

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report Nos. 50-254/94005(DRP); 50-265/94005(DRP)

Docket Nos. 50-254; 20-265

License Nos. DPR-29; DPR-30

Licensee: Commonwealth Edison Company
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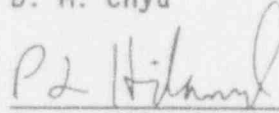
Facility Name: Quad Cities Nuclear Power Station, Units 1 and 2

Inspection At: Quad Cities Site, Cordova, Illinois

Inspection Conducted: February 8 through March 23, 1994

Inspectors: C. G. Miller
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Approved By:


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4/21/94
Date

Inspection Summary

Inspection from February 8 through March 23, 1994 (Report Nos. 50-254/94005(DRP); 50-265/94005(DRP))

Areas Inspected: Routine, unannounced safety inspection by the resident and regional inspectors of licensee action on previously identified items; follow-up of events; operational safety verification; monthly maintenance observation; monthly surveillance observation; engineering and technical support; temporary instruction; report review; management meetings; new fuel inspection; regional request; and temporary instruction review.

Results: An executive summary follows.

EXECUTIVE SUMMARY

Plant Operations

Operations performance in this period was mixed. Procedure adherence and good communications were evident during the Unit 1 shutdown. Operator response to an onsite fire was good. Operators returning the turbine bearing deluge system to operation did not use the procedure. This resulted in a deluge actuation for a brief period. The 1B recirculation pump controller ramped to 98% speed. This resulted in potential cavitation induced vibrations of recirculation system components for about one half-hour before operators detected the condition and stopped the pump. Some weaknesses in operator shift briefs were identified.

Maintenance and Surveillance

The performance of maintenance during the period was mixed. The licensee did not properly calibrate feedwater flow transmitters used to measure thermal power. This was considered a violation. Vendor and industry information was not followed for the transmitter calibrations. The Nuclear Tracking System items issued to track the vendor information were not effectively utilized. Testing of a motor operated valve was aborted due to test equipment problems. Testing of Transformer 11 resulted in a deluge event. Procedural precautions and schematic reviews lacked sufficient detail.

Engineering and Technical Support

Engineers were developing plans to troubleshoot the cause of the 1B reactor recirculation pump speed increase, and to evaluate potential concerns with recirculation system components. The computer room air conditioning units experienced reliability problems. After repairs were completed, plans were initiated to correct other ventilation system deficiencies. Jet pump flow oscillations detected by operators were due to missing capacitors in two jet pump flow circuits which were modified in 1987. Engineers failed to specify proper calibration procedures for feedwater flow transmitters installed as a modification in 1993. Inspectors identified the use of teflon tape on stainless steel piping which could adversely affect system operation. The licensee's attempt to solve the problem was evident, but lacked organization. The inspectors identified that the ECCS suction strainers were clean and free of debris following torus drain. Engineering support and communications in resolving the RCIC operability issue were good.

Plant Support

Numerous instances of weak radiological control, housekeeping, and safety practices were identified at the beginning of the refueling outage. These practices were indicative of a larger issue concerning control of contractors onsite.

DETAILS

1. Persons Contacted

Commonwealth Edison Company (CECo)

- E. Kraft, Site Vice President
- *G. Campbell, Station Manager
- R. Baumer, Regulatory Assurance
- D. Bucknell, Assistant Technical Staff Supervisor
- S. Childers, Acting Operations Manager
- N. Chrissotimos, Regulatory Assurance Supervisor
- D. Cook, Shift Operations Supervisor
- *M. Hayse, Site Quality Verification Audit Supervisor
- *T. Kroll, Maintenance Superintendent
- J. Kudalis, Support Services Director
- K. Leech, Security Administrator
- *A. Lewis, Assistant to Station Manager
- *B. McGaffigan, Assistant Superintendent - Work Planning
- *B. Moravec, Engineering and Nuclear Construction Site Manager
- *G. Tietz, Executive Assistant to Site Vice President
- L. Tucker, Technical Service Superintendent
- *D. VanPelt, System Engineer Supervisor
- *D. Winchester, Site Quality Verification Director

*Denotes those attending the exit interview conducted on March 23, 1994.

The inspectors also contacted several other licensee employees, including members of the engineering, operations, maintenance, and contract security staff.

