April 28, 2003

Mr. John L. Skolds, President
Exelon Nuclear
Exelon Generation Company, LLC
Quad Cities Nuclear Power Station
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2
NRC INTEGRATED INSPECTION REPORT 50-254/03-03; 50-265/03-03

Dear Mr. Skolds:

On March 31, 2003, the U. S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Quad Cities Nuclear Power Station, Units 1 and 2. The enclosed report documents the inspection findings which were discussed on April 1, 2003, with Mr. Tulon and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, the inspectors identified four issues of very low safety significance (Green). Three of these issues were determined to involve violations of NRC requirements. However, because of their very low safety significance and because they have been entered into your corrective action program, the NRC is treating these issues as Non-Cited Violations in accordance with Section VI.A.1 of the NRC's Enforcement Policy.

If you contest the subject or severity of these Non-Cited Violations, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulation Commission, ATTN: Document Control Desk, Washington, DC 20555-001, with a copy to the Regional Administrator, U.S. Nuclear Regulatory Commission - Region III, 801 Warrenville Road, Lisle, IL 60532-4351; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the Resident Inspector Office at the Quad Cities Nuclear Power Station.

Since the terrorist attacks on September 11, 2001, the NRC has issued two Orders (dated February 25, 2002, and January 7, 2003) and several threat advisories to licensees of commercial power reactors to strengthen licensee capabilities, improve security force readiness, and enhance access authorization. The NRC also issued Temporary Instruction 2515/148 on August 28, 2002, that provided guidance to inspectors to audit and inspect licensee implementation of the interim compensatory measures (ICMs) required by the plants during calendar year (CY) '02, and the remaining inspections are scheduled for completion in CY '03. Additionally, table-top security drills were conducted at several licensees to evaluate

the impact of expanded adversary characteristics and the ICMs on licensee protection and mitigative strategies. Information gained and discrepancies identified during the audits and drills were reviewed and dispositioned by the Office of Nuclear Security and Incident Response. For CY '03, the NRC will continue to monitor overall safeguards and security controls, and conduct inspections, and will resume force-on-force exercises at selected power plants. Should threat conditions change, the NRC may issue additional Orders, advisories, and temporary instructions to ensure adequate safety is being maintained at all commercial power reactors.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Mark A. Ring, Chief
Branch 1
Division of Reactor Projects

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

Enclosure: Inspection Report 50-254/03-03; 50-265/03-03

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REGION III

Docket Nos:	50-254; 50-265
License Nos:	DPR-29; DPR-30
Report No:	50-254/03-03; 50-265/03-03
Licensee:	Exelon Nuclear
Facility:	Quad Cities Nuclear Power Station, Units 1 and 2
Location:	22710 206th Avenue North Cordova, IL 61242
Dates:	December 29, 2002 through March 31, 2003
Inspectors:	K. Stoedter, Senior Resident Inspector M. Kurth, Acting Senior Resident Inspector D. Chyu, Fire Protection Engineer D. Nelson, Radiation Specialist M. Parker, Senior Reactor Analyst T. Ploski, Senior Emergency Preparedness Inspector R. Lerch, Project Engineer P. Pelke, Reactor Engineer T. Steadham, Reactor Engineer in Training
Approved by:	Mark Ring, Chief Branch 1 Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000254/2003-003, 05000265/2003-003; Exelon Nuclear; on 12/29/02-03/31/03, Quad Cities Nuclear Power Station; Units 1 & 2. Fire Protection, Non-Routine Evolutions, and Event Followup.

This report covers a 3-month period of baseline resident inspection and announced baseline inspections on emergency preparedness and radiation protection. The inspection was conducted by Region III inspectors and the resident inspectors. The inspection identified four Green findings, of which three were considered Non-Cited Violations. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be "Green" or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. Inspector-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

Green. The inspectors identified a finding involving a Non-Cited Violation for the licensee's failure to maintain 80 feet of spatial separation between a flammable liquids storage cabinet and the furthest diesel fire pump as required by the Quad Cities Operating Licenses and the Fire Protection Program.

The inspectors concluded that this finding was more than minor because the improper cabinet placement and potential storage of a large amount of flammable materials could lead to a fire which could engulf both fire pumps and cause a loss of the non safety-related service water system and the circulating water system. In addition, this finding was associated with the initiating events cornerstone attribute of protecting the plant against external factors and impacted the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions. The finding was of very low safety significance based on the determination that the actual stored flammable liquids, if inadvertently ignited, would not produce sufficient radiative heat flux to damage both fire pumps at the same time. (Section 1R05.1)

Green. The inspectors identified a finding involving a human performance error that resulted in the loss of the safety function of the Unit 2 reactor core isolation cooling system. An individual inadvertently bumped the system's trip throttle mechanism while removing scaffolding from the area.

The inspectors determined that the finding was more than minor because it impacted the mitigating systems attributes and objectives. In particular, the finding affected the availability, reliability, and capability of the reactor core isolation cooling system, a system that responds to initiating events to prevent undesirable consequences. The finding was of very low safety significance based on the low probability of core damage for the analyzed sequences. (Section 1R14.2)

Green. The inspectors identified a finding involving a Non-Cited Violation on Unit 1 for the failure to properly latch the potential transformer fuse drawers for bus 14 and bus 14-1. This resulted in the fuse drawers dropping open and causing the automatic initiation and loading of the emergency diesel generator due to loss of voltage on the emergency bus. Multiple operations department procedures failed to contain instructions to ensure that the potential transformer fuse drawers for the safety-related busses were properly latched. Unit 1 was unknowingly vulnerable to a loss of voltage condition on two safety-related busses during a seismic event.

The finding was more than minor because it was associated with attributes in both the mitigating systems and initiating events cornerstones and also affected each cornerstone objective. For example, a seismic event could cause both drawers to open resulting in a loss of both busses; a scram, and the loss of two residual heat removal service water pumps. The finding was of very low safety significance primarily due to the low initiating event frequency associated with a seismically induced loss of offsite power. (Section 4OA3)

Green. The inspectors identified a finding on Unit 2 involving a Non-Cited Violation for the failure to reset the primary containment isolation logic after testing the low pressure coolant injection valves which caused the inoperablility of both residual heat removal loops for more than 18 days.

The inspectors determined that the failure to reset the isolation logic after testing was more than minor because it involved the configuration control, equipment performance, and human performance attributes of the mitigating systems cornerstone, and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding was of very low safety significance based on the operators' abilities to recover the system during accident conditions, if required for injection, and the low probability of core damage for the analyzed sequences. (Section 4OA3)

B. Licensee-Identified Violations

Licensee-Identified Violations of very low safety significance have been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the corrective action program. These violations and corrective action tracking numbers are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Unit 1 began the inspection period operating at maximum achievable power. On January 5 reactor power was reduced to 80 percent for approximately 24 hours to recover two previously inoperable control rods. Reactor power was reduced to 68 percent between January 26 and 27 to perform a control rod pattern adjustment and install a Furmanite® clamp on a leaking moisture separator drain tank flange. Toward the end of January, reactor power was reduced to 60 percent to conduct flux suppression testing on a leaking fuel bundle and conduct maintenance of multiple condensate and feedwater pumps. Following the completion of these activities, operators restored Unit 1 to full power on February 4. Additional feedwater, condensate, and reactor recirculation system maintenance, in addition to routine control rod maneuvers, were completed during February 20-24. These activities required a reduction in Unit 1 reactor power to approximately 60 percent. Operators restored Unit 1 to full power on February 25. In addition, on February 28 through March 3, a power reduction to approximately 60 percent was performed to conduct flux suppression testing to identify additional leaking fuel bundles. On March 9, operators restored Unit 1 to full power.

Unit 2 began the inspection period operating at maximum achievable power. On January 2 an operator inadvertently reset the 2A reactor recirculation scoop tube circuitry prior to nulling the potentiometer. This action increased reactor recirculation pump speed and raised reactor power to approximately 101 percent. Operators took immediate actions to reduce pump speed, reactor pressure, and reactor power to normal levels. Following the January 2 transient, Unit 2 operated at normal power levels until January 11, when operators lowered power to 66 percent for feedwater pump maintenance and continued troubleshooting of the 2A moisture separator drain tank level anomalies. Unit 2 returned to full power on January 13. Routine power reductions for turbine valve testing and/or control rod pattern adjustments were conducted on February 7, and the unit was returned to full power conditions the same day.

1. REACTOR SAFETY

Cornerstone: Initiating Events, Mitigating Systems, and Barrier Integrity

1R04 Equipment Alignment (71111.04)

.1 Partial Walkdowns

a. Inspection Scope

The inspectors performed partial walkdowns of accessible portions of trains of risk-significant mitigating systems equipment during times when the trains were of increased importance due to the redundant trains or other related equipment being unavailable. The inspectors utilized the valve and electric breaker checklists listed at the end of this report to verify that the components were properly positioned and that support systems were lined up as needed. The inspectors also examined the material condition of the components and observed operating parameters of equipment to verify that there were

no obvious deficiencies. The inspectors reviewed outstanding work orders and condition reports associated with the trains to verify that those documents did not reveal issues that could affect train function. The inspectors used the information in the appropriate sections of the Updated Final Safety Analysis Report to determine the functional requirements of the systems.

