

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-254/92028(DRP); 50-265/92028(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: November 23 through 25, 1992, and November 27, 1992,
through January 11, 1993

Inspectors: T. E. Taylor
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1/27/93
Date

Inspection Summary

Inspection from November 23 through 25, 1992, and from November 27, 1992, through January 11, 1993 (Report No. 50-254/265-92028(DRP))

Areas Inspected: This was a routine, unannounced safety inspection by resident and regional inspectors of licensee action on previously identified items; licensee event report review; regional request; operational safety verification; monthly maintenance observation; monthly surveillance observation; refueling activities; training effectiveness; report review; and events.

Results: In the areas inspected, two cited violations were identified. The first violation concerned a lack of corrective actions for the 1/2 diesel generator (paragraph 2.a), and the second concerned an unauthorized installation of a temporary alteration (paragraph 6.) A non-cited violation was discussed in paragraph 3.g, and an inspector concern regarding licensee control of balance-of-plant activities was addressed in paragraph 5.

EXECUTIVE SUMMARY

Plant Operation

Operations performance remains steady. Operator response to the Unit 2 scram and erroneous decreasing vessel level events were very good.

Maintenance and Surveillance

Maintenance and surveillance activities were performed in an acceptable manner with one exception. During a calibration activity an instrument mechanic installed a temporary alteration without authorized instructions. This resulted in operator action to prevent the feedwater system responding to erroneous reactor vessel level signals.

Engineering and Technical Support

One violation was identified concerning a failure to address corrective actions relating to a proposed modification for the ½ diesel generator. Daily support of operations activities is improving.

Safety Assessment and Quality Verification

Management control over resolution of identified problems was considered poor in the case of the ½ diesel generator proposed modification.

DETAILS

1. Persons Contacted

Commonwealth Edison Company (CECo)

- *R. Pleniewicz, Site Vice President
- *R. L. Bax, Station Manager
- *G. C. Tietz, Executive Assistant
- *H. Hentschel, Operations Manager
- *B. Strub, Assistant Superintendent - Operations
- *D. Craddick, Assistant Superintendent - Maintenance
- B. McGaffigan, Assistant Superintendent - Work Planning
- *B. Moravec, Engineering and Nuclear Construction Site Manager
- D. Gibson, Master Mechanic
- G. Klone, Operating Engineer - Unit 1
- J. Kopacz, Operating Engineer - Unit 2
- *A. Misak, Regulatory Assurance Supervisor
- R. Walsh, Technical Staff Supervisor
- J. Burkhead, Quality Verification Program Supervisor
- K. Leech, Security Administrator
- J. Hoeller, Training Supervisor
- *D. Kanakares, NRC Coordinator Regulatory Assurance
- D. Bucknell, Assistant Technical Staff Supervisor
- J. Masterlark, Fire Protection System Engineer
- K. Short, EQ Coordinator
- H. Smith, Fire Marshall

*Denotes those attending the exit interview on January 11, 1993.

The inspectors also talked with and interviewed other licensee employees, including members of the technical and engineering staffs; reactor and equipment operators; shift engineers and foremen; maintenance personnel; and contract security personnel.

2. Licensee Action on Previously Identified Items (92701, 92702)

- a. (Closed) Violation 254/88011-10A(DRS); 265/88012-10A(DRS):
Failure to adequately identify and take prompt corrective action concerning the 1/2 emergency diesel generator (EDG) logic problem as described in LER 86-032. The licensee considered the problem to be an isolated event that was unlikely to recur. As an interim measure, station procedures were revised and a modification was to be developed that would eliminate the problem.