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

(Closed) Unresolved Item (254/265 92008-02(DRP)): Heat exchanger blockage: On March 4, 1992, licensee inspection of the Unit 2 RHR pump room cooler heat exchangers indicated significant blockage of the tubes beyond the design margin. A licensee analysis concluded that the room coolers were not required for RHR system operation. On May 4, 1992, in a service water team inspection report, Item 92-201-06 also addressed the same operability concerns with the 2B RHR pump. The operability issue will be reviewed as part of Item 254/265 92-201-06 follow-up. This item is closed.

(Closed) Unresolved Item (254 92016-01(DRP)): Verification of plant records: This unresolved item resulted from the inspection conducted under Temporary Instruction (TI) 2515/115, "Verification of Plant Records." The TI addressed the potential for incomplete or inaccurate records at licensed facilities. The NRC reviewed this issue as an industry wide concern and summarized the results in Generic Letter (GL) 93-03, "Verification of Plant Records." Licensee review of operators' rounds identified one case where

validity of logs could not be substantiated. Personnel involved were counseled regarding rounds and log keeping requirements. No further instances of potential failure to perform operator rounds were identified at Quad Cities. Based on licensee actions taken and issuance of GL 93-03, this item is closed.

(Closed) Open Item (254/265-92025-05(DRP)): A review of cold weather preparations identified concerns with licensee action to verify that various circuits were energized. Subsequent to the initial inspection, the licensee had enhanced the cold weather preparations to include verification that circuits were energized. Therefore, Open Item 254/265-92025-05 was considered closed. However, during recent severe cold weather, systems such as the toxic gas analyzer, failed due to complications caused by the weather conditions. Licensee action to address extreme cold weather concerns is an Inspector Follow-up Item (254/265-94005-01(DRP)).

(Closed) Unresolved Item (254/265 93004-01(DRP)): On February 11, 1993, the 1/2 diesel generator was declared inoperable due to indicated low cooling water flow. Subsequent inspector investigation identified procedural adequacy, training, and poor management involvement as causal factors. A violation was issued for this item (254/93008-03). The inspectors will evaluate the corrective action for this issue as part of the violation response review. This item is closed.

(Closed) Inspector Follow-up Item (254/265 93004-04(DRP)): On January 29, 1993, a Unit 2 scram occurred due to a high reactor pressure signal. Investigation of the event identified the probable cause to be contractors bumping a sensing line. Contractor work was involved in a diesel generator cooling water pump oiler being knocked off its mount during the Fall 1993 Unit 1 maintenance outage. During Unit 1 Refueling Outage 13 (Q1R13), contractors and offsite work groups caused a unit auxiliary transformer deluge, reactor building water leaks into cable trays, and a fire in a compressor trailer. Since adequate control of contractor activities did not appear to be improving, the inspectors considered this an Unresolved Item (254/265-94005-02(DRP)), pending inspector and licensee understanding of the issue, and effective licensee resolution of the problem. This item is closed.

No violations or deviations were identified. One inspector follow-up item was identified concerning cold weather preparation. One unresolved item was identified regarding onsite control of contractor work activities.

3. Follow-up of Events (93702)

During the inspection period, the licensee experienced several events, some of which required prompt notification of the NRC pursuant to 10 CFR 50.72. In each case, the inspectors verified that the notification was

correct and timely, if appropriate, that the licensee was taking prompt and appropriate actions, that activities were conducted within regulatory requirements, and that corrective actions would prevent future recurrence. The specific events are as follows:

- February 28 An electrician received a serious shock and was transported to the hospital after contacting a 600 VDC source during elevator repairs.
- March 2 Unit 1 turbine bearings 1, 2, and 3 were deluged for a brief period after operators returned a portion of the deluge piping to service.
- March 7 Unit 2 RCIC pump failed to meet flow requirements.
- March 13 Unit Auxiliary Transformer 11 was deluged during relay testing.
- March 15 The "1B" reactor recirculation pump spuriously ramped to 98% flow with the reactor in cold shutdown.
- March 15 The "2A" inboard main steamline isolation valve failed its local leak rate test.
- March 17 Feedwater Check Valve 1-220-58B exceeded 10 CFR 50, Appendix J combined leakage criteria.
- March 17 A fire in a compressor trailer was due to arc chutes missing from an electrical contactor.

a. Transformer 11 Deluge

On March 13, 1994, with Transformer 11 stripped of all loads, Operational Analysis Department (OAD) began relay testing in accordance with Procedures QCOADS 100-3 and OADMP-1, "Protective Relay Testing." At 2:38 a.m., Transformer 11 deluge system was actuated due to relay testing. With the deluge system actuated, the fire protection system pressure dropped low enough to automatically start both diesel fire pumps. However, the 1/2 B diesel fire pump failed to start due to a failed starting relay.