The inspectors verified the alignment of the following trains:

- 2A Residual Heat Removal Service Water System on February 6, 2003;
- Unit 2 Reactor Core Isolation Cooling System on February 18-20, 2003; and
- Safe Shutdown Makeup Pump on March 11, 2003.

b. Findings

No findings of significance were identified.

.2 Complete Walkdown (71111.04S)

a. Inspection Scope

On March 3 through 7, 2003, the inspectors performed a complete system alignment inspection of the instrument air system. This system was selected because it was considered risk-significant in the licensee's probabilistic risk assessment. The inspection consisted of the following activities:

- a review of plant procedures (including selected abnormal and emergency procedures), drawings, and the Updated Final Safety Analysis Report to identify proper system alignment;
- a review of outstanding or completed temporary and permanent modifications to the system; and
- an electrical and mechanical walkdown of the system to verify proper alignment, component accessibility, availability, and current condition.

The inspectors also reviewed selected issues documented in condition reports to determine if they had been properly addressed in the licensee's corrective actions program. Documents reviewed during this inspection are listed at the end of this report.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

.1 Crib House Walkdown

a. Inspection Scope

The inspectors conducted a walkdown of the crib house basement and ground floor (Fire Zones 11.4.A and B) on January 8, 2003, to ensure that personnel controlled transient combustibles in accordance with procedures. The inspectors observed the condition of fire protection, fire detection, and fire suppression equipment and validated that the equipment was in working condition and free from obstructions. The inspectors reviewed the licensee's compliance with previous fire protection program commitments contained in the fire hazards analysis by comparing the commitment information with actual plant configuration. The inspectors also reviewed Condition Report 140803, "NRC Has Concern with the Amount of Grease in the Crib House," which was generated as a result of this inspection.

b. Findings

The inspectors identified one Green Non-Cited Violation involving the licensee's failure to maintain 80 feet of spatial separation between a flammable liquids storage cabinet and the furthest diesel fire pump as required by the Quad Cities Operating Licenses and the Fire Protection Program.

Prior to inspecting the crib house, the inspectors reviewed the fire protection program commitments for Fire Zone 11.4.B contained in the Quad Cities Fire Hazards Analysis Report. The inspectors noted a commitment to maintain spatial separation between any flammable liquids cabinet and the diesel fire pumps at 25 feet for one pump and 80 feet for the other pump. Administratively, the quantity of materials stored in the cabinets was also limited to less than 25 gallons of oil and less than 10 gallons of grease.

The inspectors and the fire marshall inspected the crib house flammable liquids cabinets' contents during the January 8 walkdown. The inspectors determined that the licensee was in compliance with grease and oil storage requirements. Prior compliance was questionable due to the discovery of multiple hand held grease guns and two larger grease guns, each with five gallon containers attached, inside one cabinet. The inspectors verified that neither five gallon container was full. However, the fire marshall stated that maintaining compliance with the grease and oil storage requirements had been a problem previously. The fire marshall initiated Condition Report 140803 to document this issue.

Several days later the inspectors performed an independent inspection of the crib house and determined that the distance between the storage cabinet located on the south side of the crib house and each fire pump may be inadequate. The licensee measured each distance and determined that one of the fire pumps was located within 77 feet of the flammable liquids cabinet.

The inspectors concluded that this finding was more than minor because the improper cabinet placement and storage of a large amount of flammable materials could lead to a fire which could engulf both fire pumps and cause a loss of the non-safety related service water system and the circulating water system. In addition, this finding was associated with the initiating events cornerstone attribute of protecting the plant against external factors and impacted the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions.

The inspectors evaluated this finding using Inspection Manual Chapter 0609, Appendix F, Fire Protection Significance Determination Process. The inspectors reviewed Inspection Manual Chapter 0609, Appendix F, Figure 4-1, "Screening Process Phase 1," and determined that this finding did not affect crib house fire detection and manual suppression capability, automatic suppression capability, or any crib house fire barriers. However, a loss of both fire pumps could impact the automatic suppression capability elsewhere in the plant. Because the fire was postulated to occur in the crib house, a second fire in the plant requiring automatic suppression capability was not assumed. In addition, the inspectors performed fire modeling assuming a wind-free/ventilation-free condition inside the crib house. The inspectors determined that a spill of lubricating oil or grease from the cabinet (resulting in a pool of at least 3.5 feet in diameter) would not produce sufficient radiative heat flux to damage both fire pumps at the same time. Therefore, this finding was characterized as very low risk significant (Green).

Condition 3.F of Quad Cities Operating Licenses DPR-29 and DPR-30 states that the licensee shall implement and maintain in effect all provisions of the approved fire protection program as described in the Updated Final Safety Analysis Report for the facility and as approved in the Safety Evaluation Report dated July 27, 1979, with a supplement dated February 12, 1981. The Nuclear Regulatory Commission's Safety Evaluation Report dated February 12, 1981, requires that crib house flammable liquids storage cabinets be installed at least 25 feet and 80 feet away from the two fire pumps respectively to provide spatial separation and preclude a fire in the cabinet from adversely affecting the fire pumps. Contrary to the above, on January 8, 2003, the inspectors determined that the spatial separation between a flammable liquids cabinet and the second fire pump was less than 80 feet. While the failure to maintain adequate spatial separation between the cabinet and a fire pump was a violation, this violation is being treated as a Non-Cited Violation consistent with Section VI.A.1 of the NRC's Enforcement Policy **(NCV 50-254/03-03-01; 50-265/03-03-01)**. This issue was entered into the licensee's corrective action program as Condition Report 140803.

.2 Other Quarterly Walkdowns

a. Inspection Scope

During the inspection period, the inspectors conducted in-plant walkdowns of the following risk-significant fire zones to identify any fire protection degradations:

- Fire Zones 8.2.6.A and E, Unit 1 and 2 Turbine Building Ground Floor;
- Fire Zones 11.1.3 and 4, Unit 1 and 2 High Pressure Coolant Injection Room;

- Fire Zone 25.1, Laundry, Tool, and Dry Active Waste Building;
- Fire Zone11.2.1, Unit 1 Reactor Building Southwest Corner Room - 1B Core Spray; and
- Fire Zone 11.2.3, Unit 1 Reactor Building Northwest Corner Room - 1A Core Spray.

During the walkdowns the inspectors verified that transient combustibles were controlled in accordance with the licensee's procedures. The inspectors observed the physical condition of fire suppression devices and passive fire protection equipment such as fire doors, barriers, and penetration seals. The inspectors observed the condition and location of fire extinguishers, hoses, and telephones against the Pre-Fire Plan zone maps. The physical condition of passive fire protection features such as fire doors, fire dampers, fire barriers, fire zone penetration seals, and fire retardant structural steel coatings were also inspected to verify proper installation and physical condition. The inspectors also reviewed Condition Report 138737 which was initiated based on the inspection results.

b. Findings

No findings of significance were identified.

.3 Annual Fire Drill Inspection

a. Inspection Scope

On March 18, 2003, the inspectors observed a fire brigade drill on the third floor of the Unit 2 reactor building. This fire drill was chosen due to the fire hazard location and its importance to safety. The inspectors observed that protective clothing was properly donned; self-contained breathing apparatus equipment was properly worn and used; fire hose lines were capable of reaching the necessary fire hazard locations; the fire area was entered in a controlled manner; sufficient fire fighting equipment was brought to the scene; fire brigade leader's fire fighting directions were thorough, clear, and effective; fire fighting pre-planned strategies were utilized; and the licensee pre-planned drill scenario was followed, and the drill objectives acceptance criteria were met.

b. Findings

No findings of significance were identified.

1R07 Heat Sink (71111.07)

a. Inspection Scope

On January 13, 2003, the inspectors observed engineering and operations personnel complete performance testing on the 1A residual heat removal heat exchanger. This heat exchanger was chosen for inspection due to its high safety significance and risk significance. During the testing observation the inspectors verified that the acceptance criteria and test results considered differences between test and design basis conditions because testing at the design heat removal rate was not practical. The inspectors also

performed independent calculations using the licensee's test results to confirm that the results considered possible uncertainties and that the heat exchanger remained capable of performing its safety function.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11)

a. Inspection Scope

On February 10, 2003, the inspectors observed an operating crew during simulator training on Scenario LOCT-3001-EPU, "Raise Power with Recircs, Reactor Feedpump Flow Transmitter Failure, and Loss of Stator Water Cooling."

The inspectors evaluated crew performance in the areas of:

- clarity and formality of communications;
- ability to take timely actions in the safe direction;
- prioritization, interpretation, and verification of alarms;
- procedure use;
- control board manipulations;
- oversight and direction from supervisors; and
- group dynamics.

Crew performance in these areas was compared to licensee management expectations and guidelines as presented in the following documents:

- OP-AA-101-111, "Rules and Responsibilities of On-Shift Personnel," Revision 0;
- OP-AA-103-102, "Watchstanding Practices," Revision 0;
- OP-AA-103-103, "Operation of Plant Equipment," Revision 0;
- OP-AA-103-104, "Reactivity Management Controls," Revision 0; and
- OP-AA-104-101, "Communications," Revision 0.

