U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No. 50-254/84-14(DRP); 50-265/84-12(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: August 5 through September 5, 1984

Inspectors: A. L. Madison

A. D. Morrongiello

J. C. Bjorgen

Approved by: N. J. Chrissotimos, Chief
Projects Section 2C

9-14-84
Date

Inspection Summary

Inspection on August 5 through September 5, 1984 (Reports No. 50-254/84-14(DRP); 50-265/84-12(DRP))
Areas Inspected: Routine, unannounced inspection by the resident inspectors of previous inspection findings; operational safety; maintenance; surveillance; Licensee Event Reports; IE bulletin followup; IE information notice followup; reactor scrams; procedures; review of licensee's monthly performance report; followup on regional requests; followup on headquarters requests; independent inspection effort; and the emergency preparedness exercise. The inspection involved a total of 196 inspector-hours onsite by three NRC inspectors including 40 inspector-hours onsite during off-shifts.
Results: No items of noncompliance or deviations were identified.

DETAILS

1. Persons Contacted

*N. Kalivianakis, Superintendent
T. Tamlyn, Assistant Superintendent for Operations
D. Bax, Assistant Superintendent for Maintenance
L. Gerner, Assistant Superintendent for Administration
*D. Gibson, Quality Assurance Supervisor
*G. Spedl, Technical Staff Supervisor
R. Roby, Senior Operating Engineer

The inspector also interviewed several other licensee employees, including shift engineers and foremen, reactor operators, technical staff personnel and quality control personnel.

*Denotes those present at the exit interview on September 5, 1984.

2. Action on Previous Inspection Findings

(Closed) Open Item (254/84-04-02(DRP)): Perform testing required by LER 84-01, Unit 1. The inspectors verified that required testing had been performed satisfactorily.

(Closed) Open Item (254/84-04-03(DRP)): Repairs to MSIVs per LER 84-04, Unit 1. The inspectors verified that required repairs were performed and leak rate testing results of the MSIVs were satisfactory.

(Closed) Noncompliance (254/84-11-06 and 265-84-10-06(DRP)): Severity Level V violation concerning fire stops. The licensee's immediate actions were sufficient to ensure the operability of the fire stop, and the licensee's ongoing surveillance program is adequate to prevent recurrence. No further actions are required.

No items of noncompliance or deviations were identified in this area.

3. Operational Safety Verification

a. The inspectors observed control room operations, reviewed applicable logs and conducted discussions with control room operators during the month of August. The inspectors verified the operability of selected emergency systems, reviewed tagout records and verified proper return to service of affected components. Tours of Unit 1 and 2 reactor buildings and turbine buildings were conducted to observe plant equipment conditions, including potential fire hazards, fluid leaks, and excessive vibrations and to verify that maintenance requests had been initiated for equipment in need of maintenance. The inspectors by observation and direct interview verified that maintenance requests had been initiated for equipment in need of maintenance. The inspectors by observation and direct interview verified that the physical security plan was being implemented in accordance with the station security plan.

The inspectors observed plant housekeeping/cleanliness conditions and verified implementation of radiation protection controls. During the month of August, the inspector walked down the accessible portions of the residual heat removal system (RHR) of Unit 1 and 2 to verify operability. The inspector also witnessed portions of the radioactive waste system controls associated with radwaste shipments.

These reviews and observations were conducted to verify that facility operations were in conformance with the requirements established under technical specifications, 10 CFR, and administrative procedures.

b. Unit 1 was in cold shutdown for a refueling outage at the beginning of the report period. The outage was completed and the unit was returned to criticality on August 16, 1984. All systems responded normally during the startup, except for the mechanical vacuum pumps. During the process of pulling vacuum on the condenser, both sets of steam jet air ejector valves were found to be open, although the south valves indicated closed. Further investigation determined that the valves were improperly installed during a recent design modification performed during this outage. The capability to isolate the condenser was always available by the automatic function of the chimney isolation valve on a main steam line high radiation signal. Therefore, the safety significance of this event is minimal. However, this is an example of problems associated with design modifications and their review and as such, has been given to the Division of Reactor Safety, Region III, for consideration during their review of this area. Resolution of this event will be tracked as an open item (254/84-14-01(DRP)).

Unit 1 experienced two scrams from power (August 25 and 28, 1984) and these are discussed in paragraph 9 of this report. The unit remained at power at the close of this report period.

Unit 2 was in operation at the beginning of the report period and, except for minor reductions in power to accommodate testing and load dispatcher requests, remained at full power throughout the report period.

