U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report Nos. 50-254/93026(DRP); 50-265/93026(DRP)

Docket Nos. 50-254; 50-265 License Nos. DPR-29; DPR-30

Licensee: Commonwealth Edison Company
Executive Towers West III
1400 Opus Place, Suite 300
Downers Grove, IL 60515

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

Inspection At: Quad Cities Site, Cordova, Illinois

Inspection Conducted: October 1 through November 5, 1993

Inspectors: T. E. Taylor
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Reactor Projects Section 1B

12/6/93
Date

Inspection Summary

Inspection from October 1 through November 5, 1993 (Report Nos. 50-254/93026 (DRP); 50-265/93026(DRP))
Areas Inspected: Routine, unannounced safety inspection by the resident and regional inspectors of operational safety verification, monthly maintenance observation, monthly surveillance observation, engineering and technical support, plant support, and followup.

Results: Of the areas inspected, one violation was identified regarding inadequate corrective actions taken to prevent performance of unauthorized plant activities. Specifically, the performance of a heating, ventilation, and air conditioning (HVAC) heater test was unauthorized and consequently resulted in an inadvertent actuation of the computer room fire protection system.

EXECUTIVE SUMMARY

Plant Operation

Performance in this area was adequate. However, a weakness in the licensee's winterization checklist was identified. Inter-departmental communication was poor and resulted in two events where the verification of a winterization checklist was not completed and an unauthorized plant activity was performed.

Maintenance and Surveillance

Performance in this area, with one exception, was adequate. A halon actuation during computer room HVAC testing occurred. The test was performed without procedural guidance or operations oversight. This event showed a need for management action to address root cause resolutions. In addition, intra-departmental communication was weak in that the lessons learned on high pressure coolant injection (HPCI) system surveillance were not transmitted to avoided confusion during a reactor core isolation cooling (RCIC) surveillance activity.

Engineering and Technical Support

Performance in this area was adequate. Licensee activities concerning Generic Letter 89-10 were progressing. The licensee's teamwork and technical resolution of motor operated valve torque switch settings improved from previous efforts. However, licensee review of Information Notice 87-10 was weak.

Plant Support

Performance in this area was adequate. One emergency preparedness exercise was monitored during the period. No exercise weaknesses were identified.

DETAILS

1. Persons Contacted

Commonwealth Edison Company (CECo)

R. Pleniewicz, Site Vice President
*G. Campbell, Station Manager
D. Bucknell, Assistant Technical Staff Supervisor
*J. Burkhead, Quality Verification Program Supervisor
D. Cook, Administrative Operating Engineer
D. Craddick, Assistant Superintendent - Maintenance
*J. Dierbeck, Maintenance Supervisor
D. Gibson, Master Mechanic
*H. Hentschel, Operations Manager
*D. Kanakares, Regulatory Assurance, NRC Coordinator
G. Klone, Operating Engineer - Unit 1
J. Kopacz, Operating Engineer - Unit 2
K. Leech, Security Administrator
*A. Lewis, Staff Assistant Station Manager
B. McGaffigan, Assistant Superintendent - Work Planning
*A. Misak, Regulatory Assurance Supervisor
*B. Moravec, Site Engineering and Construction Manager
B. Strub, Assistant Superintendent, Operations

*Denotes those attending the exit interview conducted on November 5, 1993.

The inspectors also contacted other licensee employees including members of the operating, maintenance, plant support, and engineering staff.

2. Operational Safety Verification (71707 and 71714)

The inspectors observed control room operation, reviewed applicable logs, and conducted discussions with control room operators. The inspectors reviewed the operability of selected emergency systems, reviewed tagout records, and verified the proper return to service of affected components.

Tours of accessible areas of the plant were conducted to observe plant equipment conditions, including potential fire hazards, fluid leaks, excessive vibration, and to verify that equipment discrepancies were noted and being resolved by the licensee.

The inspectors observed plant housekeeping and cleanliness conditions and verified implementation of radiation protection and physical security plan controls.

Winterization Checklist

The inspectors reviewed the licensee's winterization checklist. This checklist was used to verify breaker positions for circuits necessary to prevent freezing of important components. Although the checklist was completed, the verification was found incomplete since the last page was missing. After operations completed the checklist, the checklist was then turned over to electricians for verification. However, there were no provisions for electricians to document the completion of verification. Miscommunication between the shift engineer and the electrical foreman resulted in the premature signoff of the checklist. The licensee initiated a procedure change to resolve the issue. The inspectors had no further concern.

No violations or deviations were identified.

3. Monthly Maintenance Observation (62703)

Station maintenance activities for both safety related and non-safety related systems were observed and/or reviewed to ascertain that they were conducted in accordance with approved procedures, regulatory guides and industry codes or standards, and in conformance with technical specifications.