The inspectors verified that the crew completed the tasks listed in the above simulator guide. The inspectors also compared simulator configurations with actual control board configurations. For any weaknesses identified, the inspectors observed the licensee evaluators to verify that they also noted the issues and discussed them in the critique at the end of the session.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors reviewed the licensee's handling of performance issues and the associated implementation of the Maintenance Rule (10 CFR 50.65) to evaluate maintenance effectiveness for the selected systems. The following systems were selected based on being designated as risk significant under the Maintenance Rule, being in increased monitoring (Maintenance Rule category a(1)) group, or due to an inspector identified issue or problem that potentially impacted system work practices, reliability, or common cause failures:

- Unit 1 250 Volt Direct Current Battery Charging System;
- Instrument Air System; and
- Core Spray System.

The inspectors' review included examination of the licensee's categorization of specific issues, evaluation of the performance criteria, appropriate work practices, identification of common cause errors, extent of condition, and trending of key parameters. Additionally, the inspectors reviewed the licensee's implementation of the maintenance rule requirements, including a review of scoping, goal setting, performance monitoring, short-term and long-term corrective actions, functional failure determinations associated with the condition reports reviewed, and current equipment performance status.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk and Emergent Work (71111.13)

a. Inspection Scope

The inspectors reviewed the documents listed in the "List of Documents Reviewed" section of this report to determine if the risk associated with the activities listed below agreed with the results provided by the licensee's risk assessment tool. In each case, the inspectors conducted walkdowns to ensure that redundant mitigating systems and/or barrier integrity equipment credited by the licensee's risk assessment remained available. When compensatory actions were required, the inspectors conducted plant inspections to validate that the compensatory actions were appropriately implemented. The inspectors also discussed emergent work activities with the shift manager and work week manager to ensure that these additional activities did not change the risk assessment results.

Maintenance Activities Assessed	Date Inspected
1B Residual Heat Removal Heat Exchanger, ½ Emergency Diesel Generator, Unit 2 Station Blackout Diesel Generator, and 2A Residual Heat Removal Heat Exchanger	Week of January 13
Unit 1 Load Drop to Identify Failed Fuel, 1B and 1C Feedwater Pump Maintenance, and 1B and 1D Condensate Pump Maintenance	Week of January 31
2C Residual Heat Removal Service Water Room Cooler Tube Bundle Replacement and Maintenance on the Residual Heat Removal System	Week of February 3
Unit 2 Reactor Water Cleanup and High Pressure Coolant Injection System Maintenance, Unit 1 Power Reduction for 1B Reactor Recirculation Pump Troubleshooting, Feedwater Pump Maintenance, and Condensate Pump Maintenance	Week of February 17
Unit 2 Reactor Core Isolation Cooling System Maintenance, Unit 2B Core Spray Maintenance, ½ A Standby Gas Treatment System Maintenance, and Unit 1 Drywell Air Monitors Emergent Maintenance	Week of March 10
Safe Shutdown Makeup Pump Maintenance, Unit 1A Core Spray Maintenance, Unit 2A Electrohydraulic Control System Maintenance, and Unit 2 High Pressure Coolant Injection Surveillance Testing	Week of March 17

b. Findings

No findings of significance were identified.

1R14 Non-Routine Evolutions (71111.14)

.1 Unit 2 Reactor Power Increase During Reset of 2A Reactor Recirculation Motor Generator Scoop Tube

a. Inspection Scope

During the week of January 13, 2003, the inspectors reviewed procedures, control room log entries, maintenance work orders, and interviewed licensee personnel to determine the circumstances that led to an inadvertent reset of the 2A reactor recirculation motor generator set scoop tube and a resultant power increase. The inspectors also reviewed Unit 2 thermal limit calculations, Technical Specifications, previous NRC guidance, and the Unit 2 operating license to verify that safety limits were not exceeded and the power increase was not excessive.

b. Findings

No findings of significance were identified.

.2 Unit 2 Reactor Core Isolation Cooling Rendered Inoperable During Scaffold Disassembly

a. Inspection Scope

During the week of March 23, 2003, the inspectors reviewed procedures and operator log entries, and interviewed licensee personnel to determine the circumstances that led to the inadvertent inoperable condition of the Unit 2 reactor core isolation cooling system. The inspectors also reviewed Technical Specifications, the Updated Final Safety Analysis Report, and relevant station procedures.

b. Inspection Findings

The inspectors identified one Green finding involving a human performance error that resulted in the loss of the safety function of the Unit 2 reactor core isolation cooling system.

On March 22, 2003, mechanical maintenance personnel inadvertently bumped the Unit 2 reactor core isolation cooling system's trip throttle linkage causing the trip throttle valve to close. This rendered the reactor core isolation cooling system inoperable. The control room received an annunciator indicating that the trip throttle valve was in the closed position. Operations personnel were dispatched and verified that the trip throttle valve was closed. The inspectors verified that the appropriate Technical Specification was entered and the operating crew initiated the proper tracking report for system inoperability. Later that morning operations personnel reset the trip throttle mechanism and returned the reactor core isolation cooling system to an operable status.

Interviews conducted with mechanical maintenance personnel revealed that the trip throttle mechanism was inadvertently bumped during the removal of scaffold from above the reactor core isolation cooling throttle valve. The scaffold was being disassembled after maintenance activities were conducted on the reactor core isolation cooling system. The inspectors verified that operations personnel appropriately reset the trip throttle valve and returned the system to its standby operational condition. Condition Report 150278 was initiated to document the human performance circumstance and initiate corrective actions to prevent future occurrences.

The inspectors determined that the finding was more than minor because it impacted the mitigating systems attributes and objectives. In particular, the finding affected the availability, reliability, and capability of the reactor core isolation cooling system, a system that responds to initiating events to prevent undesirable consequences.

The inspectors determined that this finding should be evaluated using the Significance Determination Process described in Inspection Manual Chapter 0609, "Significance Determination Process," because the finding was associated with the availability, reliability, and capability of a mitigating system. The inspectors conducted a Phase 1

screening and determined that a Phase 2 evaluation was required because the finding represented an actual loss of safety function of a system.

The inspectors used the risk-informed inspection notebook for Quad Cities Nuclear Power Station, Units 1 and 2, Revision 1, dated May 2, 2002, to complete the Phase 2 evaluation. The inspectors determined that the exposure time was less than 3 days. For each worksheet the inspectors assumed that all mitigating capability was available except for the reactor core isolation cooling system. This resulted in 10 core damage sequences ranging between 9 and 17 points. The most dominate core damage sequences involved: (1) the loss of the power conversion system with high pressure coolant injection, safe shutdown makeup pump, and the low pressure injection systems available; and (2) a loss of offsite power with the high pressure coolant injection, safe shutdown makeup pump, and the low pressure injection systems available. The inspectors concluded that the final significance determination process result for this finding was 9 points; therefore, the finding was considered to be of very low safety significance (Green) **(FIN 50-265/03-03-02)**.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors assessed the following operability evaluations:

- Operability Evaluation for Condition Report 138067, "Heat Tracing on Torus Sample Lines not Sufficient Under Worst Case Accident Conditions," dated January 8 and March 18, 2003;

- Operability Evaluation for Condition Report 140006, "Torque Wrench Used to Torque Control Rod Drive Piston Tube Nut Broken During Calibration," dated January 23, 2003;

- Operability Evaluation for Condition Report 139884, "A 125 Volt Direct Current Ground Has Been Identified and Isolated to the Unit 2 3E Power Operated Relief Valve Limit Switch (SW1) Circuit," dated January 23, 2003; and

- Operability Evaluation for Condition Report 143666, "White Residue Found on 480 Volt Breaker Auxiliary Contacts," dated March 7, 2003.

The inspectors reviewed the technical adequacy of the evaluation against the Technical Specifications, the Updated Final Safety Analysis Report, and other design information; determined whether compensatory measures, if needed, were taken; and determined whether the evaluations were consistent with the requirements of LS-AA-105, "Operability Determination Process," Revision 0.

In addition, the inspectors reviewed selected issues that the licensee entered into its corrective action program to verify that identified problems were being entered into the program with the appropriate characterization and significance.

b. Findings

No findings of significance were identified.

1R16 Operator Workarounds (71111.16)

a. Inspection Scope

The inspectors assessed the following operator workaround:

Operator Workaround Reviewed	Date
02-017 OC, Safe Shutdown Makeup Pump Cooler Troubles	November 26, 2002

The inspectors reviewed the operator workaround to assess any potential effect on the functionality of mitigating systems. The inspectors reviewed the technical adequacy of the licensee's workaround documentation against the Updated Final Safety Analysis Report and other design information to assess whether the workaround conflicted with any design basis information. Lastly, the inspectors compared the information in abnormal or emergency operating procedures to the workaround information to ensure that the operators maintained the ability to implement important procedures.

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications (71111.17)

a. Inspection Scope

During the inspection period, the inspectors reviewed the following permanent plant modifications by conducting the activities listed below:

Modification Reviewed	Date
Design Change Package 340578 - Install Patch Plate Under Residual Heat Removal Service Water Pipe Support	January 16
Design Change Package 337160 - Installation of Drain Path from Unit 1 Station Blackout Diesel Air Compressor Crankcases	February 14

The inspectors verified that modification preparation, staging, and implementation did not impair the operations department's ability to complete emergency and abnormal operating procedure actions when required, to monitor key safety functions, or to respond to a loss of key safety functions. The inspectors reviewed the design adequacy of the modifications by verifying one or more of the following:

- energy requirements were able to be supplied by supporting systems under accident and event conditions;
- replacement components were compatible with physical interfaces;
- replacement component properties met functional requirements under event and accident conditions;
- replacement components were environmentally and seismically qualified;
- sequence changes remained bounded by the accident analyses and loading on support systems was acceptable;
- structures, systems, and components response times were sufficient to serve accident and event functional requirements assumed by the design analyses;
- control signals were appropriate under accident and event conditions; and
- affected operations procedures were revised and training needs were evaluated in accordance with station administrative procedures.