The inspectors reviewed the actions to correct this problem, including those described in the licensee's response letter dated October 17, 1988. The licensee had not implemented modification requests MR4-1(2)-88-04 and MR4-0-88-013, which were referenced in the response letter, due to higher priority work. During this inspection the licensee identified three options to correct the

EDG logic problem: 1) provide an improved "loss of excitation" relay; 2) change the EDG logic to bypass the "loss of excitation" relay; 3) change the EDG logic to add a time delay to the "loss of excitation" relay. The licensee stated that a formal proposal would be submitted for station approval and funding by February 1993. The inspectors concluded that the current station procedures and proposals were acceptable and considered this item closed. Based upon the licensee's response to the violation, the long term corrective action was to develop a modification to resolve the issue. The excessive delay in implementing this corrective action is a violation of 10 CFR Part 50, Appendix B, Criteria XVI (254/265-92028-01)(DRP). The inspectors were concerned that the licensee did not provide sufficient attention to ensure prompt resolution of the previous violation.

- b. (Closed) Violation 265/89023-01(DRS): Nine examples concerning the control of transient combustible material. The licensee's response letter dated December 21, 1989, concurred with the inspection finding and stated that corrective actions had been completed. The inspectors reviewed procedures QAP 1700-1, QAP 1700-5, and other applicable documentation, which indicated that the licensee had taken adequate corrective actions to identify and control transient combustible materials used in the plant. The licensee had provided appropriate training for personnel, provided for the use of additional fire protection tours when required, and completed development and implementation of a computerized transient combustible materials tracking system. The inspectors reviewed transient fire load permits and compared them with existing plant conditions; no discrepancies were identified. The inspectors concluded that the licensee's actions were acceptable and had no further concerns. This item is closed.
- c. (Closed) Open Item 254/265-89023-02(DRS): Length of time four control room fire detectors remained out-of-service (OOS). Although the four detectors were OOS, sufficient additional detectors were in service within the respective fire zones and were available to meet minimum NRC requirements. The inspectors conducted a review of the plant's fire detection zones, which indicated that the minimum detectors required to be operable were within the established requirements. The licensee stated that the delay in detector repair was due to a billing misunderstanding and a spare part replacement vendor change. As a result, sufficient numbers of spare parts were not available to perform repairs. An approved vendor for replacement parts was identified and the four detectors were replaced. The licensee stated that this problem should not recur due to "minimum/maximum" spare parts stocking requirements. The inspectors concluded that the actions taken by the licensee were acceptable and the inspectors had no further concerns. This item is closed.

- d. (Closed) Violation 254/90022-01; 265/90021-01: Missed technical specification (TS) surveillances. The licensee revised surveillance procedures to ensure that the surveillances discussed in the violation would be corrected. Additionally, the licensee reviewed the overall surveillance program and implemented several changes including an increased emphasis on performing surveillances before they were due and a daily review of surveillances approaching their critical date. The inspector reviewed the revised procedures and the program changes, and discussed program implementation with the general surveillance coordinator. The inspector noted that no TS surveillances had missed their critical date in the past year. This is considered closed based on licensee subsequent performance in this area and corrective actions taken.
- e. (Closed) Violation 265/90021-02: Corrective actions to a previous violation were not effective. The violation concerned a maintenance electrician who lifted leads at a terminal box as part of a maintenance activity. The lifted leads were not documented in the work package, and the crew completing the maintenance was not aware of the lifted leads and did not reterminate them. In response to the violation, the licensee issued a new procedure outlining the steps required to lift and land leads, and prepared a log sheet to be included in the work packages. Personnel were trained on the procedure and use of the log, as well as on the importance of properly describing the work performed. The inspectors reviewed twelve electrical work packages involving lifting and landing leads. In all cases, the work traveller properly referenced the new procedure, the lifted and landed leads were properly logged, and the description of work completed was adequate. Based on this sample, the inspectors considered the corrective actions to be adequate. This item is closed.
- f. (Closed) Violation 265/90024-01: Inadequate management oversight of turbine torsional test. This item dealt with a reactor scram initiated by an intermediate range monitor 14 and 16 high neutron flux condition which occurred on October 27, 1990. The initial approach and resolution of the causal factors for this violation were considered narrow in scope and were contributing factors to the January 24, 1991, reactor vessel inventory loss event (Inspection Report (IR) 254/91006). Closure of this violation indicated that specific corrective actions were adequate. However, actions to prevent recurrence will continue to be tracked under item numbers 254/91006-01 and 254/91006-02. This item is considered closed.
- g. (Closed) Violation 265/91010-01: Failure to start a reactor feed pump in accordance with QOA 201-8. The licensee discussed the event with all operating crews and revised procedures to clarify necessary conditions prior to establishing a reactor cooldown. The licensee also repaired the feedwater regulating valve, as the valve's response contributed to the event. The inspectors