No items of noncompliance or deviations were identified in this area.

4. Monthly Maintenance Observation

Station maintenance activities of safety 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; functional testing and/or calibrations were performed prior to returning

components or systems to service; quality control records were maintained; activities were accomplished by qualified personnel; parts and materials used were properly certified; radiological controls were implemented; and, fire prevention controls were implemented.

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

The following maintenance activities were observed/reviewed:

Unit 1

Repairs to main steam isolation valves
Repairs to RHR shutdown cooling valves

Unit 2

Repairs to 2 'B' feedwater pump

No items of noncompliance or deviations were identified in this area.

5. Licensee Event Reports Followup

Through direct observations, discussions with licensee personnel, and review of records, the following event reports were reviewed to determine that reportability requirements were fulfilled, immediate corrective action was accomplished, and corrective action to prevent recurrence had been accomplished in accordance with technical specifications.

a. Unit 1

(i) RO 84-07, dated April 30, 1984, RHR service water vault penetrations were found to leak.

Repairs and necessary testing have been completed satisfactorily and a supplemental report was issued August 23, 1984.

(ii) RO 84-12, dated August 2, 1984, Standby gas treatment system trains declared inoperable due to loss of heaters.

At 8:45 a.m., on August 2, 1984, the reactor building vent system (VA) isolated. In the moments that followed, the 'B' standby gas treatment system (SBGTS) train auto-started, its heater tripped, and when the 'A' train was started, its heater tripped. With both SBGTS trains inoperable, the 36 hour clock was started for this Limiting Condition of Operation, as stated in technical specification 3.7.B.1.b, and a General Station Emergency Plan (GSEP) Unusual Event was declared. Unit 1 was shutdown for a refueling outage and Unit 2 was in the RUN mode at 100 percent core thermal power.

The cause of this deviation was an incorrect electrical wiring drawing dating back to the time of initial plant construction. As a temporary modification for a different concern, jumpers were installed around contacts of the temperature switches which trip the SBGTS train heaters on high temperature. The proper terminal designations were filled in on the jumper sheets, but due to an incorrect electrical print, the jumpers were installed on the wrong terminals. This resulted in a short circuit path on the secondary side of the control transformer in each train's heater logic circuit.

Each train's wiring diagrams were corrected to make them reflect what exists in the plant. The installation of new transformers was completed at 5:35 p.m. and the GSEP Unusual Event was terminated. The jumpers that bypass the high temperature switches were then reinstalled in the proper places. The 'A' SBGTS train was put on and run for ten hours and then the 'B' train was successfully operated for ten hours.

This event was previously discussed in IE report No. 254/84-11(DRP) and 265/84-10(DRP) and an open item was assigned pending completion of the resident inspector's investigation. This item is considered another example of problems associated with design changes and modifications and as such, has been forwarded to the Division of Reactor Safety (DRS) for inclusion in their review of this area. This LER and the associated open item will remain open pending completion of the DRS review.

(iii) RO 84-14, dated August 8, 1984, MO 1-1001-29A and 1-1001-29B failure.

While the unit operator was in the process of starting the shutdown cooling mode of the residual heat removal system (RHRS), it was discovered that both the 1-1001-29A and 1-1001-29B low pressure coolant injection (LPCI) valves would not open. The core spray, feedwater, and control rod drive systems were all available to maintain level, and therefore the consequences of this event were minimal. Residual heat removal could be accomplished using the reactor water clean-up system and the RHRS with the 1-1001-29B valve 25 percent open.

The cause of this deviation was personnel error. In 1980, a modification was installed consisting of a change in the logic circuits of the 1-1001-29A and 1-1001-29B valves in order to prevent them from hammering. Hammering is a condition where the motor continues to drive the valve closed until a high torque signal stops the motor. When the motor is stopped, the valve relaxes and the high torque signal is removed. With a close signal still present, the motor then again tries to drive the valve closed, until high torque is experienced. This chattering continues until the breaker is tripped or the close signal is removed.

The logic design was originated from the Station Nuclear Engineering Department (SNED). The station was sent schematic diagrams of the designs and the wiring diagrams were then originated at the station. A mistake was made when the wiring diagrams were drawn. In 1980, these logic circuits were installed as per the faulty wiring diagrams and thus, the possibility of hammering still existed. No problems were experienced with these two valves after the installation of the modification however, because the motor operators present on the valves at that time were equipped with brakes. The intended purpose of the brakes was to stop the momentum of the valve at the desired valve position. An additional feature of the brakes was that the brakes also stopped the valve at the end of its closed stroke and thus, prevented the hammering condition. During the past refueling outage, these motor operators were replaced with environmentally qualified motors. Brakes could not be qualified for environmentally qualified motors and these valve operators were analyzed as not requiring brakes.

