

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-254/89022(DRP); 50-265/89022(DRP)

Docket Nos. 50-254, 50-265

Licenses No. DPR-29; DPR-30

Licensee: Commonwealth Edison Company
Post Office Box 767
Chicago, IL 60690

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

Inspection At: Quad Cities Site, Cordova, IL

Inspection Conducted: September 24 through November 4, 1989

Inspectors: R. L. Higgins
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Reactor Projects Section 1B

11/30/89
Date

Inspection Summary

Inspection on September 24 through November 4, 1989 (Reports No. 50-254/89022 (DRP); 50-265/89022(DRP))

Areas Inspected: Routine, unannounced safety inspection by the resident and regional inspectors of licensee actions on previous items, plant operations, radiological controls, maintenance/surveillance, emergency preparedness, security, engineering/technical support and safety assessment/quality verification.

Results: During the inspection period violations were noted in the areas of procedure compliance (refer to paragraphs 2.c, 3.c.(4), 4, 5.a.(1), 5.b.(1), and 9.a.(2) of this report), and procedure adequacy (refer to paragraphs 3.c.(3), 5.a.(2), 5.a.(3), and 9.b.(5) of this report). As noted in the cover letter, the multiple examples of violations gives rise to an overall concern regarding procedural adherence.

DETAILS

1. Personnel Contacted

- *R. L. Bax, Station Manager
- *G. Spedl, Production Superintendent
- *R. Robey, Technical Superintendent
- *T. Tamlyn, ENC Site Project Manager
- *J. Hoeller, Assistant Technical Staff Superintendent
- *J. Galligan, Corporate Nuclear Safety
- *R. Stols, Corporate Nuclear Licensing
- *M. Miller, Quality Assurance
- *T. Barber, Regulatory Assurance

*Denotes those present at the exit interview on November 3, 1989.

The inspectors also contacted and interviewed other licensee and contractor personnel during the course of this inspection.

2. Action on Previous Items (92701 and 92702)

Open Items

- a. NRC Region III management has reviewed the existing open items for the Quad Cities station and have determined that the following open items will be closed administratively due to the age of the item, and other priority work. The licensee is reminded that commitments directly relating to these open items are the sole responsibility of the licensee. NRC Region III will review licensee actions by periodically reviewing a sample of administratively closed items.
 - (1) (Closed) Generic Letter 254/84023-HH; 265/84023-HH: Reactor Vessel Water Level Instrumentation in BWRs.
 - (2) (Closed) Generic Letter 254/85007-HH; 265/85007-HH: Implementation of Integrated Schedules for Plant Modifications.
 - (3) (Closed) Open Items 254/85027-02; 265/85030-02: Review Final Approved IRSF 50.59 Evaluation.
 - (4) (Closed) Open Items 254/85027-04; 265/85030-04: Evaluate Need to Monitor Spent Resin.
 - (5) (Closed) Open Items 254/85027-05; 265/85030-05: Establish Inspection Program of Container Integrity.
 - (6) (Closed) Open Items 254/85027-06; 265/85030-06: Evaluate Need for Grating.
 - (7) (Closed) Bulletin 254/87002-BB; 265/87002-BB: Fastener Testing to Determine Conformance with Applicable Material Specifications.

- (8) (Closed) LER 254/87017-LL: High Pressure Coolant Injection System Inoperable Due to Invalid System Isolation from Failed Differential Pressure Switch.
 - (9) (Closed) Generic Letter 254/88001-GL; 265/88001-GL: NRC Position on IGSCC in BWR Austenitic Stainless Steel Piping Generic Letter 88-01.
 - (10) (Closed) Generic Letter 254/88011-GL; 265/88011-GL: NRC Position on Radiation Embrittlement of Reactor Vessel Materials and its Impact on Plant Operations.
 - (11) (Closed) Generic Letter 254/88014-GL; 265/88014-GL: Instrument Air Supply Problems Affecting Safety-Related Equipment.
 - (12) (Closed) LER 254/88014-LL: High Pressure Coolant Injection Steam Line High Flow Trip Setpoint Outside Specification Due to Inadequate Testing.
 - (13) (Closed) Open Item 265/(no other info): Flammable Spacers in Gould Batteries.
 - (14) (Closed) Generic Letter 265/85022-HH: Potential for Loss of Post-LOCA Recirc Due to Insulation Debris Blockage.
 - (15) (Closed) Noncompliance 265/87019-01: Reactor Scram Due to Inadequate Direction and Lack of Procedure.
 - (16) (Closed) LER 265/88009-LL: Unit 2 125 Volt Battery Discharge Test Failure Due to Apparent High Resistance Cable Connections.
 - (17) (Closed) Noncompliance 265/88015-06: Failure of MCC 28/29-5 Main Feed Swap-over Due to Unlabeled Lead Caused by Installation Error.
 - (18) (Closed) LER 265/88022-LL: MCC 27-1 Inadvertently Deenergized Causing the Loss of Noble Gas Monitoring Equipment Required by Tech Spec Table 3.2-6 to be Operable.
 - (19) (Closed) Unresolved Item 265/88027-02: Mispositioned Seal Water Leak Off Valve Requires Drywell Entry to Correct.
 - (20) (Closed) Unresolved Item 265/88027-03: Spurious HPCI Initiation Caused by Instrument Technicians.
 - (21) (Closed) LER 265/88027-LL: Unplanned HPCI Initiation During a Surveillance.
- b. (Closed) Noncompliances 254/85027-09; 265/85030-09: Fire Protection Deviations.

