do not involve an unreviewed safety question.

Contrary to the above as discussed in Section 2.3.6.2 of the DET report, there were instances where the licensee had made changes to the facility and had not performed a 10 CFR 50.59 review or the evaluation performed was inadequate.

Specific examples included:
- One of the two pumpback air compressors (described in the UFSAR) had never been operational. The licensee failed to perform a 10 CFR 50.59 evaluation.
- The licensee failed to perform an adequate 10 CFR 50.59 evaluation when four sheared yoke-to-actuator bolts were replaced with stronger bolts on Unit 1 RHR 36B MOV. The licensee failed to address a concern that the allowable fatigue stress for the valve yoke was exceeded by 46 percent.
- The licensee performed an inadequate 10 CFR 50.59 evaluation when replacing the 60 ft-lbf motor of the 1A RHR torus cooling and the 1A torus test return valve actuators with an 80 ft-lbf motor. The 10 CFR 50.59 evaluation did not consider the increased thrust capability of the actuator as a potential adverse affect on the valves.
This is a Severity Level IV Violation.

REASONS FOR THE VIOLATION:

CECo acknowledges the above violation. The reasons is due to weaknesses of the 10 CFR 50.59 program.

CORRECTIVE STEPS TAKEN AND RESULTS ACHIEVED:

The station will evaluate each specific example and determine if a 10 CFR 50.59 evaluation is needed or an enhancement to the existing 10 CFR 50.59 evaluation is required.

CORRECTIVE STEPS TAKEN TO AVOID FURTHER VIOLATION:

The station will evaluate QCAP 1100-9 for potential enhancement and will provide its personnel with additional training on the requirements for 10 CFR 50.59. This item is due to be completed by December 31, 1994. In addition, Quad Cities will evaluate corrective actions taken at Zion for 10 CFR 50.59 program revisions for implementation at Quad Cities.

DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED:

Full compliance will be met when the station completes the evaluations for the specific issues listed above.