When these valves experienced a continuous closed signal, as from a control switch held in the closed position, or a LPCI loop select signal during surveillance testing, they continuously tried to close and both valve stems were damaged. The damage was such that the valves would no longer fully open.

They were visually inspected immediately and the 29B valve was found to be 25 percent open and the 29A valve was found fully closed. The wiring diagram problem affected only the anti-hammer circuit of the 29A and 29B valves and did not affect their LPCI loop select logic.

The valve stems were removed and replaced. The wiring correction was done and the wiring diagram was corrected to reflect that change. The station investigated all circuits modified under the anti-hammering modifications on Unit 1 and 2. The Unit 2 1001-29A and B were found to have the same mistake and were corrected. Additionally, all motor operators and motors that were replaced to comply with Bulletin 79-01B, "Environmental Qualifications," were checked to determine if the wiring diagrams and schematics were functionally the same. This investigation revealed that the high pressure coolant injection (HPCI) valve did not have the anti-hammering circuit installed. The anti-hammering circuit was installed under a separate modification.

b. Unit 1

(i) RO 84-09, dated August 5, 1984, Reactor scram.

On August 5, 1984, at 1044 hours, the 2B reactor protection system (RPS) motor-generator(MG) set feed breaker tripped resulting in the loss of the 2B RPS bus. This caused the AC solenoid valves, which supply instrument air to the outboard main steam isolation

valves (MSIV) operators, to become deenergized and closed. Two of the DC solenoid valves, which also supply air to the MSIV operators, were failed, thereby causing the A and B outboard MSIVs to close. The reactor then scrammed from 50 percent core thermal power due to the channel B scram signal present, caused by the loss of the motor-generator set, and the channel A scram signal, caused by the 10 per cent from full open condition of the A and B outboard MSIVs. All reactor safety systems were operable and functioned as designed, therefore, the safety implications of this event were minimal.

The immediate corrective action was to place the reactor in a safe condition. Work requests were initiated to replace the DC solenoids and to repair the motor on the 2B RPS MG set. The 2B RPS bus was maintained on its back-up power supply while work was performed on the 2B RPS MG set motor. The AC and DC solenoids on the inboard and outboard MSIVs were then satisfactorily tested on both units.

No items of noncompliance or deviations were identified in this area.

7. IE Bulletin Followup

For the IE Bulletins listed below the inspector verified that the written response was within the time period stated in the bulletin, that the written response included the information required to be reported, that the written response included adequate corrective action commitments based on information presentation in the bulletin and the licensee's response, that licensee management forwarded copies of the written response to the appropriate on-site management representatives, that information discussed in the licensee's written response was accurate, and that corrective action taken by the licensee was as described in the written response.

(Closed) 79-05, "Nuclear Incident at Three Mile Island."
No response was required.

(Closed) 79-05A, "Nuclear Incident at T.M.I., Supplement."
No response was required.

(Closed) 79-06, "Review of Operational Errors at T.M.I."
No response was required.

(Closed) 79-06A, "Review of Operational Errors and System Misalignments Identified at T.M.I."
No response was required.

(Closed) 79-06B, "Review of Operational Errors and System Misalignments Identified at T.M.I."
No response was required.

(Closed) 79-13, "PWR Pipe Cracking."
Not applicable to Quad-Cities Station.

(Closed) 79-17, "Pipe Cracks in Stagnant Borated Water Systems at PWRs."
Not applicable to Quad-Cities Station.

(Closed) 79-20, "Package of Low Level Waste."
Applicable to material licensees only.

(Closed) 79-21, "Potential for Inaccurate Level Indication Following LOCA at PWRs."
Not applicable to Quad-Cities Station.

(Closed) 79-22, "Possible Leakage of Tubes of Tritium Gas used in Timepieces for Luminosity."
Not applicable to Quad-Cities Station.

(Closed) 79-25, "Failure of Westinghouse BFD Relays in Safety-Related Systems."
The subject relays are not in use in safety-related applications at the Quad-Cities Station.

(Closed) 80-04, "Analysis of a PWR Main Steam Line Break with Continued Feedwater Addition."
Not applicable to Quad-Cities Station.

(Closed) 80-12, "Decay Heat Removal System Operability."
Not applicable to Quad-Cities Station.