This item dealt with the lack of fire detection monitors on the refuel floor, which were required as part of the operating license. The licensee submitted to NRR justification as to why the monitors

were not required. Written approval was received from NRR stating that due to existing fire protection measures and alternate shutdown capability, the level of fire protection is acceptable. Installation of the monitors is not required. This item is closed.

- c. (Closed) Unresolved Item, 254/89020-01: Unit 1 New Fuel Bundle Tips Over.

This event is discussed in Inspection Report 254/89020(DRP); 265/89020(DRP), paragraph 3.d.(4). Further investigation revealed that the bundle tipped over because it was raised with the grapple release-engage switch in the release position, rather than in the engage position as required by step F.6.f of QFP 150-2, the Refueling Platform Operation Procedure. Failure to follow procedures is contrary to 10 CFR Part 50 Appendix B, Criterion V, and is considered to be a Violation (254/89022-01a).

One example of a violation was identified in this area.

3. Plant Operations

The inspectors, through direct observation, discussions with licensee personnel, and review of applicable records and logs, examined plant operations. The inspectors verified that all activities were accomplished in a timely manner using approved procedures and drawings and were inspected/reviewed as applicable; and that procedures, procedure revisions, and routine reports were in accordance with Technical Specifications, regulatory guides, and industry codes or standards. Additionally, the inspectors verified that approvals were obtained prior to initiating any work; activities were accomplished by qualified personnel; the limiting conditions for operation were met during normal operation and while components or systems were removed from service; functional testing and/or calibrations were performed prior to returning components or systems to service; and independent verification of equipment lineup and review of test results were accomplished. Also verified were quality control records for being properly maintained and reviewed, and parts, materials and equipment for proper certification, calibration, storage, and maintenance as applicable. The inspectors conducted frequent tours of plant facilities to observe any adverse plant conditions such as equipment malfunctions, potential fire hazards, radiological hazards, fluid leaks, excessive vibrations, and personnel errors. The inspectors' review ensured that any such issues were addressed in a timely manner with sufficient and proper corrective actions and reviewed by appropriate management personnel.

a. Engineered Safety Features System Walkdown (71710)

During plant tours of Units 1 and 2, the inspectors walked down some of the accessible portions of the High Pressure Coolant Injection (HPCI), Reactor Core Isolation Cooling (RCIC), Core Spray (CS), Residual Heat Removal (RHR), RHR Service Water, Standby Liquid Control (SLC) Systems, and Standby Gas Treatment (SGT) Systems. The inspectors also walked down the Emergency Diesel Generators (EDG) and the Station Batteries. No violations or deviations were noted.

b. Summary of Operations

Unit 1

Unit 1 was shutdown for a scheduled maintenance and refueling outage throughout the reporting period.

Unit 2

Unit 2 operated at power until October 12, 1989, when an automatic scram occurred. Unit 2 restarted on October 14, 1989, and operated at power throughout the rest of the inspection period.

c. Onsite Followup of Events at Operating Power Reactors (93702)

(1) Unit 2 Reactor Scram and Restart

On October 12, 1989, with Unit 2 at 55% power in order to perform maintenance on the main turbine's #2 stop valve limit switch, the reactor scrambled due to a turbine trip signal caused by the slow closure of the main turbine's #1, #3 and #4 stop valves to less than 90 % open. The turbine trip signal was generated because of incomplete work instructions (refer to paragraph 5.a.(2) of this report).

On October 13, 1989, Unit 2 was restarted, and on October 14, 1989, the Unit 2 main generator was reconnected to the electrical grid.