The inspectors observed or reviewed portions of the following maintenance activities:

Unit 1

QCEPM 200-1 Inspection and Maintenance of 4 KV 1A RHR SW Breaker
WR Q09123 Replacement of 1A CRD Water Filter
1B CRD Pump Speed Changer Repair
Differential Pressure Test of Motor Operated Valve 01-1301-60

Unit 2

Thermography Inspection of the Emergency Diesel Generator Potential Transformers

Unit 1/2

Replacement of 1/2 "A" Diesel Fire Pump
4 KV Vertical Breaker Inspection

a. 4 kv Vertical Breaker Auxiliary Contact Problems

A concern with 4 kv breakers was identified regarding improper clearances between the mechanical linkages and the auxiliary contacts. The auxiliary contacts provided various logic signals for the operation of the breaker. The clearance between the

auxiliary contact operating rod and a plunger was critical to the operation of the breaker.

The licensee performed additional inspections of 4 kv breakers at the request of the inspectors. Of the eight breakers inspected, three were found to have incorrect clearances. However, these breakers were verified to operate satisfactorily.

The following is a list of licensee actions taken to ensure 4 kv breaker operability:

- Plunger spacing was adjusted on affected breakers.
- The 4 kv vertical breaker installation procedure was revised to ensure proper clearance between the rod and plunger.
- Training materials provided to operators were revised to include methods of verifying correct clearances during breaker installation.
- The licensee contacted the vendor for assistance to avoid similar problems in the future.

A similar breaker problem was previously identified during review of a loss of offsite power event. The licensee's corrective actions taken for that previous event appeared adequate. Review of licensee corrective action will be conducted as part of the inspectors followup to Inspection Report 254/265-93024(DRS).

b. 1A Residual Heat Removal Service Water Pump (RHRSWP) Failure

On October 10, control room operators twice attempted to start the Unit 1 "A" RHRSWP without success. The licensee documented the failure on a Problem Identification Form (PIF 93-0348) and wrote a work request to repair the breaker. Inspections of the breaker and its relays revealed no abnormalities. The 1A RHRSWP motor was removed for overhaul and reinstalled. Post maintenance testing was completed satisfactory. Troubleshooting efforts to determine the breaker fault did not identify any root cause. The licensee concluded that an intermittent failure may have existed but was not evident during troubleshooting efforts. The inspectors concluded the licensee's efforts to identify the root cause were reasonable.

No violations or deviations were identified.

4. Monthly Surveillance Observation (61726)

During the inspection period, the inspectors observed test activities. Observations made included one or more of the following attributes: testing was performed in accordance with adequate procedures; test

equipment was in calibration; test results conformed with technical specifications and procedure requirements; test results were properly reviewed; and test deficiencies identified were properly resolved by the appropriate personnel.

The inspectors witnessed or reviewed portions of the following test activities:

Unit 1

QCOS 1400-1 1A and 1B Quarterly Core Spray Pump Flow Rate
QCOS 2300-5 Quarterly HPCI Pump Operability Test

Unit 2

QCOS 2300-5 Quarterly HPCI Operability Test
QCOP 1000-9 Torus Cooling Startup and Operation
QCOS 1300-1 Periodic RCIC Pump Operability Test
QCOS 1400-1 2A and 2B Quarterly Core Spray Pump Flow Rate
QCOS 6600-1 Diesel Generator Monthly Load Test

a. Unit 1 High Pressure Coolant Injection (HPCI) Quarterly Surveillance

On October 21, during performance of QCOS 2300-5, "Quarterly HPCI Pump Operability Test," Unit 1 HPCI was declared inoperable for exceeding inservice testing (IST) flow rate. The IST flow data was to be recorded at a specified HPCI turbine speed. However, the HPCI speed indicator in the control room was not accurate. Subsequently, the licensee utilized a hand-held tachometer to measure HPCI turbine speed locally for the test. This test data verified satisfactory operation of HPCI and the licensee declared HPCI operable. In addition, vibration data was to be recorded during the HPCI test. However, by the time a decision was made as to when to record vibration data, the torus level was rising due to HPCI turbine exhaust. It was later determined that the vibration data should be recorded about 5 minutes into the surveillance activity.

Lessons learned from HPCI surveillance were not incorporated during a subsequent RCIC test. The licensee did not realize that a hand-held tachometer was required to record the RCIC turbine speed locally and that the vibration data was to be recorded about 5 minutes into the surveillance activity. Intra-departmental communication was lacking in that useful information was not transmitted. This event also showed ineffective management oversight to improve performance.

b. Unplanned Computer Room Halon System Actuation

On October 4, the computer room halon fire protection system was inadvertently actuated. The actuation occurred during testing of the computer room heating, ventilation, and air conditioning (HVAC) in-line duct heaters. When the heater was energized, dust on the heater surface generated smoke causing the halon system actuation.

Review of the event by the inspectors identified several concerns:

- The work performed, using a blanket work request, was beyond the scope of Quad Cities Administrative Procedure (QCAP) 307-14, "Initiation and Control of Blanket Work Requests."

- Operations was not cognizant of ongoing work activities. Maintenance personnel performing the activity failed to notify the shift engineer (SE) and obtain proper authorization prior to the heater test.

- System engineering support was weak. The system engineer was unaware of the test being performed and was unaware of two previous instances where dust on the heater had actuated halon system in the computer and document rooms. Therefore, lessons learned were not incorporated.

- There was confusion between system engineering and maintenance over ownership of the computer room HVAC system.