The event occurred due to test personnel overlooking an auxiliary contact on the transformer electrical drawing. This contact, actuated by testing, was an input to the deluge system logic. There were no precautions in the procedure which specifically identified that a deluge system could be actuated. The procedure was generic in scope, and only required that the test engineer review the drawings before performing the circuit checks. The licensee issued problem identification form (PIF) 94-0592 to document the personnel error. The plant manager suspended relay testing until tighter controls on work was in place. The failed 1/2 B diesel fire pump was declared inoperable and the failed

starting relay was replaced. The diesel was tested and declared operable on March 17. The inspectors will continue to follow licensee actions to effectively control relay testing.

b. Recirculation Pump

On March 15 Unit 1 Loop B recirculation pump speed inadvertently increased to about 98 percent, and ran for about 30 minutes with the reactor vessel depressurized. This resulted in the probable cavitation of the recirculation jet pumps and a crud burst, causing an increase in radiation levels in the drywell and decreased visibility in the vessel. At the close of the inspection period, the vendor did not have enough information to determine what effects the cavitation induced vibration might have had on susceptible components. In order to better characterize the event, the vendor recommended actions including analysis of fatigue on susceptible components, a visual inspection of the vessel internals, a controlled cavitation test to monitor vibration of vessel components, and determination of the root cause of pump speed increase.

The licensee and vendor determined that the test could be deferred until after refueling was completed. The inspectors considered this an Inspector Follow-up Item (50-254/265-94005-03(DRP)) pending review of the licensee's root cause analysis, measures to prevent recurrence, and evaluation of affected components.

c. Compressor Trailer Fire

On March 17, an electrical fire started in a semi-trailer located in the protected area, which held an air compressor intended for use by a painting contractor. At 3:15 p.m., the control room received an emergency phone call concerning the fire. Operators in the control room entered Procedure QOA C10-12 "Fire/Explosion." The Cordova Fire Department was summoned to the site, but was not utilized. The fire was extinguished at 3:20 p.m. The inspectors observed operator and fire brigade response, and determined the response was effective and timely.

Inspections of the trailer determined that arc chutes were not in place for the air compressor circuit breaker. The arc chutes were found lying on the floor opposite the circuit breaker panel. A phase to phase short occurred when the circuit breaker was closed. The licensee continued to investigate why the arc chutes were removed.

One inspector follow-up item was identified concerning 1B recirculation pump speed increase.

4. Operational Safety Verification (71707)

The inspectors observed control room operation, reviewed applicable logs, and conducted discussions with control room operators. The inspectors verified 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 identified 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.

a. Unit Operation Summary

Unit 1

The reactor was in coastdown, operating at a maximum of 93 percent power decreasing to 85 percent prior to shutdown. On March 13, the reactor was shutdown to commence a 16-week refueling outage.

Unit 2

The unit operated at power levels up to 97 percent. On February 13, operators reduced power to about 20 percent to allow for a drywell entry to investigate the cause for increasing pressure in the RHR discharge line. Power operation continued near 97 percent for the remainder of the inspection period.

b. Shift Briefs

The inspectors identified the following weaknesses in operations shift meetings: infrequent operations management overview; inconsistencies with the scope of information presented by the Nuclear Station Operators (NSOs); lack of maintenance groups representation; and the large volume of information presented to the NSOs, some of which had little relevance to the operators on the shift to whom it was presented. The lack of management involvement, above the shift engineer (SE) level, hindered the licensee's ability to assess the adequacy of the shift briefs and express expectations of shift briefing performance. The large volume of information presented by the SEs regarding other department activities increased the difficulty for the NSO to prioritize potentially significant items which could impact unit operations. The licensee agreed that improvements were needed, and was considering changes to the meeting at the close of the inspection period. The inspectors will continue to monitor this area.