(2) Unusual Event

On October 17, 1989, licensee personnel noticed that the seismograph was alarming when they checked it to determine if the equipment had sensed an earthquake which had struck California earlier in the day. The licensee declared an Unusual Event based on the seismograph alarm. Further investigation by the licensee revealed that the seismograph had been alarming since October 4, 1989, but the alarm condition was overlooked because the log sheets used by the Equipment Attendant described the alarm condition of the previous model seismograph, the Teledyne-Geotech Model RFT-250. The previous model was replaced in September 1989 by a Teledyne-Geotech Model A-700, which displays its alarm condition in a completely different manner. Failure to provide adequate procedures is contrary to 10 CFR Part 50 Appendix B, Criterion V, and is considered to be a violation (254/89022-02b; 265/89022-02b).

(3) Improperly Placing Unit 1 Shutdown Cooling In-Service

On October 28, 1989, while placing shutdown cooling in service on Unit 1, licensee personnel noted that RHR pump discharge pressure was abnormally high. The pump was promptly shut off.

Investigation by licensee personnel revealed that the 1001-33A valve, one of the Low Pressure Coolant Injection main injection valves, was shut when it should have been open. The 1001-33A valve was subsequently opened and shutdown cooling was successfully placed in service.

Review by an NRC Resident Inspector discovered that step C.1 of QOP 1000-5, the Shutdown Cooling Startup and Operation procedure, required as an initial condition that the residual heat removal system be filled and vented in accordance with procedure QOP 1000-1, "Filling and Venting the Residual Heat Removal System after System Outage". Step F.1.t of QOP 1000-1 requires that valve 1001-33A be verified open. Failure to comply with the appropriate procedure is contrary to 10 CFR Part 50 Appendix B, Criterion V, and is considered to be a violation (254/89022-01d).

Two examples of violations were identified in this area.

4. Radiological Controls (71707)

Observations by the inspectors indicated that the licensee's performance in the area of radiological controls was good. Management remains committed to an aggressive ALARA program. Personnel exposure has been moderately higher than the targeted goal for this inspection period because several extensive, unbudgeted jobs were performed during the Unit 1 outage in areas with high background radiation levels.

Failure to Post a Radiologically-Controlled Area

On October 30, 1989, an NRC Resident Inspector and Project Inspector discovered the west entrance to the Unit 1 Low Pressure Heater Bay devoid of any radiological warning signs. Investigation revealed that the Low Pressure Heater Bay was a radiologically controlled area and should have had the appropriate warning signs. This situation developed when contractor (Basco) employees removed barriers erected for asbestos removal without notifying the Radiological Control Department. Licensee personnel promptly instituted corrective actions upon being informed of the problem. General step 2 of the Radiological Signs and Labels section of QRP 1000-1, the Radiation Protection Standards procedure, requires each controlled area to be conspicuously posted to warn personnel approaching the area from any direction. Failure to comply with the appropriate procedure is contrary to 10 CFR Part 50 Appendix B, Criterion V, and is considered to be a Violation (254/89022-01e).

Allegation Followup (AMS NO. RIII-59-A-0126)

An NRC Resident Inspector at Quad-Cities Station received a telephone call from an individual who expressed concerns about the radiation protection program at Quad-Cities Station.

A regional radiation specialist contacted the individual and made arrangements to interview the individual to obtain more specific

information about the concerns. The individual failed to show up at the appointed place as arranged. Subsequent attempts made to contact the alleged on November 1 were unsuccessful.

The inspector reviewed licensee procedures and standards, interviewed licensee and contractor personnel, and reviewed selected records to determine the validity and consequences of the concerns expressed by the alleged. The allegations are presented and discussed below.

Allegation: Airborne radioactivity samples are not routinely taken in the drywell.

- ° Discussion: Records indicate that 2-3 hour grab air samples are routinely collected on each major drywell level each 12-hour shift. These samples meet procedural requirements. Job specific air samples are discussed below.
- ° Finding: The number and frequency of routine air sample collection in the Unit 1 drywell during the current outage appears adequate. The allegation was not substantiated.

Allegation: Periodic airborne radioactivity samples are not taken of work being performed in the drywell which has the potential of creating airborne contamination.

- ° Discussion: The licensee establishes respiratory use requirements by collecting breathing zone air samples at the start of each task such as welding, grinding, cutting etc., on materials with low levels of contamination or potential contamination; respiratory protective device use is required if the potential is high. In accordance with procedural requirements, the licensee does not require use of respiratory protective devices when welding new pipe, and when grinding new metal on weld overlays in the drywell. The need for job specific air sampling is based on breathing zone air sample results, surface contamination levels, and knowledge of the work to be performed. The inspector reviewed air sampling requirements for selected ongoing work in the drywell; no problems were noted.
- ° Finding: The allegation was not substantiated. Since the alleged could not be contacted to provide more specific information, the inspector reviewed selected ongoing drywell work and found no problems with the prescribed air sampling requirements.