reviewed these corrective actions and operator response to subsequent events and considered them adequate. Additionally, following implementation of corrective actions to this, and other violations in the 1990-1991 time frame, no further operational problems have been caused by operator failure to follow procedures or by shift control room engineer failure to adequately supervise and coordinate control room activities. This item is closed.

- h. (Closed) Unresolved Item 265/91010-02: Insufficient post-maintenance testing of the B feedwater regulating valve. The original concern was with the lack of a stroke test following maintenance on the feedwater regulating valve. Upon further review, the inspectors could not identify any requirement for a stroke test to be performed, nor were any other problems identified with inadequate post-maintenance testing. Therefore, this is considered an isolated occurrence, and the item is closed.
- i. (Closed) Violation 254/91017-01: Failure to implement adequate corrective action. The violation concerned failure to provide instrument check acceptance criteria for TS surveillances. The licensee revised the appropriate procedure to provide specific acceptance criteria for each instrument check and to more clearly indicate that it was a TS surveillance. The inspectors reviewed the revised procedure and found it acceptable. Additionally, the inspectors noted that no problems with TS surveillances were identified within the last year. This item is closed.
- j. (Closed) Violation 254/91017-02, 265/91013-02: Inadequate as-found testing of secondary containment. The licensee revised the secondary containment testing procedure to provide instructions on how to perform walkdowns in the as-found condition. The inspectors reviewed the revised procedure and found it acceptable to resolve the original concern. This item is closed.
- k. (Closed) Violation 254/91017-03; 265/91013-03: Failure to perform safety evaluations in accordance with plant procedures. The licensee implemented a number of corrective actions for this violation, including procedure revisions, training of all personnel performing safety evaluations, and an on-going quality verification (QV) audit of safety evaluations. The inspectors reviewed the latest QV audit findings, which identified continuing deficiencies with safety evaluation screenings and safety evaluations. The inspectors also reviewed a number of recently completed safety evaluations associated with temporary alterations. The specific corrective actions to this violation were acceptably completed. This violation is closed.
- l. (Closed) Unresolved Item 254/91017-04: Standby gas treatment system (SGBT) heater circuitry concern. This item was encompassed by the loss of instrument air concern discussed in IR 254/265-92025, paragraph 2.a.(1). To avoid duplicate tracking, this item

is closed and the concern will be tracked under Unresolved Item 254/265-92025-02.

- m. (Closed) Unresolved Item 254/91020-02; 265/91016-02:
Reclassification of certain emergency core cooling system room coolers. This item was addressed during the service water inspection, documented in IR 254/265-92201. To avoid duplicate tracking, this item will be closed and the concern tracked under Unresolved Item 254/265-92201-01.
- n. (Closed) Unresolved Item 265/92008-01: Low bottom head temperature. This item was the subject of a violation (265/92011-01b) discussed in IR 254/265-92011, paragraph 10.d. Corrective actions will be evaluated during review of that violation. This item is closed.
- o. (Open) Unresolved Item 254/265-92201-04: Environmental qualification (EQ) of the flow reversing valves on the residual heat removal (RHR) heat exchanger. The inspectors were concerned that the valves, which were not environmentally qualified, could fail in an intermediate position and render the RHR heat exchanger inoperable while mitigating an accident. The licensee revised operating procedures, which removed the possibility of operating the valves during accident conditions. The licensee stated that the valves would be evaluated for inclusion in the EQ program. In a letter to the NRC dated November 13, 1992 the licensee requested an extension until May 29, 1993, to complete the evaluation and documentation process. This item remains unresolved pending completion of the licensee's inspection and evaluation of results and final NRC review.

One violation was identified.