c. RCIC Valve Inoperability

On March 4, the licensee declared the Unit 1 reactor core isolation cooling (RCIC) inboard steam isolation valve (MO 1-1301 16) inoperable. Inoperability was based on recent EPRI testing which questioned valve factors used for thrust calculations on valves similar to the RCIC isolation valve. The valve was expected to function, but in some severe blowdown conditions, could not be expected to fully seat. On March 5, the licensee verbally requested, and was granted a Notice of Enforcement Discretion from Technical Specification (TS) 3.7.D for Quad Cities Unit 1. This TS would have required a valve in the RCIC steam supply line to be closed. This discretion was granted based on the safety value of keeping the RCIC system available for accident mitigation. The inspectors identified good licensee engineering support and communications with other groups in resolving the RCIC operability issue. The licensee intended to repair the RCIC valve during the refueling outage which began on March 13.

d. Computer Room Ventilation

On February 23, control room operators received the "Computer HVAC Trouble" alarm. The ventilation system provided cooling for the station computer. An operator found both computer room air conditioning units tripped. With room temperatures rising, licensee personnel de-energized the station computer to prevent damage to the computer's electrical components. Operators successfully restarted one of the two air conditioning units and re-energized the computer about 45 minutes later. The following day, the air conditioning units tripped again. The computer room temperature increased to 82 degrees F, and the computer was shut down. Licensee personnel ventilated the room with outside air to decrease room temperatures, and the computer was restarted.

The inspectors identified that in the recent past the licensee had experienced numerous problems with the reliability of the computer room air conditioning units. Repairs to both units were initiated with vendor assistance. In order to increase the system's reliability, the licensee planned to include the air conditioning equipment in the preventive maintenance program. This is considered an Inspector Follow-up Item (254/265-94005-04(DRP)) pending inspectors review of the licensee's corrective actions.

One inspection follow-up item was identified concerning computer room ventilation.

5. 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 following maintenance activities were observed and reviewed:

Unit 1

Hydrolyzing Dryer Separator Pit Drains
Q11513 Work on "1B" Control Rod Drive Motor and Gear Assembly
Functional Testing and Limit Switch Verification of MOV 1601-26 (RCIC Suction Valve from Torus)

Unit 2

Q11217 Rebuild of "2A" RHRSW Pump
Q14666 Installation of Spring Cans on "2A" RHRSW Pump LP and HP Suction Piping
Q14955 Repair Gasket Leak on 2A RHRSW Pump
Q09977 1/2 SBT System Modification

Observations

a. HPCI 2301-3 Valve MOV Testing

On February 10, the licensee performed an Interim Procedure (IP) 490, "Unit 2 high pressure coolant injection (HPCI) cold start," in an attempt to obtain information on the HPCI 2301-3 motor operated valve. The HPCI system was configured such that the valve would experience differential pressure expected during accident conditions. However, the initial test result was not obtained since a battery was missing from the test equipment. The licensee re-performed the test the following day with satisfactory results.

The inspectors identified that the licensee's other preparations for the test were good. The briefing before the test was well attended, and management oversight was sufficient in the control room during the test. Procedural adherence and communications during test performance were good.

b. Jet Pump Flow Indicator

On February 17, 1994, the licensee found that the Unit 2 jet pump flow indicator 12 was oscillating about 0.8 million pounds mass per hour (Mlb/hr). Other Unit 2 jet pump flow indicators oscillated less than 0.2 Mlb/hr. Technicians examined the jet pump flow computer 12, and found that it did not match the

equipment drawing. Specifically, a capacitor shown on the drawing was not installed in the square root converter circuit. The licensee determined that the jet pump flow circuits were modified beginning in 1987. The function of the oil dash pot in the jet pump transmitters should have been replaced with a capacitor. However, in 1989, the dash pot was removed from jet pump flow computer 12, and a capacitor was never installed.

As part of the investigation, the licensee visually inspected all jet pump square root converter circuits to ensure that the modification was completed. The licensee identified Unit 1 jet pump flow indicator 1 oscillating about 1.5 Mlb/hr. The square root converter circuit had been similarly modified, but was also missing a capacitor. The two circuits were repaired, and returned to service. The licensee attributed these errors to inadequate self-check by the technicians who performed the work in 1989, and design configuration weaknesses. The inspectors consider this a Unresolved Item (254/265-94005-05(DRP)) pending review of the licensee's configuration control program.

c. Feedwater Flow Accuracy

The inspectors reviewed the licensee's preparation for increasing reactor power following feedwater flow nozzle testing. The feedwater nozzle testing indicated that Unit 1 and Unit 2 thermal power indicated approximately 1.7 percent and 1.4 percent power, respectively, less than actual. This set up a condition of potential operation above licensed thermal power.