Allegation: Personnel working in the drywell who are not wearing respiratory protection routinely enter areas of the drywell in which respiratory protection is required.

- ° Discussion: In general, contamination levels in the drywell are low because of past and present decontamination efforts. Respirators are conservatively assigned based on evaluation of a specific job; not all drywell jobs require them. If potential airborne hazards are very localized, respirators may be required only for persons working in the immediate vicinity but not for persons passing by or working

further away. If the potential hazard extends to a wider area, more extensive controls are imposed including restricting access to individuals wearing appropriate respirators. The inspector selectively reviewed records of whole body counting of persons who worked in the drywell during the current outage; there is no indication that they were inadequately protected from airborne radioactive materials; no uptake greater than the 40 MPC-hour control measure was noted.

- Finding: The allegation was not substantiated. Absent more specific information, it could not be determined if individuals were violating respiratory requirements in the drywell. However, the inspector was able to determine that no significant personnel intakes had been detected, which provides assurance that workers have not been exposed to significant airborne radioactive concentrations.

Allegation: Contractor personnel have been given the impression that contractor supervision does not want them to contact the NRC, and to limit NRC interface to answering questions posed by NRC personnel.

- Discussion: During discussions with licensee and contractor radiation protection supervisors, the inspector learned that a contractor supervisor had instructed persons working under his direction not to "bother" NRC inspectors and take up their time, but to answer questions asked of them by an NRC inspector; the supervisor said he did not believe he used the word "contact" when he instructed person he supervised, nor did he intend to imply that they were not to contact the NRC. During discussions, the supervisor said that he now realizes that his instructions to persons he supervises could have been misinterpreted to mean they should not "contact" the NRC.
- Finding: The allegation was substantiated. Contractor personnel involved could have been given the "impression" that they should not contact the NRC. This matter was discussed with licensee radiation protection supervisors, who stated that the contractor supervisor would appropriately reinstruct persons working under his direction.

Allegation: A named individual has a body burden exceeding one. The allegor believes this body burden was caused by high airborne activity in the drywell which was unmonitored. (The terminology used by the allegor "a body burden exceeding one" is not technically rigorous terminology. It is assumed that the allegor was referring to one (100 percent) maximum permissible body burden (MPBB).)

- Discussion: The inspector reviewed whole body counts for the named individual conducted during employment. The individual began temporary employment at Quad Cities Station in mid-August 1989. The individual was whole body counted before working in the controlled area; this entrance whole body count indicated about two percent MPBB for Co-60. In early October the individual, became contaminated around the nose and mouth while working in the drywell; an investigation was conducted by the licensee, and the individual was whole body counted. The investigation revealed that the contamination occurred when the individual wiped away face moisture with the sleeve

of protective clothing being worn. After several showers and recounts over one and one half days, initial elevated counts resulting partly from external contamination or ingestion were reduced to about three percent MPBB for Co-60. The individual was whole body counted nearly daily until termination at the end of October at which time whole body counts had diminished to near the two percent MPBB Co-60 identified on the entrance count in mid-August 1989.

- Finding: The named individual appears to have received an uptake of Co-60 (at Quad-Cities) that resulted in about a one percent increase in body burden. This represents a small intake, less than the 40 MPC-hour control measure prescribed in 10 CFR 20.103, and therefore, was not a violation of regulatory requirements nor does it represent a significant problem. The licensee's evaluation of the named individual's uptake appeared good, and did not identify an unmonitored airborne radioactive material source in containment.

Allegation: On several occasions, Radiation Work Permit (RWP) clothing requirements were not complied with.

- Discussion: Licensee records indicate that persons working in RWP clothing have infrequently been discovered wearing clothing other than prescribed on their RWP, such as the wrong gloves or head covering; going beyond the limits of the RWP, such as operating equipment or valves while in minimum RWP clothing during tours/observations; or doing work on the wrong RWP. When such misuse of RWP clothing results in a personal contamination event, the event is investigated to identify root cause, and appropriate corrective actions initiated. Also, station and contractor radiation protection personnel are instructed to observe RWP clothing use and initiate appropriate corrective measures if misuse is noted. Ultimately, individual workers and their foremen are held responsible to follow RWP requirements.
- Finding: The allegation that RWP clothing requirements are occasionally not met was substantiated. However, licensee efforts to identify such misuse and take appropriate corrective measures appears acceptable. The misuse does not appear extensive and no significant consequences of the occasional misuse were noted.