(Closed) 80-18, "Maintenance of Adequate Minimum Flow Through Centrifugal Charging Pumps Following Secondary Side High Energy Line Rupture."
Not applicable to Quad-Cities Station.

(Closed) 80-22, "Automation Industries, Model 200-520-008 Sealed-Source Connectors."
Not applicable to Quad-Cities Station.

No items of noncompliance or deviations were identified in this area.

8. IE Information Notice Followup

For the IE Information Notices (IEN) listed below, the inspector verified that the information notice was received by licensee management, that a review for applicability was performed, and that if the information notice were applicable to the facility, appropriate actions were taken or were scheduled to be taken.

a. IEN 84-37: "Use of Lifted Leads and Jumpers During Maintenance or Surveillance Testing." The licensee already uses the suggestions listed in the notice.

b. IEN 84-39: "Inadvertent Isolation of Containment Spray Systems." Notice involves PWR containment sprays and is not applicable to Quad-Cities.

c. IEN 84-40: "Emergency Worker Doses." A copy of the notice was forwarded to the Rad/Chem supervisor and a copy placed in required reading. Quad-Cities has correctly interpreted 10 CFR 20 and does count emergency dose as part of quarterly dose and accumulated exposure.

d. IEN 84-41: "IGSCC in BWR Plants." This item is covered under IE Bulletin 83-02.

e. IEN 84-42: "Equipment Availability for Conditions During Outages not Covered by Technical Specifications." A copy of this notice was placed in the required reading. The diesel generators and auxiliary systems required for their operability are required by technical specifications to be operable for shutdown and refuel conditions.

f. IEN 84-44: "Environmental Qualification Testing of Rockbestos Cables." While Quad-Cities relief valve and safety valve acoustic monitor cables are made by Rockbestos, these cables are being replaced under the environmental qualification program in response to IE Bulletin 79-01B.

g. IEN 84-45: "Reversed Differential Pressure Instrument Sensing Lines." A copy of this notice was forwarded to operation required reading, instrument mechanics and technical staff.

h. IEN 84-46: "Circuit Breaker Position Verification." A review of procedures confirmed that they conform to suggestions in the notice. Additionally, after racking in a breaker, it is operated to verify that it closes and that the equipment works.

i. IEN 84-47: "Environmental Qualification Tests of Electrical Terminal Blocks." A copy of the notice was forwarded to mechanical maintenance for their review and information.

j. IEN 84-49: "Intergranular Stress Corrosion Cracking Leading to Steam Generator Tube Failure." Steam generator tube failures not applicable to Quad-Cities.

k. IEN 84-50: "Clarification of Scope of Quality Assurance Programs for Transport Packages Pursuant to 10 CFR 50, Appendix B." The corporate quality assurance (QA) manual addresses the QA of shipments. This notice has been forwarded to QA, Rad/Chem supervisor, and to Operations.

l. IEN 84-51: "Independent Verification." A copy of this notice was given to training and placed on the required reading list.

m. IEN 84-52: "Inadequate Material Procurement Controls on the Part of Licensees and Vendors." A copy of the notice was given to technical staff and QA for their review and information.

n. IEN 84-53: "Information Concerning the Use of Locktite 242 and Other Anaerobic Adhesive/Sealants." Locktite 242 is not used at Quad-Cities in this application.

o. IEN 84-54: "Deficiencies in Design Base Documentation and Calculations Supporting Nuclear Power Plant Design." Station engineering has reviewed this. In addition, copies have been routed to Quality Control and technical staff for information.

p. IEN 84-55: "Seal Table Leaks at PWRs." This notice is not applicable to Quad-Cities.

q. IEN 84-56: "Respirator Users Notice for Certain 5-Minute Emergency Escape Self-Contained Breathing Apparatus." Quad-Cities does not use the Robert Shaw RAM-5 respirator. A copy of the notice was sent to the Rad-Chem supervisor for information.

r. IEN 84-58: "Inadvertent Defeat of Safety Function Caused by Human Error Involving Wrong Unit, Wrong Train, or Wrong System." Quad-Cities has used separate unit keys where applicable and color-coded paperwork to help minimize these types of errors. Additionally, this topic is periodically brought up at various meetings to re-emphasize its importance. A copy of the notice was sent to Operations and Maintenance.

s. IEN 84-62: "Therapy Misadministrations to Patients Undergoing Cobalt-60 Teletherapy Treatments." Not applicable to Quad-Cities.

t. IEN 84-66: "Undetected Unavailability of the Turbine-Driven Auxiliary Feedwater Train." Not applicable to Quad-Cities.