The inspectors questioned whether the licensee had reviewed Supplement 1 of Service Information Letter (SIL) 452, "Feedwater Flow Element Transmitter Calibration" for applicability to Quad Cities. The SIL contained information directly related to feedwater flow instrumentation and calibration. The inspectors determined that although the follow-up of the 1988 SIL had been requested by the Nuclear Tracking System, no answer had been given to address the issues of the SIL. After pulling calibration records for feedwater flow transmitters, the inspectors determined that the transmitters had not been calibrated in accordance with the Rosemount 1152 transmitter technical manual. Zero and span adjustments for high static pressure had not been performed. Supplement 1 of SIL 452 had identified these zero and span adjustments as potential errors in 1988.

The licensee had installed the Rosemount 1152 transmitters as part of a modification to the feedwater system during the Fall 1993 maintenance outages on Unit 1 and Unit 2. Engineering reviews of the modification and maintenance calibrations failed to ensure that the vendor recommended static pressure adjustment was

implemented. Failure to develop and follow proper calibration procedures for the feedwater flow transmitters was considered a Violation of 10 CFR 50, Appendix B, Criterion V "Instructions, Procedures, and Drawings." (254/265-94005-06(DRP))

The inspectors also questioned the licensee's practices of allowing average power range monitor (APRM) indicated reactor power to deviate from indicated core thermal power by two percent, prior to adjustment. On several occasions, the inspectors found the computer indicated APRM power to be more than two percent greater than core thermal power during three successive 1-hour periods. The licensee indicated that the APRM meters were considered to be more accurate than the computer indicated APRM readings. However, no work request has been written to reconcile the difference in calibration.

The licensee also indicated that deviation of up to two percent was acceptable because a two percent error in accuracy was part of the design basis for APRMs, and because APRM power trip setpoints for the reactor protection system (RPS) had been set conservatively. The inspectors identified that the two percent error was not intended to be allowed under normal operating conditions, and that the licensee had not specified the APRM gain adjustment practices as the reason for the conservative RPS setting for APRM power. The licensee's APRM gain adjustment practices were considered an Inspector Follow-up Item (254/265 94005-07(DRP)) pending inspectors and licensee review of calibration frequency and tolerances.

d. Refueling Outage

The licensee commenced Unit 1 refueling outage (Q1R13) on March 13. Major work planned for the outage, aside from refueling activities, included: reactor vessel internal inspection of jet pump beam bolts and core shroud welds; motor operated valve testing for Generic Letter 89-10 "Safety Related Motor-Operated Valve Testing and Surveillance"; torus maintenance including recoat; motor refurbishments for RHR, RHRSW, reactor recirculation, core spray, and condensate pumps; station black out bus work; eight MSIV overhauls; reactor vessel water level reference leg purge modifications; and low pressure turbine and generator overhaul.

Shutdown and cooldown activities proceeded smoothly, with the exception of a unit auxiliary transformer deluge actuation caused by personnel error during relay testing. The inspectors expressed concerns in the first week of the outage because of a increasing number of poor housekeeping, personnel safety, and radiological control practices. These occurrences, which included failure to use proper safety gear, failure to keep the work site clean and free of hazards, and weak contamination boundary and step off pad practices, were not individually significant. However, these

examples were indicative of a larger problem of contractor control. More significant contractor control events included a fire in an onsite compressor trailer caused by removal of electrical contactor arc chutes (paragraph 3.c.) and a demineralized water hose connection which came apart and leaked water into a reactor building cable tray.

The inspectors will follow the licensee's actions to adequately control contractors as part of the Unresolved Item (254/265-94005-02(DRP)) described in paragraph 2.

One unresolved item was identified concerning jet pump flow indication. One violation was identified for failure to adequately develop and follow procedures for calibrating feedwater flow transmitters. One inspector follow-up item was identified regarding APRM gain adjustment practice.