Allegation: Copies of applicable RWPs are not maintained at the drywell access point.

- Discussion: Quad-Cities does not routinely maintain RWPs at a drywell access point. RWPs are maintained at major controlled area access points where they are viewed and signed by persons entering the controlled area; the frequency of viewing and signing depends on the type of RWP under which a person is entering. According to licensee personnel, not maintaining RWPs at the drywell access has not been shown to have an adverse affect on work performed in the drywell.

- Finding: The allegation was substantiated. However, there is no regulatory or procedural requirement to maintain RWPs at the drywell access point, and it is fairly common not to do so.

Allegation: A frisker station was missing a frisker. The workers, upon entering the frisking station, noticed that the frisker was missing and therefore did not survey themselves for contamination after leaving the drywell. There was no radiation control technician present to ensure that the personnel performed contamination surveys of themselves.

- Discussion: According to the licensee, friskers occasionally fail to operate properly and are removed from service. Such is the case near the drywell. There are, however, five frisking stations within thirty feet of the drywell access point, and, according to the licensee, some are available for use at all times. The licensee's NGET program includes instructions on frisking requirements and places responsibility on individuals to follow frisking requirements. Radiation protection personnel spot check to verify that frisking requirements are met. According to the licensee, few problems concerning failure to frisk are identified.
- Finding: The allegation could neither be substantiated nor denied. The inspector was unable to obtain more specific information concerning the allegations from the alleged. Therefore, the inspector's review primarily concerned the operability of friskers during the time of the inspection. All friskers observed appeared to be operating properly, and personnel were following frisking requirements. Training provided to personnel stresses the requirement to frisk for contamination, and operable friskers were apparently available nearby. Therefore, occasional inoperability of a frisker is not cause for undue concern.

5. Maintenance/Surveillance

a. Monthly Maintenance Observation (62703)

Station maintenance activities of safety-related and nonsafety-related systems and components listed below were observed/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 items were considered during this review: the limiting conditions for operation were met while components or systems were removed from service; approvals were obtained prior to initiating the work; activities were accomplished using approved procedures and were inspected as applicable. Additional items reviewed included verification that functional testing and/or calibrations were performed prior to returning components or systems to service; quality control records were maintained; and activities were accomplished by qualified personnel. Also, the inspectors verified that parts and materials used were properly certified; radiological controls were implemented; and fire prevention

procedures were followed. Work requests were reviewed to determine the status of outstanding jobs and to assure that priority is assigned to the maintenance of safety related equipment which may affect system performance.

The Resident Inspector reviewed the torus sludge removal and coating procedures. The inspector attended a portion of Q. A. required qualification training presented to the torus underwater coating applicators (divers) before initially starting the work. The training appeared to be comprehensive and well planned. The inspector also noted that the instructor made good use of visual aids including a video tape filmed underwater in the Unit 1 torus.

(1) Violation of Out-of-Service Procedure (Licensee Identified)

On September 14, 1989, the Unit 1 main generator disassembly was delayed because a racked-out generator field breaker physically blocked the removal of the generator housing (dog house). In order to remove the dog house, the generator field breaker had to be physically removed or racked in. Though there was an Out-of-Service (OOS) card attached to the generator field breaker requiring it to be racked out, the licensee discovered the generator field breaker racked in and the dog house removed. The licensee performed an investigation into the violation of the OOS which identified a contractor foreman as the most likely individual responsible. This individual was released in a reduction-in-force. Step C.1.a of QAP 300-14, the Equipment Out-of-Service Procedure, states that equipment with an out-of-service card attached shall not be operated under any circumstances. Failure to comply with the appropriate procedure is contrary to 10 CFR Part 50, Appendix B, Criterion V, and is considered to be a violation (254/89022-01b).

(2) Unit 2 Reactor Scram

Investigation by licensee personnel revealed that the Unit 2 scram which occurred on October 12, 1989, (refer to paragraph 3.c.(1) of this report) was due to the omission of a step in the work instructions requiring the removal of two additional connections. Failure to remove these connections caused the number 1, 3 and 4 main turbine stop valves to shut, which caused the main turbine to trip and the reactor to scram. Failure to provide adequate work instructions is contrary to 10 CFR Part 50 Appendix B, Criterion V, and is considered to be a violation (265/89022-02a).