3. Licensee Event Report (LER) Review (92700)

Through direct observations, discussions with licensee personnel, and review of records, the following event reports were reviewed to verify reportability requirements were fulfilled, immediate corrective action was accomplished, and corrective action to prevent recurrence had been, or will be, accomplished in accordance with TS requirements:

In addition, the inspectors reviewed the licensee's deviation reports (DVRs) generated during the inspection period. This was done in an effort to monitor the conditions related to plant or personnel performance, or potential trend development. DVRs were also reviewed for proper initiation and disposition as required by the applicable procedures and the QA manual.

- a. (Closed) LER 254/90011-LL: ½ diesel fire pump out of service longer than seven days to install new suction line. The inspectors reviewed the licensee's compensatory actions and found them adequate. This item is closed.
- b. (Closed) LER 254/90012-LL: "B" control room heating, ventilation, and air conditioning (HVAC) failed to attain required temperature differential, believed to be due to heater problem. The heater was repaired and the HVAC system was returned to operation. The inspectors reviewed the licensee's corrective actions and found them adequate. This item is closed.
- c. (Closed) LER 254/90026-LL: Control room vent isolation due to toxic gas concentration high. The inspectors reviewed the licensee's completed investigation and found it adequate. Additionally, the licensee received a TS revision removing the toxic gas analyzer from the TS. This item is closed.
- d. (Closed) LER 254/90032-LL: Fire diesel inoperable for more than seven days. The inspectors reviewed the licensee's compensatory actions and found them acceptable. This item is closed.
- e. (Closed) LER 254/91014-LL: Standby gas treatment (SBGT) system heater logic circuitry missing due to an inadequate review of original safety analysis report. This LER documents the same concern discussed in Unresolved Item 254/91017-04 (discussed in paragraph 2.1 of this report.) This item is closed.
- f. (Closed) LER 254/91019-LL: Control room HVAC inoperable due to low delta-temperature and high delta-pressure. The licensee's corrective actions were found acceptable. This item is closed.
- g. (Closed) LER 254/91020-LL: Missed TS surveillance. The inspectors reviewed the reasons for the missed surveillance against the corrective actions for previous violations on missed TS surveillances and found that this was an isolated occurrence, identified by the licensee, not reflective of the licensee's surveillance program, and categorized at Severity Level IV. The corrective actions were adequate to prevent recurrence, as shown by no TS surveillances being missed during the last year. The missed surveillance was in violation of the requirements of TS section 4.8.A.5; however, no Notice of Violation will be issued because the criteria of 10 CFR Part 2, Appendix C, paragraph VII.B.2 were met. This item is closed.
- h. (Closed) LER 254/91022-LL: "B" train control room HVAC inoperable. The inspectors reviewed the licensee's completed investigation and found it adequate. This item is closed.

- i. (Closed) LER 254/91027-L1: Unit shutdown due to water impingement on electrical bus 14-1. The LER was revised to change a commitment date which had no effect on the adequacy of the licensee's corrective actions. This item is closed.
- j. (Closed) LER 254/92028-L1: SBT design deficiency due to reliance on instrument air. On October 16, 1992, the licensee determined that general design criteria 19 control room dose limits would be exceeded during the postulated design basis accident with a loss of instrument air. The licensee's immediate corrective action was to revise control room HVAC initiation procedures and to place the control switches for both circuits in the primary mode. The inspectors reviewed the licensee's compensatory measures and proposed corrective actions, which appeared adequate. This event was discussed in greater detail in IR 254/265-92025, paragraph 2.a.(1). This item is closed.
- k. (Closed) LER 265/91007-L1: Reactor low water level scram. The inspectors reviewed the revised LER and determined that it did not affect the conclusions discussed in paragraph 2.e, or closure of the original LER in IR 254/91017; 265/91013. This item is closed.
- l. (Closed) LER 265/91009-L1: Failure of the core spray room drain check valves. The inspectors reviewed the LER and determined that the discussion in IR 254/265-92016, paragraph 3, adequately addressed the event. This item is closed.