The event identified an unauthorized performance of a plant activity, a lack of oversight of test activities, lack of communication between departments, and system ownership problems. Although no other safety related system actuated, a potential existed for personnel injury. Management action to improve control of plant activities and to prevent unauthorized performance of plant activities were still lacking.

On December 4, 1992, an instrument mechanic reinstalled a temporary alteration (tygon tubing) on a reactor vessel level transmitter without instruction authorizing the activity. Corrective action taken was to discuss with the technician involved the need to ensure that the appropriate instructions were in place prior to performing activities. However, this corrective action was ineffective as evidenced by this recent recurrence.

Failure to take effective corrective actions to prevent performance of unauthorized plant activities is considered a Violation of 10 CFR 50, Appendix B, Criteria XVI (50-254/93026-01(DRP)).

c. Emergency Diesel Generator (EDG) Surveillance

On October 26, the inspectors witnessed surveillance testing of the Unit 2 EDG. The inspectors identified that the EDG was not barred over prior to operation as recommended by the vendor. In response to NRC Information Notice 91-62, "Diesel Engine Damage Caused by Hydraulic Lockup Resulting from Fluid Leakage into Cylinders," the licensee submitted a technical specification change request and planned a modification to allow barring of the EDGs. The license amendment was recently approved which allowed the licensee to bar the EDG; however, the modification had not yet been implemented. The licensee planned to change the surveillance procedure, once the modification was completed, to require barring of the EDGs. The inspectors had no further concerns.

One violation was identified concerning inadequate corrective action to prevent performance of unauthorized plant activities.

5. Engineering and Technical Support (37700)

Licensee Response to Generic Letter 89-10

As part of response to Generic Letter 89-10, "Safety-Related MOV Testing and Surveillance," the licensee recalculated thrust requirements for motor operated gate valves. A more conservative valve factor of 0.5 was chosen for gate valve thrust calculations. As a result, some new calculated valve thrusts were greater than the existing thrust values.

The inspectors reviewed several safety evaluations generated as a result of the new calculated values and determined that the licensee did not adequately address safety support functions in some evaluations. Subsequent evaluations, after inspector prompting, more clearly explained the function of the valves in their safety support roles. No operability issues were identified during this review. In addition, the inspectors reviewed licensee compensatory actions for operation of the valves. Some valves required licensee followup actions including modifications to valve operators, to ensure the recommendations of the generic letter were met.

On October 15 and 16, the licensee adjusted torque switch settings on both units' recirculation isolation valves. This was necessitated by use of the higher valve factor to ensure operability of the valves. The inspectors noted that the licensee's teamwork and its technical resolution of the issue improved from previous efforts. The licensee's efforts to resolve this issue, including the decision to reduce power, were considered prompt and appropriate.

No violations or deviations were identified.

6. Plant Support (71707 and 82301)

Emergency Preparedness Exercise

On November 3, the licensee conducted an annual emergency preparedness exercise. The exercise consisted of a simulated security event complicated by multiple component failures. The inspectors monitored the exercise from the simulator control room (SCR) and the Technical Support Center (TSC).

The associated supporting emergency facilities were activated within required time limits. Personnel appeared knowledgeable of their positions. Equipment required to support the exercise was available and in a good state of repair. However, a simulator software problem forced controllers to utilize a backup method of data transfer. Offsite notifications were made within the required time limits. Briefings in the TSC were both timely and informative.

The scenario was technically challenging and was adequately addressed by the licensee. However, the licensee was slow in the declaration of an ALERT from the simulator control room. The scenario did not drive the SCR operators to properly classify the ALERT. The operators' interpretation of the emergency action levels differed with the interpretation of the scenario creators. The licensee continued to evaluate the scenario problems. The above observations were provided to regional specialists and is considered an Inspector Followup Item (50-254/265-93026-02(DRSS)).

One inspector followup item was identified concerning emergency action levels interpretation.

7. Followup (71707, 92700)

Licensee Response to Information Notice 87-10

The inspectors reviewed the licensee's response to Information Notice 87-10, "Potential for Water Hammer during Restart of Residual Heat Removal Pumps." The licensee concluded that followup actions were not required and provided an explanation to support this position. However, the inspectors reviewed the licensee's explanation and concluded that the evaluation performed was inadequate and a potential existed for a water hammer under the stated conditions. This is considered an Inspection Followup Item pending further NRC review (50-254/265-93026-03(DRP)).

No violations or deviations were identified. One inspector followup item was identified regarding licensee evaluation of Information Notice 87-10.

8. Inspection Followup Items

Inspection followup items are matters which have been discussed with the licensee, will be reviewed by the inspectors, and which involved some action on the part of the NRC, licensee, or both. Inspection followup items disclosed during the inspection are discussed in paragraphs 6 and 7.

9. Exit Interview

The inspectors met with the licensee representatives denoted in Paragraph 1 during the inspection period and at the conclusion of the inspection on November 5, 1993. The inspectors summarized the scope and results of the inspection and discussed the likely content of this inspection report. The licensee acknowledged the information and did not indicate that any of the information disclosed during the inspection could be considered proprietary in nature.