(3) Improper Reassembly of the Safety Valve Discharge Piping

On October 24, 1989, a NRC inspector in the Unit 1 drywell noted discharge piping to safety relief valves being improperly installed. The licensee was made aware of the problem and immediately issued a stop work order to the

contractor involved. Investigation by the Resident Inspectors revealed that the work instructions being used by the workers reassembling the piping did not provide sufficient detail to ensure that the discharge piping was reassembled properly. The licensee did a thorough review of open work packages to ensure that detailed work instructions were available and that adequate QA and QC hold points were included. The licensee instituted enhanced oversight by licensee personnel of contractor work and then lifted the stop work order. Failure to provide adequately detailed work instructions is contrary to 10 CFR Part 50 Appendix B, Criterion V, and is considered to be a Violation (254/89022-02c).

(4) Portions of the following activities were observed/reviewed:

- (a) Unit 2 feedwater discharge line weld repair.
- (b) Asbestos removal.
- (c) Painting of the Unit 1 torus interior.
- (d) Unit 1 main turbine refurbishment.
- (e) Unit 1 drywell mirror insulation installation.
- (f) Unit 1 main generator disassembly and inspection.
- (g) Standby gas treatment system flow control valve repairs.
- (h) Unit 1 HPCI turbine overhaul.
- (i) Unit 1 main generator rotor repair.
- (j) Unit 1 control rod drive discharge valve maintenance.
- (k) Unit 1 source range monitor 23 repair.
- (l) Overhaul of motor operated valve 1-1001-18A.
- (m) Scaffolding inspection.

b. Monthly Surveillance Observation (61726)

The inspectors observed surveillance testing required by the Technical Specification and verified that testing was performed in accordance with adequate procedures, that test instrumentation was calibrated, and that limiting conditions for operation were met. Additionally, the inspectors observed/verified the removal and restoration of the affected components, and that test results conformed with Technical Specifications and procedure requirements. Also, the inspectors verified that the results were reviewed by personnel other than the individual directing the test and that any deficiencies identified during the testing were properly reviewed and resolved by appropriate management personnel.

(1) Unit 2 Diesel Generator Trips on Overspeed

On October 7, 1989, when shutting down the Unit 2 diesel generator at the conclusion of an operability surveillance, the diesel generator output breaker was opened prior to reducing the diesel generator's load to zero, causing the diesel generator to overspeed. Subsequent examination revealed that the diesel generator components were not damaged. The diesel was then restarted and successfully completed an operability surveillance. Step F.2.a of surveillance procedure QOS 6600-1, "Diesel Generator Monthly Load Test", requires the diesel generator load to be reduced to zero prior to opening the diesel generator output breaker. Failure to comply with the appropriate procedure is contrary to 10 CFR Part 50 Appendix B, Criterion V, and is considered to be a violation (265/89022-01c).

(2) Portions of the following activities were observed/reviewed:

- (a) Unit 1 single rod criticality verification.
- (b) Unit 1 control rod drive friction testing.
- (c) Unit 2 HPCI valve operability.
- (d) Unit 2 RCIC valve operability.
- (e) Unit 2 HPCI monthly pump operability.
- (f) Unit 2 RCIC monthly pump operability.
- (g) Unit 1 local leak rate testing.
- (h) Unit 1 integrated leak rate test preparation.
- (i) Unit 2 APRM heat balance.
- (j) Unit 1 RHR service water vault penetration pressurization test.
- (k) Unit 1 refueling.

Four examples of violations were identified in this area.

6. Emergency Preparedness (71707)

During the inspection period the Resident Inspectors and DRP Project Inspector inspected the Quad Cities Technical Support Center (TSC) and the Emergency Operations Facility for adequacy. The inspectors also monitored a monthly test of the Emergency Notification System (ENS) phone. All three Resident Inspectors attended the licensee's annual meeting with off-site emergency response organizations.

No violations or deviations were noted.

7. Security (71707)

During the inspection period the inspectors toured the plant and the Central Alarm Station to assure that security programs were being properly implemented. The inspectors verified that security barriers were in place, security doors were operable, the security force was alert, personnel correctly displayed their identification badges and visitor access was being properly controlled.

Regulatory Effectiveness Review Preparation

The inspectors monitored the licensee's use of contractor personnel to assess the adequacy of protected area and vital area security in preparation for the Regulatory Effectiveness Review. The inspectors observed several drills conducted by the licensee using contracted players. The inspectors also monitored the licensee's addition to and modification of the site security barriers.

No violations or deviations were noted.

8. Engineering/Technical Support

a. Installation and Testing of Modifications (37828)

The feedwater hydrogen addition modification for both units is continuing. The feedwater hydrogen addition modification for Unit 2 is projected to be completed prior to the Unit 2 outage.