One non-cited violation was identified.

4. Regional Request (92701)

- a. The inspectors completed an Office of Nuclear Reactor Regulation survey regarding the possibility of contamination of suppression pool water supply to emergency core cooling systems from piping insulation materials. The information supplied by the licensee was verified for accuracy and completeness, and was determined to be adequate. The licensee was aware of the concern and has modified the majority of the Unit 1 containment piping insulation to address the concern. Modification of the Unit 2 insulation was being planned and is in progress. The inspectors have no further questions at this time.
- b. The inspectors received a regional request to determine when Quad Cities would no longer have full core off-load capability. The inspectors determined that the licensee would no longer be capable of performing a full core off-load capability (assuming no fuel is moved between pools) by November of 1998. This date included installation of four more high density fuel racks in the Unit 1 spent fuel pool. The Unit 2 spent fuel pool has already been

modified. Licensee corporate engineering was evaluating alternate methods of fuel storage, with the most economical means of storage appearing to be onsite dry cask storage.

No violations or deviations were identified.

5. Operational Safety Verification (71707)

During the inspection period, the inspectors verified that the facility was being operated in conformance with the licenses and regulatory requirements and that the licensee's management control system was effectively carrying out its responsibilities for safe operation. This was done on a sampling basis through routine direct observation of activities and equipment, interviews and discussions with licensee personnel, independent verification of safety system status, and review of facility records.

On a sampling basis the inspectors daily verified the following: adequate control room staffing and coordination of plant activities with ongoing control room operations; operator adherence with approved procedures; operation as required by TS; adequate monitoring of control room instrumentation for abnormalities; that onsite and offsite power was available; plant and control room visits were made by station managers; and safety parameter display system operation.

During tours of accessible areas of the plant, the inspectors made note of general plant and equipment conditions, including control of activities in progress (maintenance/surveillance), observation of shift turnovers, general safety items, etc. The specific areas observed were:

a. Observations

On December 13, 1992, a shift foreman, making a plant tour prior to shift turnover, noticed a new hose attached to the temporary domestic water supply to the 1A instrument air compressor. The hose was routed to a decontamination pad, but was not in use. Use of the hose could have impacted the adequacy of the cooling water supply to the 1A instrument air compressor, causing a trip of the compressor on high temperature. This would be an unnecessary challenge to operations to maintain stable operating conditions. A similar concern regarding the loss of the same temporary cooling water supply was discussed in IR 254/265-92016, paragraph 10, and was made an open item (254/92016-03(DRP)). This further occurrence will also be tracked under that open item number. These two occurrences of poor activity control on a balance-of-plant system which could challenge plant operations were of concern to the inspectors.

b. Engineered Safety Features (ESF) Systems

Accessible portions of ESF systems and components were inspected to verify: valve position for proper flow path; proper alignment of power supply breakers or fuses for proper actuation on an initiating signal; proper power supply to components required by TS or the final SAR; and the operability of support systems essential to system actuation or performance through observation of instrumentation and/or proper valve alignment. The inspectors also visually inspected components for leakage, and proper lubrication and cooling water supply. The inspectors' review did not identify any discrepancies.

c. Radiation Protection Controls

The inspectors verified that workers were adhering to health physics procedures for dosimetry, protective clothing, frisking, and posting, and randomly examined radiation protection instrumentation for use, operability, and calibration. No problems concerning radiation protection practices were identified.

d. Security

The inspectors, by sampling, verified that persons in the protected area (PA) displayed proper badges and had escorts if required; vital areas were kept locked and alarmed, or guards posted if required; and personnel and packages entering the PA received proper search and/or monitoring.

e. Housekeeping and Plant Cleanliness

The inspectors monitored the status of housekeeping and plant cleanliness for fire protection and protection of safety related equipment from intrusion of foreign matter. Recent housekeeping tours and resident inspector plant tours have identified a decline in plant housekeeping. The licensee is aware of this decline and is assessing improvement needs.