The inspectors also verified that the post modification testing demonstrated system operability by verifying no unintended system interactions occurred, system performance characteristics met the design basis, and post-modification testing results met all acceptance criteria.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing (71111.19)

a. Inspection Scope

Post Maintenance Activity	**Date Inspected**
Testing Following Tube Bundle Replacement in 2C Residual Heat Removal Service Water Pump Cubicle Cooler	February 6-7, 2003
Testing Following Solenoid Replacement on Unit 1 Reactor Building to Suppression Chamber Vacuum Breaker	March 7, 2003
Testing Following Unit 2 Reactor Core Isolation Cooling System Overspeed Trip Troubleshooting	March 13-14, 2003
Testing Following Re-Routing of the 1A Core Spray Pump Minimum Flow Line	March 21, 2003
Testing Following Safe Shutdown Makeup Pump Room Cooler Maintenance	March 18, 2003
Testing Following 2A Residual Heat Removal 2-1001-28A Motor Operated Valve Maintenance	March 25, 2003

For each post maintenance activity selected, the inspectors reviewed the Technical Specifications and Updated Final Safety Analysis Report against the maintenance work package to determine the safety function(s) that may have been affected by the maintenance. Following this review the inspectors verified that the licensee's post maintenance test procedure adequately tested the safety function(s) affected by the maintenance, that the procedure's acceptance criteria were consistent with licensing and design basis information, and that the procedure was properly reviewed and approved. When possible the inspectors observed the post maintenance testing activity and verified that the structure, system, or component operated as expected; test equipment used was within its required range and accuracy; jumpers and lifted leads were appropriately controlled; test results were accurate, complete, and valid; test equipment was removed after testing; and any problems identified during testing were appropriately documented.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors observed surveillance testing activities and/or reviewed completed surveillance test packages for the tests listed below:

- QCIS 7600-02, "Unit 2 Standby Diesel Generator Cardox Fire Protection Functional Test;"
- QCOS 1300-23, "Unit 1 Reactor Core Isolation Cooling Functional Test;"
- QCOS 2300-26, "Unit 2 High Pressure Coolant Injection Contaminated Condensate Storage Tank Suction Check Valve Closure Test;" and
- QCOS 2300-13, "High Pressure Coolant Injection System Manual Initiation Test."

The inspectors verified that the structures, systems, and components tested were capable of performing their intended safety function by comparing the surveillance procedure acceptance criteria and results to design basis information contained in Technical Specifications, the Updated Final Safety Analysis Report, and licensee procedures. The inspectors verified that the test was performed as written, the test data was complete and met the requirements of the procedure, and the test equipment range and accuracy was consistent with the application by observing the performance of the surveillance test. Following test completion, the inspectors conducted a walkdown of the test area to verify that the test equipment had been removed and that the system was returned to its normal standby configuration.

b. Findings

No findings of significance were identified.

1R23 Temporary Modifications (71111.23)

a. Inspection Scope

The inspectors reviewed documentation for the following temporary configuration changes:

- Lifted leads to isolate 125 Volt direct current ground condition on pressure operated relief valve annunciator circuit.

The inspectors assessed the acceptability of each temporary configuration change by comparing 10 CFR 50.59 screening and evaluation information against the Updated Final Safety Analysis Report and Technical Specifications. The comparisons were performed to ensure that the new configurations remained consistent with design basis information. The inspectors performed field verifications to ensure that the modifications were installed as directed; the modifications operated as expected; modification testing adequately demonstrated continued system operability, availability, and reliability, and that operation of the modifications did not impact the operability of any interfacing systems. The inspectors also reviewed condition reports initiated during or following temporary modification installation to ensure that problems encountered during installation were appropriately resolved.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP2 Alert and Notification System Testing (71114.02)

a. Inspection Scope

The inspectors discussed with corporate and station Emergency Preparedness staff the design, operation, and periodic testing of the Alert and Notification System in the Quad Cities Station's Emergency Planning Zone in order to determine whether the Alert and Notification System was adequately maintained and tested between mid-2001 and December-2002 in accordance with relevant documents. The inspectors also reviewed the licensee's Alert and Notification System testing plan and samples of records associated with scheduled and other equipment maintenance activities to verify that corrective actions were taken following test failures and other identified equipment malfunctions.

b. Findings

No findings of significance were identified.

1EP3 Emergency Response Organization Augmentation Testing (71114.03)

a. Inspection Scope

The inspectors reviewed and discussed with Emergency Preparedness staff the procedures that included the primary and alternate methods for initiating an Emergency Response Organization activation and the provisions for maintaining the station's and corporate office's Emergency Response Organization call-out rosters. The inspectors also reviewed the licensee's assessment of its vendor's automated call-out system's processes and administrative controls.

The inspectors reviewed the station's provisions for conducting monthly, off-hours, unannounced Emergency Response Organization augmentation drills, including several that involved corporate office staff, and assessed drill and corrective action records in order to verify that the licensee maintained, tested, and critiqued its capability to activate its Emergency Response Organization. The inspectors assessed the adequacy of corrective actions resulting from the drills' critiques.

The inspectors reviewed a sample of 2002 revisions to the Quad Cities Station's Emergency Response Organization roster to verify that very good numbers of personnel were maintained for each key and support position. The inspectors also checked a random sample of 40 station Emergency Response Organization members' training records to verify that those key and support personnel, who were listed on the current revision of the station's call-out roster, had completed all annual Emergency Preparedness training requirements.

b. Findings

No findings of significance were identified.

1EP5 Correction of Emergency Preparedness Weaknesses and Deficiencies (71114.05)

a. Inspection Scope

The inspectors reviewed a sample of Nuclear Oversight staff's 2001 and 2002 audits of the station's Emergency Preparedness program to verify that these independent assessments complied with the requirements of 10 CFR 50.54(t). The inspectors also reviewed a sample of corrective action documents that were associated with the 2001 off-year exercise, the 2002 biennial exercise, and several emergency preparedness drills conducted between June 2001 and December 2002 in order to verify that the licensee had fulfilled its drill commitments and to evaluate the licensee's efforts to identify, track, and resolve concerns identified during these activities. The inspectors reviewed a sample of procedures to verify that they were revised as indicated by relevant corrective action program records.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control To Radiologically Significant Areas (71121.01)

Plant Walkdowns, Radiological Boundary Verifications, and Radiation Work Permit Reviews

a. Inspection Scope

The inspectors conducted walkdowns of the radiologically restricted area to verify the adequacy of radiological boundaries and postings. Specifically, the inspectors walked down several radiation and high radiation area boundaries in the reactor, radwaste, and fuel handling buildings. Confirmatory radiation measurements were taken to verify that these areas were properly posted and controlled in accordance with 10 CFR Part 20, licensee procedures and Technical Specifications. The radiation work permit for NRC general tours was reviewed for electronic dosemeter alarm set points and protective clothing requirements.

b. Findings

No findings of significance were identified.

Cornerstone: Public Radiation Safety

2PS1 Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems (71122.01)

.1 Offsite Dose Calculation Manual

a. Inspection Scope

The inspectors reviewed the Radioactive Effluent Release Report for the year 2001, to verify that the radiological effluent program was implemented as described in the Updated Final Safety Analysis Report and the Offsite Dose Calculation Manual. The inspectors reviewed changes made by the licensee to the Offsite Dose Calculation Manual as well as to the liquid and gaseous radioactive waste processing system design, procedures, or operation since the last inspection to verify that changes were documented in accordance with the requirements of the Offsite Dose Calculation Manual and the Technical Specifications.

The inspectors reviewed the 2001 Radioactive Effluent Release Report to determine if anomalous results had been reported and whether those anomalous results were adequately resolved.

b. Findings

No findings of significance were identified.

.2 Gaseous and Liquid Release Systems Walkdowns

a. Inspection Scope

The inspectors performed walkdowns of the major components of the gaseous and liquid release systems to verify that the current system configuration was as described in the Updated Final Safety Analysis Report and the Offsite Dose Calculation Manual, and to observe ongoing activities and equipment material condition. This included radiation and flow monitors, demineralizers and filtration systems, compressors, tanks, and vessels. The inspectors also discussed the waste processing system operations and components with the cognizant system engineer to assess its overall operation.

b. Findings

No findings of significance were identified.

.3 Gaseous and Liquid Releases

a. Inspection Scope

The inspectors reviewed liquid and gaseous radioactive waste release records for 2002 including radiochemical measurements to verify that appropriate treatment equipment was used, and that the radwaste effluents were processed and released in accordance with the Offsite Dose Calculation Manual. The inspectors also verified that radioactive releases met the 10 CFR Part 20 requirements.

b. Findings

No findings of significance were identified.