6. 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 0

6600-1 1/2 Monthly Diesel Generator Load Test

Unit 1

Thermal Performance Test for the 1A RHR Heat Exchanger

QCIS 200-15 Monthly Main Steam Line Low Pressure Calibration and Functional Test

QCIS 7600-2 Semi-Annual Unit 1 and Unit 2 Standby Diesel Generator Cardox Test

1300-1 Periodic RCIC Operability Test

QCOS 6600-1 Monthly Diesel Generator Load Test

QCTS 600-4 Drywell Personnel Airlock Local Leak Rate Test

Unit 2

IP 490 HPCI Manual Initiation Test/DP Test MO 1(2)-2301-03

IP 470 New Fuel Inspection

QCOS 6600-1 Monthly Diesel Generator Load Test

QCTS 430-2, SBT System DOP Leak Test of HEPA Filters

QCOS 1300-7 RCIC Manual Initiation Test

QCOS 1000-4 Quarterly RHRSW Pump Operability Test
QCOS 2300-1 Monthly HPCI Pump Operability Test
QCOS 4100-1 Weekly Diesel Fire Pump Test
QCOS 5750-9 ECCS Room & DGCWP Cubicle Cooler D/P Monthly Test
QCOS 6600-1 Emergency Diesel Generator Monthly Load Test

The inspectors did not identify any specific problems with the surveillances observed. No violations or deviations were identified.

7. Engineering and Technical Support (71707)

a. Teflon Tape Use

Due to concerns with possible misapplication of teflon tape identified in the industry, the inspectors reviewed teflon tape use at the station. Some industry problems included possible adverse chemical interaction between teflon tape and stainless steel piping, teflon tape potentially entering instrument air piping, and plugging of orifices.

The licensee had identified teflon tape as a potential problem, but no one work group or individual had ownership of resolving the issue. Chemistry identified possible problems of teflon tape use with stainless steel. Chemistry practice was to label tubes of teflon based on Administrative Procedure (QCAP) 700-2 "Chemical Control." The inspectors found one tube of liquid teflon in the instrument maintenance shop with a chemistry sticker stating the product was suitable for use on stainless steel and an identical tube with no chemistry sticker. In the electrical maintenance department, one tube was found with no chemistry sticker. The inspectors identified that although the problem did not appear widespread, there was no organized attempt to control and limit teflon use. The licensee was taking actions to control teflon use at the end of the inspection period. The inspectors will review this effort in future inspections.

b. Yarway Calibration Problems

The inspectors reviewed an industry problem with calibration of Yarway level indicating switches for applicability to Quad Cities. The switches actuated emergency core cooling systems (ECCS). Quad Cities had two Yarways per unit, with four switches per Yarway.

The issue had been addressed at Quad Cities several years earlier, by increasing the calibration interval to every 2 months. The problem involved the difficulty of matching the Yarway level indication to the actuation setpoint of the switches. The calibration of one switch affected the switch actuation setpoint for the other three switches. The calibration procedure was changed to incorporate verification that the other switch setpoints had not gone out-of-tolerance. The inspectors reviewed past calibration data, and no significant problems were noted.

Because of the difficulty in calibrating the switches, the station was in the process of replacing the Yarway level instruments. The proposed solution had been reviewed and accepted by the Station Long Range Planning Committee. The licensee had developed a new design, and was waiting on cost estimates from vendors.

c. Review of SBO Project

The inspectors reviewed ongoing construction work of the station blackout (SBO) project and the applicable adherence to Regulatory Guide (RG) 1.155. The inspectors determined that the licensee has established procedures to execute work activities, individuals performing quality related activities were trained, and (except where noted below) records were being maintained to furnish evidence of work activities.

The inspectors determined that the licensee had exhibited excellent controls over the equipment suppliers and the contractors. The inspectors concluded that the licensee was not compromising safety to meet the construction schedules and that prompt corrective actions were taken to resolve identified deficiencies. The inspectors considered the licensee's overall control of the SBO project, a strength.