The inspectors also monitored various records, such as tagouts, jumpers, shift logs and surveillances, daily orders, maintenance items, various chemistry and radiological sampling and analyses, third party review results, overtime records, quality assurance and/or quality control audit results, and postings required per 10 CFR 19.11.

No violations or deviations were identified.

6. Monthly Maintenance Observation (62703)

Station maintenance activities 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 TS.

The following items were considered during this review: the limiting conditions for operation were met while components or systems were removed from and restored to service; approvals were obtained prior to initiating the work; functional testing and/or calibrations were performed prior to returning components or systems to service; activities were accomplished by qualified personnel; and proper radiological and fire prevention controls were implemented.

The following specific maintenance activities were observed and reviewed:

Unit 0

Q00939 Installation of 250VDC Battery System for Emergency Bearing Oil Pump (EBOP)

Unit 1

Q02880 Install TBCCW Lines to Instrument Air Compressors
Q00980 Unit 1 Reactor Vessel Transmitter (LT1-646A) A Channel Calibration

Unit 2

Q72748 2B Condensate Pump Motor Changeout

Observations

On December 14, 1992, during preparations for reactor vessel transmitter calibration performed under Work Request Q00980, an instrument mechanic (IM) performed an unauthorized activity. The IM assigned to perform the transmitter calibration, identified to the job foreman that a tygon tube, used for vessel indication during unit shutdowns, was still connected to the transmitter. The IM foreman contacted the operations department, to notify them of the problem. The operations shift foreman responded to remove the tygon, which was a temporary alteration, and, after the tygon was removed, to double verify the removal. The job foreman relayed this information to the IM performing the work. After completing the transmitter calibration, the IM reconnected the tygon tubing, intending to notify the foreman of the need to permanently remove the tubing. The reinstallation was performed even though the IM had no instructions or authorization to do so. The IM subsequently was assigned another job. Neither the IM foreman nor the operations shift engineer were informed that the tygon tubing had been reattached. Based on the double verification of temporary alteration's removal, the operations department assumed the temporary alteration was disconnected.

Following reinstallation of the tygon tubing, the selected reactor vessel level indication (channel A) indicated a decreasing level. The feedwater system responded correctly to the erroneous indication, and began increasing feedwater flow. The unit nuclear station operator noted the increasing feedwater flow and decreasing level, recognized it

as a possible instrument error due to training on the simulator, and switched control to the B channel, which indicated normal level. The feedwater system promptly returned to normal. Operator response was considered prompt and appropriate. Following the event, the tygon tubing was permanently removed, the temporary alteration and the specific work request were properly closed out.

IM's

Inspector evaluation of the event identified the ~~ims~~ unauthorized installation of the tygon tubing and failure to communicate the activity to operations or IM supervision as the root cause of the event. The operations shift engineer reliance on a non-supervisory person to ensure the temporary alteration was permanently removed and documented, and the IM foreman's failure to follow up on activities accomplished during the transmitter calibration were considered contributing causes to the event.

The unauthorized installation of the tygon tubing without authorized instructions is considered a violation of 10 CFR Part 50, Appendix B, Criterion V (254/92028-02(DRP)).

One violation was identified.

7. Monthly Surveillance Observation (61726)

The inspectors observed surveillance testing required by TS during the inspection period and verified that testing was performed in accordance with adequate procedures, that test instrumentation was calibrated; that results conformed with TS and procedure requirements and were reviewed by personnel other than the individual directing the test; and that deficiencies identified during the testing were properly resolved by the appropriate personnel.

The inspectors witnessed portions of the following test activities:

Unit 0

QOS 6600-1 Emergency Diesel Generator (EDG) Monthly Load Test

Unit 1

QCOS 1300-5 Quarterly RCIC Pump Operability Test

QCOS 201-8 Vessel Hydro

QCOP 1000-5 Shutdown Cooling Startup and Operation

QCTS 500-1 Integrated Primary Containment Leak Rate Test (IPCLRT)

QOS 6500-3 4 Kv Bus 14-1 Undervoltage Functional Test

QTS 110-1 Emergency Core Cooling System Simulated Automatic Actuation and Diesel Generator Auto-Start

QCOS 1300-7 RCIC Manual Initiation Test
Control Rod Drive Friction Testing

Unit 2

QCTS 920-12 Reactivity Anomaly Test

QCOS 700-7 Weekly Power Operation APRM Function Test

QOS 6600-1 EDG Monthly Load Test

"A" RHR Heat Exchanger Special Test to Help Determine
Fouling Mechanism

Surveillances were performed as required. Operations and technical staff personnel performed the surveillances in a competent manner.