.4 Abnormal Releases and Inoperable Effluent Radiation Monitors

a. Inspection Scope

The inspectors reviewed the records of any abnormal releases and/or releases made with inoperable effluent radiation monitors. The inspectors reviewed the licensee's actions for those releases to ensure an adequate defense-in-depth was maintained against an unmonitored release of radioactive material to the environment.

b. Findings

No findings of significance were identified.

.5 Dose Calculations

a. Inspection Scope

The inspectors reviewed gaseous and liquid release records for the year 2002, the Annual Radiological Environmental Operating Report, and the Radioactive Effluent

Release Report for the year 2001, and year 2002 monthly dose calculations to ensure that the licensee had properly determined the offsite dose to the public from radiological effluent releases, and to determine if any annual Technical Specification or Offsite Dose Calculation Manual (i.e., Appendix I to 10 CFR Part 50 values) limits were exceeded.

b. Findings

No findings of significance were identified.

.6 Air Cleaning Systems

a. Inspection Scope

The inspectors reviewed the most recent air cleaning system surveillance test results for containment purge, and the radwaste and auxiliary buildings exhaust ventilation systems activated carbon beds to ensure that test results were within the licensee's acceptance criteria. The inspectors also reviewed surveillance test results for the gaseous release systems to verify that the flow rates were consistent with Updated Final Safety Analysis Report values.

b. Findings

No findings of significance were identified.

.7 Effluent Monitor Calibrations

a. Inspection Scope

The inspectors reviewed calibration records of liquid and gaseous point of discharge effluent radiation monitors to verify that instrument calibrations were within the required calibration frequency. The inspector also reviewed the current effluent radiation monitor alarm setpoint values for agreement with station requirements.

b. Findings

No findings of significance were identified.

.8 Counting Room Instrument Calibrations and Quality Control

a. Inspection Scope

The inspectors reviewed the quality control records for radiochemistry instrumentation used to identify and quantitate radioisotopes in effluents, in order to verify that the instrumentation was calibrated and maintained as required by station procedures. This review included calibrations of gamma spectroscopy/spectrometry systems, liquid scintillation instruments, proportional counters, and associated instrument control charts. The inspectors also reviewed the lower limit of detection determinations to verify that the radiochemical instrumentation and analysis conditions used for effluent analysis could meet the Offsite Dose Calculation Manual detection requirements.

b. Findings

No findings of significance were identified.

.9 Interlaboratory Comparison Program

a. Inspection Scope

The inspector reviewed the results of the year 2002 Radiochemistry Cross Check Program in order to evaluate the licensee's capability to perform radiochemical measurements, and to assess the quality of radioactive effluent sample analyses performed by the licensee. The inspectors reviewed the licensee's quality assurance evaluation of the Interlaboratory Comparison Program and associated corrective actions for any deficiencies identified.

b. Findings

No findings of significance were identified.

.10 Identification and Resolution of Problems

a. Inspection Scope

The inspector reviewed audits, self-assessments, and condition reports generated in 2002 to evaluate the effectiveness of the licensee's self-assessment process in the identification, characterization, and prioritization of problems, and to verify that previous radiological instrumentation and effluent related issues were adequately addressed. Condition reports that addressed radioactive treatment and monitoring program deficiencies were also reviewed to verify that the licensee had effectively implemented the corrective action program.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

.1 Initiating Events, Mitigating Systems and Barrier Integrity Performance Indicator Verification

a. Inspection Scope

The inspectors reviewed Licensee Event Reports, licensee memoranda, plant logs, licensee data gathering instruments, and NRC inspection reports to verify the following performance indicators for Units 1 and 2 during 2002.

- Unplanned Scrams per 7000 Critical Hours;
- Scrams with Loss of Normal Heat Removal;
- Safety System Unavailability, Residual Heat Removal System; and
- Reactor Coolant System Leakage.

The inspectors verified that the licensee accurately reported performance as defined by the applicable revision of Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline" by comparing the data reported to the guideline requirements.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

.2 Alert and Notification System, Drill and Exercise Performance, and Emergency Response Organization Drill Participation Performance Indicator Verification

a. Inspection Scope

The inspectors verified that the licensee accurately reported the following indicators in accordance with relevant procedures and Nuclear Energy Institute guidance endorsed by NRC: Alert and Notification System, Emergency Response Organization Drill Participation, and Drill and Exercise Performance for the emergency preparedness cornerstone. Specifically, the inspectors reviewed the licensee's records associated with Performance Indicator data reported to the NRC for the period April 2002 through September 2002. Records included assessments of Drill and Exercise Performance opportunities during pre-designated Control Room Simulator training sessions, the biennial exercise, and several drills, as well as revisions of the roster of personnel assigned to key Emergency Response Organization positions. The inspectors also reviewed records of the results of periodic Alert and Notification System operability tests.

b. Findings

No findings of significance were identified.

.3 Radiological Effluent Technical Specification/Offsite Dose Calculation Manual Radiological Effluent Occurrences

a. Inspection Scope

The inspectors verified the licensee's assessment of its performance indicators for public radiation safety. Since no reportable elements were identified by the licensee for the 1st, 2nd, 3rd, and 4th quarters of 2002, the inspectors reviewed the licensee's data to verify that there were no occurrences concerning the public radiation safety cornerstone during those quarters.

b. Findings

No findings of significance were identified.

4OA3 Event Follow-up (71153)

.1 (Closed) Licensee Event Report 50-254/02-002: Automatic Initiation and Loading of Emergency Diesel Generator due to Loss of Voltage to Emergency Bus as a Result of Door to Potential Fuse Drawer Falling Open.

On November 13, 2002, maintenance personnel were performing cubicle modifications on safety-related bus 14-1 as part of the Unit 1 refueling outage. The modifications required the individuals to remove the sealing flange between cubicles 8 and 9 by pounding out six rivets using a punch and hammer. As the individuals were removing the second rivet, the force exerted by the punch and hammer on cubicle 9 caused the potential transformer fuse drawer for bus 14-1 to fall open. As the drawer fell open, bus 14-1 experienced a loss of voltage condition which resulted in an automatic start of the Unit 1 emergency diesel generator.

The licensee determined that the drawer fell open because it was not completely latched following previous work activities. The licensee interviewed several operations personnel and determined that the operations department was unaware of the proper methods for securing the drawers and ensuring the drawer was latched. In addition, operations department procedures which manipulated the fuse drawers did not contain instructions for ensuring that the drawers were properly latched. An extent of condition review determined that the bus 14 drawer was also improperly latched.

The inspectors determined that the failure to properly latch the fuse drawers for bus 14 and bus 14-1 was more than minor because this finding was associated with attributes in both the initiating events and mitigating systems cornerstones and also affected each cornerstone objective. For example, a seismic event could have exerted enough force to open both drawers which would have caused the loss of both busses. The loss of bus 14 would have resulted in a reactor scram on low reactor water level due to the loss of two condensate pumps and a subsequent loss of feedwater pumps. The loss of bus 14 would have also caused a loss of one circulating water pump and two residual heat removal service water pumps (mitigating systems equipment). The loss of bus 14-1 would have caused the Unit 1 emergency diesel generator to start. However, the Division II residual heat removal pumps and a core spray pump would not have loaded onto the bus until the undervoltage condition was cleared by reclosing the drawer. Therefore, this mitigating systems equipment would have also been temporarily unavailable.

From a shutdown perspective, this finding was of low risk significance because Unit 1 was not at power and adequate mitigating systems equipment was available to respond to a shutdown event. Because the licensee was unable to determine the actual time the drawers became improperly latched, the inspectors were also required to evaluate this finding using the At Power Significance Determination Process. The inspectors conducted a Phase 1 screening and determined that a Phase 2 evaluation was needed because this finding contributed to both the likelihood of a reactor trip and the likelihood

that mitigating equipment or functions would not be available. However, Step 2.5 of Inspection Manual Chapter 0609 stated that the Phase 2 evaluation worksheets did not include external initiating event information. Because of this, a risk analyst was required to perform a Phase 3 evaluation to estimate the increase in risk due to possible external event initiators.

The regional senior reactor analyst determined that this finding's risk significance was below the 1E-6 threshold and of very low safety significance (Green) primarily because of the low initiating event frequency associated with a seismically induced loss of offsite power. The analyst concluded that the initiating event of concern would be that activity that could result in the potential fuse drawer falling open (i.e., seismic event). This was found to be consistent with the licensee's risk determination, as documented in Licensee Event Report 50-254/02-002.

Criterion V to 10 CFR Part 50, Appendix B, requires that activities affecting quality be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstance. These instructions, procedures, and drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished. Contrary to the above, as of November 13, 2002, multiple operations department procedures failed to contain instructions to ensure that the potential transformer fuse drawers for the safety-related busses were properly latched. As a result, the licensee was unknowingly vulnerable to a loss of voltage condition on two safety-related busses during a seismic event. Although the failure to have procedures appropriate to the circumstance was considered a violation of NRC requirements, this violation is being treated as a Non-Cited Violation consistent with Section VI.A.1 of the NRC's Enforcement Policy **(NCV 50-254/03-03-03)**. This issue was entered into the licensee's corrective action program as Condition Report 131373.

.2 (Closed) Licensee Event Report 50-265/03-001: Low Pressure Coolant Injection was Inoperable for Both Heat Removal Loops Due to Inadequate Procedure Review.