No items of noncompliance or deviations were identified in this area.

9. Reactor Scrams

a. Unit 1

(i) On August 8, 1984, while in cold shutdown for a refueling outage, the unit experienced a spurious reactor scram, group 2 and 3 isolation, and emergency core cooling system (ECCS) initiation due to personnel error by instrument technicians. RHR and core spray were secured and vessel level returned to normal. All systems responded as required.

(ii) On August 25, 1984, the unit experienced an APRM Hi-Hi reactor scram from approximately 70 percent power. The cause of the scram was an electrical fault in the electrohydraulic control (EHC) system, making the bypass valves open rapidly and the control valves to respond by shutting. The resultant pressure spike caused the scram. A high vessel level turbine trip also resulted. All other systems functioned normally and no ECCS systems initiated.

During the subsequent shutdown, three spurious low vessel level scrams occurred due to a fault in the new GEMAC system.

Following repairs to the GEMAC and EHC systems and a drywell entry to determine the cause of high temperatures on the Target-rock relief valve, the unit was returned to power on August 26, 1984. All systems performed normally on the startup, except IRM No. 14 which became stuck in the core due to mechanical problems. These problems were subsequently corrected.

(iii) While at power, on August 28, 1984, the unit was scrammed due to personnel error. While restoring main steam line flow instrumentation following surveillance, the instrument technician performing the surveillance inadvertently initiated a pressure transient within the instrumentation line. This caused all main steam line flow monitors to sense excess flow and this resulted in the scram.

No ECCS systems were actuated and the unit was returned to power later the same day.

No items of noncompliance or deviations were identified. However, the incidence of two spurious scrams, due to personnel errors on the part of instrument technicians, is an item of concern. The licensee is currently subject to a Regulatory Improvement Program (RIP), the purpose of which is, in part, to reduce personnel errors. The progress of this program is still under review by Region III and will be documented in subsequent reports.

The licensee acknowledged the inspectors concerns and reiterated their intentions to attain error-free operation.

10. Procedures

For the procedures listed below, the inspector verified that they were in accordance with technical specifications, and changes were made to reflect both licensee revisions and NRC requirements.

QAP 300-2, Rev. 12	Conduct of shift operations
QAP 300-5, Rev. 4	Shift change for shift control room engineer/shift technical advisor
QIP 730-2, Rev. 3	TIP ball valve removal, repair, and installation
QIS 16-1, Rev. 3	HPCI steam line high flow calibration
QIS 16-2, Rev. 5	HPCI steam line high flow functional Test
QMS 700-2, Rev. 11	LPCI and containment cooling modes of RHRS logic test

QOA 900-8-E, Rev. 9	901-8(902-8) Row E Annunciator Procedures
QOP 202-5, Rev. 10	Recirculation system shutdown of one pump to hot standby
QOS 1100-S1, Rev. 3	Standby liquid control system demineralized water recycle and flow rate meter accuracy test data sheet operating cycle
QOS 1100-S3, Rev. 2	Standby liquid control system demin water recycle test data sheet with flow indicator
QOS 1300-3, Rev. 2	RCIC motor operated valve operability test
QOS 1000-2, Rev. 9	Residual heat removal system (RHRS) pump operability
QOS 1000-4, Rev. 11	RHR service water pump flow rate testing
QOS 1000-S2, Rev. 4	RHR and RHR service water pump operability data sheet
QOS 1000-S4, Rev. 9	RHR service water pump flowrate testing data sheet
QTS 110-1, Rev. 10	Unit 1 emergency core cooling system simulated automatic actuation and diesel generators auto-start surveillance
QTS 110-3, Rev. 10	Unit 2 emergency core cooling system simulated automatic actuation and diesel generators auto-start surveillance
SQGA-1, Rev. 2	Loss of coolant (fast leak; large or small line break inside containment)
SQGP 1-1, Rev. 3	Normal unit startup
SQGP 1-2, Rev. 3	Unit startup to hot standby
SQGP 1-3, Rev. 3	Unit hot standby to power operation
SQGP 1-S1, Rev. 3	Master startup checklist
SQGP 1-S2, Rev. 2	Minimum startup checklist
SQGP 2-1, Rev. 2	Normal unit shutdown
SQGP 2-2, Rev. 2	Flooding the reactor vessel
SQOA 1600-1, Rev. 2	High drywell pressure

SQOA 1400-1, Rev. 2	Core spray system automatic initiation
SQOA 202-4, Rev. 2	Loss of flow - single pump
SQOA 201-6, Rev. 2	Post-LOCA inadequate core cooling
SQOA 010-5, Rev. 2	Plant operation with the control room inaccessible

No items of noncompliance or deviations were identified in this area.