The Unit 2B RHR service water modification was completed and the RHR service water systems for both units were returned to normal.

b. Revised Procedures Not Prepared

A modification was performed in September 1989 which replaced the Teledyne-Geotech Model RFT-250 seismograph with a Teledyne-Geotech Model A-700 seismograph. Procedure revisions were not in place to reflect this modification when it was completed, causing a seismograph alarm to remain undetected for 13 days (refer to paragraph 3.c.(3) of this report).

9. Safety Assessment/Quality Verification

a. Evaluation of Licensee Quality Assurance Program Implementation (35502)

During the inspection period the Senior Resident Inspector observed quality control and quality assurance personnel inspecting the welding of the blank flange for the 2B RHR service water pump discharge piping modification. The Resident Inspector observed Non-Destructive Examination (NDE) of Reactor Feedpump recirc to condenser pipe welds, by a contractor, and also observed the licensee quality control personnel examining radiographs to confirm the contractor's interpretation of the results.

(1) Quality Assurance Program Effectiveness

The Project Inspector performed an evaluation of the effectiveness of the licensee's implementation of its Quality Assurance (QA) Program. The overall effectiveness of the licensee's QA program implementation is directly related to the licensee's performance in specific functional disciplines, which is reflected in its operating history. Therefore, operating history is an indication of the effectiveness of the implementation of the QA program. The evaluation was conducted by review of the following:

- (a) NRC inspection reports for the past 12 months.
- (b) SALP reports for the past 2 years (SALP 6 and SALP 7).
- (c) Outstanding regional Open Items List (OIL).
- (d) Licensee corrective actions for NRC inspection findings.
- (e) Licensee event reports for the past 12 months.

In addition to the above review, the facility's recent operating history and the collective knowledge of the resident and region based inspection staffs were also used in the evaluation report.

Quad Cities operating history has shown improvements in the number of ESF actuations and LERs:

<u>ESF Actuations</u>	<u>LERs</u>
1987 - 2	1987 - 55
1988 - 2	1988 - 47
1989 thru Sept. - 1	1989 thru Sept. - 17

No negative performance trends were noted and based upon the review the inspector has concluded that the QA program at Quad Cities is effectively implemented.

(2) Inconsistencies in Radiographic Film Location Markings

On November 1, 1989, an NRC Project Inspector noted that the first two sets of radiographic film of weld 1-09 in the Unit 1 Reactor Water Cleanup System, which had been repaired twice, did not correspond to the last two sets of film. It was determined by licensee Quality Control personnel after extensive study that the first two sets of film were radiographed using different location markings, different permanent markings, and different orientation than the last two sets of film, but the film sets could be correlated to each other by comparing physical weld features. Step 4.9.3.3 of procedure NDT-A, "Radiographic Examination", specifies that location markings shall be maintained on the part during the radiography

and that permanent markings shall be used. Failure to comply with the appropriate procedure is contrary to 10 CFR Part 50 Appendix B, Section V, and is considered to be a violation (254/89022-01f).

b. In-Office Review of Written Reports of Nonroutine Events at Power Reactor Facilities (90712) and Onsite Followup of Written Reports of Nonroutine Events at Power Reactor Facilities) (92700)

During the inspection period the resident inspectors reviewed incidents such as scrams, ESF actuations and component failures which occurred at other plants. The resident inspectors informed the licensee of the details of all events which potentially had applicability to components or activities at Quad Cities.

LER Review

- (1) (Closed) LER 254/89001, Revision 00: Unit 1 RCIC Valve MO-1301-48 Failure to Open Due to Binding of the Torque Switch of the Motor Operator.

The issues covered by this LER have been incorporated into LER 254/89001, Revision 01. This item is considered closed.

- (2) (Open) LER 254/89001, Revision 01: Unit 1 RCIC Valve MO-1301-48 Failure to Open Due to Binding of the Torque Switch of the Motor Operator.

This item will remain open pending the installation of a replacement valve for the 1-1301-49 valve.

- (3) (Closed) LER 254/89002, Revision 01: Total Combined LLRT Interval for AO 1-203-1A exceeded 3.25 Times the Specified Surveillance Interval.

This revision only changes the format of the original LER, which was closed in Inspection Report 88028. Therefore this item is considered closed.

- (4) (Closed) LER 254/89012, Revision 00: Control Valve Fast-Acting Solenoids Inoperable Due to a Ground on the No. 2 Control Valve Test Limit Switch.

This is a voluntary LER which is discussed in paragraph 3.d.(2) of report 254/89020; 265/89020.

It was initially declared an unusual event, because it was believed that the inoperable fast acting solenoids had disabled a required scram function. Further investigation determined that the inoperable fast acting solenoids would prevent the control valves, stop valves and combined intermediate valves from fast closing. Without the fast closure of the valves, the scram function is not needed because its purpose is to

anticipate the plant transients caused by fast closing the valves. The scram signals generated when the stop valves reach 90% were functional. The fast closure function is a turbine protection feature in case of a sudden loss of generator load.