On January 9, 2003, during the completion of QCOS 1000-09, "RHR [residual heat removal] Power Operated Valve Test," operations personnel, without operator action, observed the low pressure coolant injection system injection valve 2-1001-29A unexpectedly go to a full-closed position after being stroke-timed open. Troubleshooting identified that relay 10A-K63A was energized causing the valve to automatically close after being opened. This was contrary to the expected deenergized condition. The relay would only be energized if the residual heat removal system were in the shutdown cooling mode of operation and a Group II primary containment isolation signal was received. Also, operating personnel identified that the 10A-K63B relay was in an energized condition. Again, this was not as expected for the existing plant conditions. As a result, the "A" and "B" low pressure coolant injection system injection valves would not open automatically upon initiation of the low pressure coolant injection system injection signal. The proper Technical Specification Limiting Conditions for Operation were entered upon discovery that the residual heat removal low pressure coolant injection mode was inoperable.

The inspectors determined that procedural inadequacies resulting from problem identification and resolution deficiencies contributed to the failure to maintain the residual heat removal low pressure coolant injection system in its proper standby condition. On December 18, 2002, operations personnel performed surveillance QCOS 1600-44, "Unit 2 Primary Containment Isolation Group II Partial Isolation Test at Power." During the surveillance, relays 10A-K63A and 10A-K63B were verified to be in an energized state for surveillance completion, however, there was no procedural direction to reset the isolation signal, thereby allowing the relays to remain in an energized state. A similar event was documented in 1995 (Licensee Event Report 265/95-003) that initiated procedural corrective actions. Those corrective actions were not carried forward in subsequent procedure revisions.

The inspectors determined that the failure to adequately reset the isolation signals after testing was more than minor because it: involved the configuration control, equipment performance, and human performance attributes of the mitigating systems cornerstone; and (2) affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences.

The inspectors determined that this finding should be evaluated using the Significance Determination Process described in Inspection Manual Chapter 0609, "Significance Determination Process," because the finding was associated with the availability of a mitigating system. The inspectors conducted a Phase 1 screening and determined that a Phase 2 evaluation was required because the energized state of the relays resulted in an actual loss of the safety function of a system. Also the finding resulted in a loss of a safety function of the system for greater than the Technical Specification Allowed Outage Time.

The inspectors used the risk-informed inspection notebook for Quad Cities Nuclear Power Station, Units 1 and 2, Revision 1, dated May 2, 2002, to complete the Phase 2 evaluation. The inspectors determined that the exposure time was between 3 and 30 days. For each worksheet the inspectors assumed that all mitigating capability was available except for both residual heat removal subsystems. The inspectors allowed credit for recovery because the residual heat removal system could be restored by resetting the primary containment isolation by depressing the containment reset buttons on the control room panel. This resulted in 12 core damage sequences ranging between 10 and 15 points. The most dominate core damage sequences involved: (1) the loss of the power conversion system with high pressure injection equipment and core spray system available; (2) a medium break loss of coolant accident with the core spray system available; (3) a large break loss of coolant accident with the core spray system available; and (4) a loss of offsite power with the high pressure injection systems and core spray system available. The inspectors concluded that the final significance determination process result for this finding was 10 points; therefore, this finding was considered to be of very low risk significance (Green).

Criterion V to 10 CFR Part 50, Appendix B, requires that activities affecting quality be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstance. These instructions, procedures, and drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important

activities have been satisfactorily accomplished. Contrary to the above, as of May 5, 2000, QCOS 1600-44 failed to contain instructions to ensure that the primary containment isolation logic was reset for residual heat removal low pressure coolant injection system injection valves 2-1001-29A and 2-1001-29B. As a result, from December 18, 2002, until January 9, 2003, the residual heat removal low pressure coolant injection system would not automatically inject as designed if required during certain accident conditions. Although the failure to have procedures appropriate to the circumstance was considered a violation of NRC requirements, this violation is being treated as a Non-Cited Violation consistent with Section VI.A.1 of the NRC's Enforcement Policy **(NCV 50-265/03-03-04)**. This issue was entered into the licensee's corrective action program as Condition Report 138696.

3. (Unresolved Item) Failure of ATWS-RPT Breaker to Open as Designed During Plant Shutdown: On July 12, 2002, during the performance of QCOP 0202-34, "Unit 2 Reactor Recirculation System Shutdown," the exciter field breaker (ATWS-RPT) failed to open when required. The failure of the breaker to open electronically kept the trip coil in an energized state and resulted in the trip coil burning. An operator responded to the failure and pressed the manual trip button. The operator was unsuccessful in his attempt to trip open the breaker. Finally the operator mechanically agitated the breaker and it immediately went to the open position.

   The breaker was removed from its cubicle, quarantined, and transferred to the vendor for further analysis to determine the cause of failure. Based on visual and functional inspections no defects were noted. Also the breaker was mechanically and electrically cycled and the failure could not be repeated.

   Further information is needed regarding maintenance practices from the vendor to determine if a maintenance deficiency occurred. Therefore, this is considered to be an Unresolved Item (**URI 50-254/03-03-05; 50-265/03-03-05)** pending further review of breaker maintenance practices.

4OA6 Meetings

.1 Exit Meeting

The inspectors presented the inspection results to Mr. T. Tulon and other members of licensee management at the conclusion of the inspection on April 1, 2003. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

.2 Interim Exit Meetings

Interim exits were conducted for:

- Emergency Preparedness with Mr. B. Swenson on January 17, 2003.
- Access Control and Liquid and Gaseous Effluents with Mr. T. Tulon on February 14, 2003.

4OA7 Licensee-Identified Violation

The following violation of very low significance was identified by the licensee and is a violation of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Manual, NUREG-1600, for being dispositioned as a Non-Cited Violation:

Technical Specification 5.5.2 states in part, “Integrated leak test requirements for the process sampling system occur at 24 month intervals.” Contrary to this requirement, the licensee failed to complete leak test requirements for the high radiation sample system, which is considered the site’s process sampling system, at 24 month intervals. The licensee entered the issue into the corrective action program (Condition Report 149403). The inspectors determined the safety significance of this issue to be of very low safety significance (Green) because upon discovery a leak test was performed and satisfactory results were achieved.

KEY POINTS OF CONTACT

Licensee

T. Tulon, Site Vice President
B. Swenson, Plant Manager
D. Barker, Radiation Protection Manager
W. Beck, Regulatory Assurance Manager
G. Boerschig, Work Control Manager
J. DeYoung, EP Specialist
R. Gideon, Engineering Manager
W. Harris, EP Coordinator
A. Javorik, Maintenance Manager
K. Leech, Security Manager
K. Moser, Chemistry/Environ/Radwaste Manager
M, Perito, Operations Manager
M. Snow, Nuclear Oversight Manager
F. Tague, EP Manager

Nuclear Regulatory Commission

M. Ring, Chief, Reactor Projects Branch 1
C. Lyon, Project Manager

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-254/03-03-01; 50-265/03-03-01	NCV	Failure to Maintain Adequate Spatial Separation of Flammables from the Diesel Driven Fire Pumps
50-265/03-03-02	FIN	Unit 2 Reactor Core Isolation Cooling Rendered Inoperable During Scaffold Disassembly
50-254/03-03-03; 50-265/03-03-03	NCV	Failure to Properly Latch Fuse Drawers Causing Automatic Initiation and Loading of Emergency Diesel Generator
50-265/03-03-04	NCV	Failure to Reset Primary Containment Isolation Logic Causing RHR LPCI Inoperability
50-254/03-03-05; 50-265/03-03-05	URI	Failure of ATWS-RPT Breaker to Open As Designed During Plant Shutdown

Closed

50-254/03-03-01; 50-265/03-03-01	NCV	Failure to Maintain Adequate Spatial Separation of Flammables from the Diesel Driven Fire Pumps

50-265/03-03-02	FIN	Unit 2 Reactor Core Isolation Cooling Rendered Inoperable During Scaffold Disassembly
50-254/03-03-03; 50-265/03-03-03	NCV	Failure to Properly Latch Fuse Drawers Causing Automatic Initiation and Loading of Emergency Diesel Generator
50-265/03-03-04	NCV	Failure to Reset Primary Containment Isolation Logic Causing RHR LPCI Inoperability
50-254/02-002	LER	Automatic Initiation and Loading of Emergency Diesel Generator
50-265/03-001	LER	Low Pressure Coolant Injection was Inoperable for Both Heat Removal Loops

LIST OF ACRONYMS USED

ADAMS	NRC's Document System
ALARA	As-Low-As-Reasonably-Achievable
DRS	Division of Reactor Safety
EPIP	Emergency Plan Implementing Procedure
ERO	Emergency Response Organization
FIN	Finding
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
PARS	Public Availability Records
URI	Unresolved Item

LIST OF DOCUMENTS REVIEWED

1R04 Equipment Alignment

QCOP 1000-04; RHR Service Water System Operation; Revision 14

M-79; Diagram of RHR Service Water Piping; Revision AR

QCOP 1300-01; Reactor Core Isolation Cooling System Preparation for Standby Operation; Revision 23

M-89; Diagram of Reactor Core Isolation Cooling (RCIC) System; Revision AR

QCOP 2900-01; Safe Shutdown Makeup Pump System Preparation for Standby Operation, Revision 17