11. Review of Licensee's Monthly Performance Report

The inspector reviewed the licensee's monthly performance reports of Units 1 and 2 for the month of July, 1984.

Areas covered by the report were amendments to Technical Specifications, summary of corrective maintenance performed on safety related equipment, Licensee Event Reports, operating data tabulations, and refueling information. The report was reviewed for compliance with Technical Specification 6.6.A.3.

No items of noncompliance or deviations were identified in this area.

12. Followup Regional Requests

Region III requested additional inspection concerning IE Bulletin 81-03, "Flow Blockage of Cooling Water to Safety System Components by Corbicula Sp.(Asiatic Clam) and Mytilus Sp.(Mussel)" in response to generic concerns noted in NUREG/CR-3054.

The licensee had responded to this bulletin on May 26, 1981, February 8, 1983, and March 28, 1983, indicating that evidence of minor Corbicula fouling had occurred in some non-safety related systems but that no fouling was observed in any safety related system components. No provision had been made for biocide treatment of any systems not already so equipped; however, an inspection schedule was in place.

The inspectors verified that inspection schedules and performance testing of safety system components were in accordance with the submittals noted above.

Since the plant began using the Mississippi River as the heat sink instead of the spray canals, inspections have shown a reduced incidence of Corbicula. Also, the licensee has applied with the EPA to use Bromine in addition to Hypochlorite in their biocide applications to provide better treatment of Corbicula.

It appears that inspection schedules and performance testing of safety system components are performed frequently enough to detect and prevent flow blockage by Corbicula and that planned biocide applications are adequate for Corbicula control. However, the licensee is exploring other methods such as heat to control Corbicula infestation.

No items of noncompliance or deviations were identified in this area.

13. Followup on Headquarters Request

On August 12, 1984, the reactor vessel cavity seal failed at the Haddam Neck Nuclear Station, draining approximately 100,000 gallons of water into the containment. Inspection and Enforcement (I & E) Headquarters requested the resident inspectors to review the event for applicability to Quad-Cities.

The cavity seal at Quad-Cities is a metal boot seal utilizing manways for access to the drywell. This seal was part of the original design of the station and is not comparable to the seal used at Haddam Neck. No failures of this seal have been experienced at Quad-Cities. However, should the seal fail for any reason, sufficient water will remain to cover any fuel in the vessel and the fuel storage pool by design. Further, should a fuel bundle be raised in transit from vessel to pool, it is believed that sufficient time will exist to return the fuel bundle to a safe position (approximately five minutes) before the cavity is completely drained (approximately 20 minutes in the case of Haddam Neck). This issue is still under review by I & E Headquarters for any generic implications and as a possible unreviewed safety issue.

No items of noncompliance or deviations were identified in this area.

14. Independent Inspection Effort

a. On August 24, 1984, Salem Nuclear Station reported unqualified gages on personnel air locks supplied by Chicago Bridge and Iron Company (CB&I)and the degradation of containment integrity as a result. While the personnel air locks at Quad-Cities are manufactured by CB&I, the gages have never been used and their lines are blank flanged.

b. On August 27, 1984, Browns Ferry Nuclear Station reported that solenoid air actuators supplied by ASCO Solenoid Company was installed with reversed air ports during an overhaul prior to their December 1983 startup. Onsite review at Quad-Cities showed that these solenoids were in use at the station, but that receipt inspections by Quality Control personnel and bench testing by instrument technicians eliminated the possibility of this occurrence at Quad-Cities Station.

15. Emergency Preparedness Exercise

On August 28, 1984, Quad-Cities Station participated in the annual Emergency Preparedness Exercise. All state, county, and local emergency response agencies participated. This was the first nighttime drill for Quad-Cities Station and the State of Iowa and Illinois. The resident inspectors were onsite during portions of the exercise. A full report on the exercise is contained in inspection reports 254/84-09 and 265-84-08.

16. Open Items

Open 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. An open item disclosed during the inspection is discussed in Paragraph 3.

17. Exit Interview

The inspector met with licensee representatives (denoted in Paragraph 1) throughout the month and at the conclusion of the inspection on September 5, 1984, and summarized the scope and findings of the inspection activities. The licensee acknowledged the inspectors' concerns.