The inspectors had the following concerns with some of the activities related to the SBO project:

- The inspectors noted that the licensee was not adequately documenting receipt inspections in accordance with RG 1.155 and the licensee's SBO procedure ADM-001. The inspectors noted that the diesel generator set, the air start equipment, and the after cooler were not receipt inspected in accordance with licensee procedures. On February 11, the licensee issued SBO project deficiency report DR-003 to correct the problem. Receipt inspection was considered a weakness.
- The SBO diesel-generators are a tandem arrangement in which a 16 cylinder diesel on one end and a 12 cylinder diesel on the other end drive the generator. The inspectors noted that the SBO diesel generators could be operated with a single diesel without adequate precautions. Since the licensee was required to meet the reliability figures stated in RG 1.155, there existed a situation where one diesel would start and the licensee would consider the start a success. In addition, the starting of one diesel would only supply about 12/28 or 16/28 of the required loads. The licensee stated that the proper cautions in the test procedures would be included to avoid the above problems.

- The inspectors noted that the licensee had installed scaffolding adjacent to the Unit 1 reserve auxiliary transformer (RAT) without specifically evaluating the potential for losing the RAT due to falling scaffolding. However, the licensee has evaluated the scaffolding for seismic considerations. The scaffolding was installed on August 23, 1993, per work request Q0608-602.

No deviations or violations were identified.

8. New fuel Inspection (60705)

On February 10, 1994, the inspectors observed new fuel inspection. Although inspection activities were performed adequately, some weaknesses were identified. The fuel move foreman filled out the nuclear material check list without using a procedure at the job site. The foreman indicated that the activity was performed numerous times in the past, and that the activity could be performed correctly without a procedure. This was an indication that management expectation concerning use of procedures was not thoroughly communicated. In addition, the required frequency of some fuel inspection items was not well defined.

9. Temporary Instruction (TI)

TI 2515/065 Item II.F.2.4; TMI Action Plan Requirements Follow-up: The inspectors observed various portions of the installation and testing of the Unit 1 and Unit 2 reactor vessel water level indication systems (RVLIS), and verified operability of the modified systems in accordance with the TI. This item is closed for Units 1 and 2.

10. Report Review

During the inspection period, the inspectors reviewed the licensee's Monthly Performance Report for February 1994. The inspectors confirmed that the information provided met the requirements of Technical Specification 6.9.1.8. and Regulatory Guide 1.16.

11. Management Meetings

On February 15, Mr. H. J. Miller, RIII Deputy Regional Administrator, and other members of NRC staff met with the Chief Executive Officer of Commonwealth Edison Company, J. J. O'Connor, and members of the Quad Cities Nuclear Station staff for the presentation of the Systematic Assessment of Licensee Performance (SALP). The previous day, Mr. Miller and NRC staff met with and conducted interviews of selected licensee managers, supervisors, and staff.

12. Regional Request

Licensee Response to Information Notice (IN) 89-77, Supplement 1, "Debris in Containment Emergency Sumps and Incorrect Screen Configurations"

The inspectors reviewed the licensee's system for tracking and accounting operational experience information in response to IN 89-77, Supplement 1. The main issue of the IN for boiling water reactors (BWR) was to check the integrity of the emergency core cooling system (ECCS) suction strainers.

Shortly after IN 89-77, Supplement 1 was issued, Bulletin 93-02, Supplement 1, "Debris Plugging of Emergency Core Cooling Suction Strainers" was issued. The bulletin required specific actions, including suction strainer inspection. The licensee incorporated the response to IN 89-77, Supplement 1 under the response to the bulletin. Commonwealth Edison Company was organizing a working group for this issue. Also, the licensee was working with the BWR owner's group on plans to issue a draft safety evaluation.

The Unit 1 torus was drained for the ongoing refueling outage in order to recoat the torus. The inspectors performed an as-found inspection of the four strainers. All strainers appeared in good condition. The licensee planned to remove the strainers to better assess the condition.

13. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance, or deviations. Unresolved items disclosed during this inspection are discussed in paragraphs 2.e. and 5.b.

14. Inspector Follow-up Items

Inspector follow-up items are matters which have been discussed with the licensee which will be reviewed further by the inspector and which involve some action on the part of the NRC or licensee or both. Inspector follow-up item disclosed during this inspection is discussed in paragraphs 2.c, 3.b, 4.c, and 5.c.

15. Exit Interview

The inspectors met with licensee representatives (denoted in paragraph 1) throughout the inspection period and at the conclusion of the inspection on March 23, 1994, to summarize the scope and findings of the inspection activities. The licensee acknowledged the inspectors' comments. The inspectors also discussed the likely informational content of the inspection report with regard to documents or processes reviewed by the inspectors during the inspection. The licensee did not identify any such documents or processes as proprietary.