M-70; Diagram of Safe Shutdown Makeup Pump System; Revision V

UFSAR 9.3.1.1, “Instrument Air System”

Drawing M-24, Sheet No. 1, “Diagram of Instrument Air Piping, Turbine Building”

Drawing M-24, Sheet No. 3, “Diagram of Instrument Air Piping, Turbine Building”

Drawing M-24, Sheet No. 4, “Diagram of Instrument Air Piping, Turbine Building Main Header”

Drawing M-24, Sheet No. 24, “Diagram of Instrument Air Piping, Reactor Building Main Header”

Drawing M-71, Sheet No. 1, “Diagram of Instrument Air Piping, Turbine Building”

Drawing M-71, Sheet No. 4, “Diagram of Instrument Air Piping, Turbine Building”

Drawing M-22, Sheet No. 4, “Diagram of Service Water Piping”

QCOP 4700-01, Revision 6, “Instrument Air Startup”

QOP 4700-03, Revision 5, “Instrument Air Unit Cross-Connect Operation”

CR #00097954, “Instrument Air System Requires Emergent Modification,” dated 03/06/2002

CR #00128977, “Moisture Separator Work Used Instrument Air Instead of Service Air,” dated 10/25/2002

CR #00138855, “U2 Instrument Air Dryer Left Chamber Performance Degrading,” dated 01/09/03

CR # 00141267, U2 Instrument Air Dryer Identified as a Maintenance Rule Functional Failure,” dated 01/24/03

CR #00141275, “Instrument Air System Operation with Blowdown Valves Open,” dated 01/24/03

CR #00109503, “Instrument Air Compressor Run Without Cooling Water,” dated 05/24/02

CR #00113667, “PI 0-4741-57(75)(76) were Replaced w/o Part Evaluation,” dated 06/24/02

CR #00132627, “Configuration Control Issues Exceeds Common Cause Threshold,” dated 11/20/02

CR #00140354, “NOS Identified Adverse Trend in Configuration Control,” dated 01/21/03

Instrument Air System Health Overview Report dated January 2003

1R05 Fire Protection

OP-AA-201-001; Fire Marshall Tours; Revision 1

Various Sections; Quad Cities Fire Hazards Analysis; Revision 13; August 2001

Condition Report 140803; NRC has Concern with the Amount of Grease in Cribhouse; dated January 23, 2003

Quad Cities Operating Licenses DPR-29 and DPR-30

NRC Safety Evaluation Report for Quad Cities Station dated February 12, 1981

Condition Report 141871; Fire Protection Equipment Requirements for Unit 1 and Unit 2 High Pressure Coolant Injection; dated January 23, 2003

Drawing No. F-2-1, Revision D, “Detection and Suppression, Reactor Building Floor Elevation 554'-0""

Quad Cities Station Units 1 and 2 Fire Hazards Analysis; dated August 2001

Quad Cities Fire Pre-Plan RB-3, “Unit 1 Reactor Building, Elevation 554'-0" Southwest Corner Room - 1B Core Spray, Fire Zone 11.2.1"

Condition Report 138737; Flammables Not Being Stored Properly

Quad Cities Fire Pre-Plan RB-4, “Unit 1 Reactor Building, Elevation 554'-0" Northwest Corner Room - 1A Core Spray, Fire Zone 11.2.3"

Quad Cities Fire Drill Scenario 1st Quarter 2003; Fire Drill on 3rd Floor Reactor Building

Quad Cities Fire Pre-Plan RB-21, “Unit 2 Reactor Building Elevation 647'-6" Third Floor, Fire Zone 1.1.2.4"

1R07 Heat Sink

QCOS 1000-29; RHR Heat Exchanger Thermal Performance Test; Revision 6

Updated Safety Analysis Report

EPRI TR-107397; Service Water Heat Exchanger Testing Guidelines; March 1998

1R11 Licensed Operator Requalification

Scenario LOCT-3001-EPU; Raise Power with Recircs, Reactor Feedwater Pump Flow Transmitter Failure, and Loss of Stator Water Cooling; dated February 10, 2003

QCGP 3-1; Reactor Power Operations; Revision 30

QCOA 0201-09; Reactor Low Water Level; Revision 20

QCOA 5300-01; Loss of Stator Cooling; Revision 11

QCOP 0202-03; Reactor Recirculation System Low Controller Operations; Revision 12

1R12 Maintenance Effectiveness

Work Order 00508613 01; 250 Volt DC Charger Low Output Amps

Condition Report 00130924; Unit 1 250 Volt Battery Charger No. 1 Failed to Operate as Expected

Maintenance Rule Expert Panel Scoping Determination; 250 Volt DC Power

NUMARC 93-01; Nuclear Energy Institute Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants; Revision 2

Maintenance Rule Expert Panel Scoping Determination; Instrument Air

Maintenance Rule Expert Panel Scoping Determination; Core Spray

Regulatory Guide 1.160; Monitoring the Effectiveness of Maintenance at Nuclear Power Plants; Revision 2

Regulatory Guide 1.182; Assessing and Managing Risk Before Maintenance Activities at Nuclear power Plants; May 2000

1R13 Maintenance Risk Assessment and Emergent Work

Work Week Safety Profile; Weeks of January 13, January 24, February 3, February 17, March 10, and March 17, 2003

OU-QC-104; Daily Risk Factor Chart, Attachment 1; Revision 1

WC-AA-104; Review and Screening for Production Risk; Revision 4

Online Work Schedules; Week of January 13, January 24, February 3, February 17, March 10, and March 17, 2003

WC-AA-101; On-Line Work Control Process; Revision 6

Operations Department Night Orders; dated Week of February 17 and March 10, 2003

NRC Weekly Surveillance Report for the Week of February 17 and March 10, 2003

Quad Cities Availability Matrix

1R14 Non-Routine Evolutions

Condition Report 137908; 2A Recirculation Motor Generator Set Scoop Tube Inadvertent Reset

Qualified Nuclear Engineers Evaluation of Process Computer and Plant Information

Control Room Logs

Work Order 00412042; Perform Calibrations on 2A Recirculation Motor Generator Set Instrumentation

QCOP 0202-06; Reactor Recirculation Motor Generator Set Scoop Tube Reset; Revision 12

QCOP 0202-12; Reactor Recirculation Motor Generator Set Scoop Tube Lock Up and Manual Operation; Revision 21

QCOA 0201-03; Reactor High Pressure; Revision 14

QCOA 0400-01; Reactivity Addition; Revision 14

QCOA 0202-12; Reactor Recirculation System Failure, Flow Controller Fails High; Revision 13

Condition Report 150278; Inadvertent RCIC Trip Throttle Valve Trip and Unplanned LCO

QCOP 1300-01; Reactor Core Isolation Cooling System Preparation for Standby Operation; Revision 23

M-89; Diagram of Reactor Core Isolation Cooling (RCIC) System; Revision AR

1R15 Operability Evaluations

Condition Report 138067; Containment Hydrogen and Oxygen Monitoring Torus Sample Line Heat Trace Temperature; dated January 3, 2003

Condition Report 138083; Containment Hydrogen Monitors; dated January 3, 2003

NUREG-0737; Clarification of Three Mile Island Action Plan Requirements; dated November 1980

Letter from H.R. Denton to All Operating Nuclear Power Plants; Discussion of Lessons Learned Short Term Requirements; dated October 30, 1979

Regulatory Guide 1.97, Revision 2; Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environmental Conditions During and Following an Accident; dated May 1983

Letter from T. Ross, NRC, to H.E. Bliss, Commonwealth Edison; Conformance of Post Accident Monitoring Instrumentation at Quad Cities with Regulatory Guide 1.97; dated August 16, 1988

Technical Specifications

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Non-Licensed Operator/Licensed Operator Training Module LN-2400; Containment Accident Monitoring; dated April 2001

Condition Report 140006; Torque Wrench Used to Torque Piston Tube Nuts is Broken; dated January 2, 2003

Condition Report 139884; Unit 2 125 VDC Ground, January 17, 2003

Schematic Diagram 4E-2461, Sheet 2; Auto Blowdown; Part 1

Schematic Diagram 4E-2575AK; Control Room Annunciator Panel 902-3; and

Wiring Diagram 4E-2789E; Auto Blowdown Relay Panel 2202-32

Condition Report 138067; Containment H_2/O_2 Monitor Torus Sample Line Heat Trace Temperature

Condition Report 143666; White Residue Found on 480 Volt Breaker Auxiliary Contacts

Condition Report 143005; Emergency Core Cooling System Keep Fill Pump Stopped Operating

1R16 Operator Workarounds

Operator Workaround 02-017OC; Safe Shutdown Makeup Pump Room Cooler Compressor High Discharge Pressure Troubles

Condition Report 127679; The Safe Shutdown Makeup Pump Room was Warm and the Cooler Not Running

Technical Specifications

Updated Final Safety Analysis Report

1R17 Permanent Plant Modifications

Design Change Package 337160; Installation of Drain Path from Unit 1 Station Blackout Diesel Air Compressor Crankcases; Revision 0

Design Change Package 337160; Installation of Drain Path from Unit 1 Station Blackout Diesel Air Compressor Crankcases; Revision 1