All short term corrective actions have been completed, and long term corrective actions are being tracked by the Nuclear Tracking System. This item is considered closed.

- (5) (Closed) LER 254/89015, Revision 00: Offgas Isolation.

On September 16, 1989, Unit 1 was in the refuel mode at 0 percent power. Both Off Gas radiation monitors were downscale, which is the normal condition when the reactor is in the refuel mode. The Operations Department completed a power supply changeover of the Reactor Protection Bus from the Motor Generator Sets to bus 15-2. During the transfer, the loss of power to the "A" off gas monitor caused its contacts to open giving an upscale radiation signal, thus starting the off gas timer. The timer completed its 15 minute cycle and as designed isolated the Off Gas System. The reactor operator, realizing that conditions did not warrant Off Gas isolation, promptly reset the Off Gas System.

The Off Gas System isolation was determined to be due to inadequate procedures, QOP 7000-1 "Reactor Protection System MG Set" and QOA 7000-2 "120 EAC Reactor Protection System Bus Failure". Failure to provide adequate procedures is contrary to 10 CFR Part 50 Appendix B, Section V, and is considered to be a violation (254/89022-02d).

- (6) (Open) LER 254/89014, Revision 00: Exceeding Technical Specification Leakage Limits for Containment Isolation Valves and Main Steam Isolation Valves - Causes to be Determined.

The causes and corrective actions have not been determined. This item will remain open until the supplemental report is issued which documents the causes and corrective actions.

- (7) (Open) LER 265/87012, Revision 01: Loss of Drywell to Torus D/P.

This item will remain open pending installation of more reliable position indicators which was delayed by design problem failures.

- (8) (Closed) LER 265/87009, Revision 01: Scram Due to Main Transformer "C" Phase Fault.

All corrective actions have been implemented. This item is considered closed.

- (9) (Closed) LER 254/87017, Revision 01: HPCI System Inoperable Due to Failed Differential Pressure Transmitter.

All corrective actions are being implemented. This item is considered closed.

- (10) (Closed) LER 265/88009, Revision 01: RCIC Inoperable Due to a Failed Governor Actuator.

All corrective actions have been implemented. This item is considered closed.

- (11) (Open) LER 254/89016, Revision 00: New Fuel Assembly Dropped in Fuel Pool.

This event was discussed in paragraph 3.d.(4) of Inspection Report 254/89020(DRP); 265/89020(DRP). Based upon additional licensee investigation, this event was determined to be a Violation (refer to paragraph 2.c of this report). This event will remain open pending the addition of a new main grapple hoist interlock to the Unit 2 refuel bridge, and the addition to the Fuel Handling Procedures of tolerances on the digital height readout for a fully seated fuel bundle.

- (12) (Open) LER 265/89005, Revision 00: Unit 2 Reactor Scram from Turbine Stop Valve Closure.

This event is discussed in paragraphs 3.c.(1) and 5.a.(2) of this report. This item will remain open pending the performance of a wiring field verification on main turbine related equipment.

c. Evaluation of Licensee Self-Assessment Capability (40500)

During the inspection period Resident Inspectors attended several On-Site Review Committee meetings. Relevant issues addressed included the movement of Control Rods K-9 and M-7 from position 00 to 02 while loading fuel channels into the applicable cells. The committee was properly staffed, adequately addressed the relevant issues, and demonstrated adequate concern for reactor safety.

The Resident Inspectors attended the exit meeting conducted by the offsite Quality Assurance audit team. The audit appeared to be thorough and the findings were presented to site personnel in a professional manner.

d. Resolution of NRC Compliance Bulletin 87-02 (TI 2500/027)

The inspectors reviewed the licensee's followup action on a nonsafety related bolt (sample DN-4) that was found to have a carbon content below the specification limits. The licensee found that due to a typographical error the carbon content of the bolt

was erroneously reported as 0.11%, instead of 0.44% which is within specifications. The discovery of the error was reported to Mr. W. E. Morgan in a letter from V. Stavropoulos dated January 14, 1988.

One example of a violation was identified in this area, however, the examples given through this report are, in aggregate, two violations which apply to this area. One for failure to adhere to procedure; the other for inadequate procedures.

10. Management Meetings - Entrance and Exit Interviews (30703)

The inspectors met with licensee representatives (denoted in Paragraph 1) throughout the inspection period and at the conclusion of the inspection on November 3, 1989, and summarized the scope and findings of the inspection activities.

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/processes as proprietary.