No violations or deviations were identified.

8. Refueling Activities (60710)

During the inspection period, the Unit 1 refueling outage was completed. The unit was synchronized to the grid on December 16, 1992. The outage schedule was well planned and executed, and was considered a marked performance improvement over previous outages. Additionally, outage performance reflected a decrease in personnel errors and engineered safety feature actuations over previous outages.

A summary of major activities completed during the outage included:

- a. Permanent repair of vessel shroud access hole covers.
- b. Installation of main transformer backfeed capability.
- c. Completion of TMI inadequate core cooling instrumentation.
- d. Preventive maintenance for a majority of the major electrical buses.

No violations or deviations were noted.

9. Training Effectiveness (41400, 41701)

The effectiveness of training programs for licensed and non-licensed personnel was evaluated by the inspectors, by witnessing performance of surveillance, maintenance, and operational activities. Except for violation issues noted, personnel appeared to be knowledgeable of tasks being performed. In general, activities performed indicated an effective training program.

No violations or deviations were identified.

10. Report Review (71707)

During the inspection period, the inspectors reviewed the licensee's monthly performance and monthly station performance update reports for November 1992. The inspectors confirmed that the information provided met the requirements of TS 6.6.A.3 and Regulatory Guide 1.16.

No violations or deviations were identified.

11. Reactor Scram Due to Main Steam Isolation Valve (MSIV) DC Solenoid Failure (93702)

On January 7, 1993, Quad Cities Unit 2 scrambled from 100 percent power at 10:08 a.m. CST. The scram was caused by failure of the dc solenoid

for the A outboard MSIV. The licensee was in the process of swapping power feeds to the B reactor protection system (RPS) bus. During the transfer, ac power to the MSIV solenoids was interrupted, allowing the 2A MSIV to close upon dc solenoid failure. The resultant pressure increase caused a neutron flux spike and tripped the A RPS system. With the B RPS already deenergized, the full scram logic was satisfied.

The plant responded to the scram as expected, with the following exceptions: 1) the source range and intermediate range instrumentation failed to automatically insert, and were inserted manually, 2) the A recirculation system automatic runback on low feedwater flow was slower than expected, 3) the feedwater pumps ran out and tripped on low net positive suction head due to the standby condensate booster pump being unavailable for automatic start, and 4) the B feedwater regulating valve locked up at approximately 63 percent open. The effect of these items on the plant recovery was minimal. The licensee placed the unit in cold shutdown at approximately 5:00 p.m. CST on January 7, 1993.

Operator action in response to the event was considered prompt and appropriate. The unit remained offline to effect repairs of the above mentioned items. The failed dc solenoid was sent offsite for analysis to determine its failure mode. During the subsequent unit startup problems with high turbine vibrations were encountered. The unit was shutdown to investigate the cause of the high vibrations. Investigations identified the cause to be a bowed turbine rotor due to turning gear and indication problems. The licensee repaired the turning gear indication. The inspectors had no concerns with this event.

No violations or deviations were identified.

12. Violations For Which "Notice of Violation" Will Not Be Issued

The NRC uses the Notice of Violation (Notice) to formally document failure to meet a legally binding requirement. However, because the NRC wants to encourage and support licensee's initiatives for self-identification and correction of problems, the NRC will not issue a Notice if the requirements set forth in 10 CFR Part 2, Appendix C, Section VII.B.2 were met. A violation of regulatory requirements identified during the inspection for which a Notice will not be issued is discussed in paragraph 3.g.

13. 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 January 11, 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.