Design Change Package 24288; Moisture Elimination for the 1A Station Blackout Diesel Air Compressor; Revision 0

Design Change Package 24288; Moisture Elimination for the 1A Station Blackout Diesel Air Compressor; Revision 1

QCAP 0400-17; Station Lubrication Program; Revision 22

QOM 1(2)-6620-01; Station Blackout Diesel Generator 1 Starting Air Valve Check List; Revision 3

Design Change Package 340578; Install Patch Plate Over Pinhole Leak on MO-1-1001-5B Outlet Reducer

50.59 Screening Number QC-S-2003-0006; Install Patch Plate Over Pinhole Leaks on Line Number 1-1043B-12 inch

Condition Report 138011; Leak Identified from Service Water Piping for Standby Coolant Injection Header

Condition Report 139325; Pool of Water Identified in the 1B Residual Heat Removal Room

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1R19 Post Maintenance Testing

Work Order 99229406; Replace Tube Bundle in 2C RHRSW Pump Cubicle Cooler

QCOS 0010-07; Equipment External Leak Test, Revision 1

Condition Report 148786; Technical Bases 3.6.1.7 Statement Discrepancy

QCOS 1600-14; Pressure Suppression System Power operated Valve IST Testing, Revision 19

Work Order 99252878; Solenoid Replacement for 1-1601-20B

Schematic Diagram 4E-1510; Primary Containment Isolation System Valve MO 1-1601-57 and Miscellaneous Valves, Revision AG

Work Order 00553177; Troubleshoot RCIC Overspeed Trip

QCOS 1300-05; Quarterly RCIC Pump Operability Test, Revision 35

M-89; Diagram of Reactor Core Isolation Cooling Piping, Revision AR

Work Order 00421097; Safe Shutdown Makeup Pump Room Cooler Inspection

Work Order 00421013; Safe Shutdown Makeup Pump Room Cooler Belt Replacement

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Procedure QCOS 1400-01, Revision 23, “Quarterly Core Spray System Flow Rate Test”

Technical Specification 3.5.1

P&ID M-36, Diagram of Core Spray Piping, Unit 1

Procedure MA-AA-723-300; Diagnostic Testing of Motor Operated Valves, Revision 0

Work Order 99275655; MOV Post-test Data Review Worksheet

1R22 Surveillance Testing

QCIS 7600-02; Unit 2 Standby Diesel Generator Cardox Fire Protection Functional Test; Revision 1

QCOS 1300-23; Unit 1 Reactor Core Isolation Cooling Functional Test; Revision 8

QCOS 2300-26; Unit 2 High Pressure Coolant Injection Contaminated Condensate Storage Tank Suction Check Valve Closure Test; Revision 10

QCOS 2300-13; Unit 2 High Pressure Coolant Injection System Manual Initiation Test; Revision 29

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Drawing 4E-1484A; Schematic Diagram RCIC System Part 1; Revision AA

Drawing 4E-1484B; Schematic Diagram RCIC System Part 2; Revision AT

Drawing 4E-1484C; Schematic Diagram RCIC System Part 3; Revision AJ

Drawing 4E-1484D, Sheet 1; Schematic Diagram RCIC System Part 4; Revision AL

Drawing M-87, Sheet 1; Diagram of High Pressure Coolant Injection (HPCI) Piping; Revision BF

1R23 Temporary Plant Modifications

Engineering Change 340635; Lift Leads at 2-2202-32 Panel to Alleviate a 125 Volt DC Ground on the PORV 2-0203-3E Annunciator Circuit

Condition Report 139884; U-2 125 VDC Ground

10 CFR 50.59 Screening QC-S-2003-0013; Disable PORV 2-0203-3E Annunciator; Dated January 17, 2003

LS-AA-105-1001; Supporting Operability Documentation; Operability Assessment Required for the 3E Relief Valve

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1EP2 Alert and Notification System (ANS) Testing

Quad Cities Station Off-site Siren Test Plan; Revision 3

Exelon Semi-Annual Siren Report for January 2002 Through June 2002

EP-AA-125-1004; Facilities and Equipment - PI Guidance; Revision 0

Samples of 2001 and 2002 ANS Maintenance Records

Condition Report 00121176; Review of First Half 2002 Siren Test Data

1EP3 Emergency Response Organization (ERO) Augmentation Testing

EP-AA-122; Drills and Exercises; Revision 3

EP-AA-122-1001; Attachment 2; Conduct of Call-in Augmentation Drills; Revision 2

EP-AA-121-1001; Automated Call-out System Maintenance; Revision 2

Records of Monthly, Unannounced, Off-hours ERO Augmentation Drills From June 2001 Through December 2002

Vendor Assessment of Automated ERO Call-out Processes and Administrative Controls; dated March 26, 2002

Samples of 2002 Revisions of the Quad Cities Station's ERO Roster

Quad Cities Station's ERO Roster; dated January 2003

Condition Report 0083650; November 2001 Off-hours Augmentation Drill Marginally Successful Due to One Responder Being Seven Minutes Late

Condition Report 00113126; One Support Responder Responded Incorrectly to Automated Call-out System During June 2002 Off-hours Drill

Condition Report 00118625; Several False Pager Activations in August 2002 Due to Ongoing Maintenance by Pager Vendor

Condition Report 00133159; November 2002 Augmentation Drill Canceled Due to Plant Outage

1EP5 Correction of Emergency Preparedness Weaknesses and Deficiencies

December 2001 Off-year Exercise Findings and Objectives Report; dated March 2002

June 2002 Pre-exercise Drill Findings and Objectives Report; dated July 2002

July 2002 Biennial Exercise Findings and Objectives Report; dated July 2002

Quad Cities Station 2001 Medical/Health Physics Drill Evaluation Report; dated January 8, 2002

Quad Cities Station 2002 Medical/Health Physics Drill Evaluation Report; dated October 6, 2002

Nuclear Oversight Field Observation on August 2001 Unusual Event Declaration; NOA-QC-01-3Q

Nuclear Oversight Continuous Assessment Report for October Through December 2001

Nuclear Oversight First Quarter 2002 Field Observation; NOA-QC-02-1Q

Nuclear Oversight Second Quarter 2002 Field Observation; NOA-QC-02-2Q

Nuclear Oversight Third Quarter 2002 Field Observation; NOA-QC-02-3Q

Nuclear Oversight Fourth Quarter 2002 Field Observation; NOA-QC-02-4Q

Lessons Learned From the Quad Cities Pre-exercise Drill; undated training handout

ERO Exercise/Drill Review; undated training handout

Condition Report 00114574; Improvement Items Identified During June 2002 Pre-exercise Drill

Condition Report 00114575; Provide Additional Training on Meaning of "Release is Occurring"

Condition Report 00117403; Reassess Procedural Guidance on Changing Environmental Thermo-luminescent Dosimeters and Air Sampler Cartridges During an Emergency

Condition Report 00117395; Evaluate Need for a Hazardous Materials Response Kit Within the Protected Area

Condition Report 00113827; Plant Public Address System Audibility Problem in Mechanical Maintenance Staff's Break Room

Condition Report 00114582; Revise Command and Control Transfer Checklist to Ensure Control Room is Notified of Command Transfer to Emergency Operations Facility

Condition Report 00117401; Plant Public Address System Audibility Problems

EP-AA-112, Attachment 1; Command and Control Turnover Briefing Form; Revision 6

EP-AA-112, Attachment 6; Coordination of Field Team Activities; Revision 6

EP-MW-114-100, Attachment 1; Offsite Notifications - Nuclear Accident Reporting System; Revision 1

2PS1 Radiological Effluents

SVP-02-024; Quad Cities Nuclear Power Station's Radioactive Effluent Report for January through December 2001; April 5, 2002

CY-QC-110-605; Reactor Building Vent Gaseous & Particulate Sampling; Revision 4

CY-QC-120-720; Plant Effluent Dose Calculations; Revision 1

CY-QC-130-320; Operation of the Packard 2900TR/3100TR Liquid Scintillation Counter; Revision 0

CY-QC-130-402; SPING 3/4 Calibration; Revision 1

CY-QC-130-601; G.E. Noble Gas Monitor Efficiency Calibration; Revision 0

QCCP 0300-07; DAM 4/3 Calibration; Revision 6

QCCP 0800-05; Efficiency Calibration of CRU Gamma Spectrometer Multichannel Analyzer System; Revision 5

QCCP 0800-07; Tritium Analysis Using the Tricarb Liquid Scintillation Counter; Revision 9

QCCP 0800-10; Efficiency Calibration of Tennelec Proportional Alpha/Beta Systems; Revision 3

QCCP 0800-11; Lower Limit of Detection (LLD) Determination; Revision 10

QCCP 0800-19; Counting Room Quality Control Program; Revision 3

QCTS 0420-03; TSC/HRSS Air Filtration Unit Removal of Charcoal Adsorber Test Canisters; Revision 5

QCTS 0440-03; CREVS Air Filtration Unit Charcoal Test Canister Removal; Revision 11

½-1799-01; Calibration of Liquid Radwaste Effluent Monitor; May 3, 2001

2-1799-01; Calibration of U2 Service Water Effluent Monitor; January 23, 2003

1(2)-1730A/B; Calibration of Plant Chimney Noble Gas Monitor; June 6, 2001

1-1735A/B; Calibration of U1 Reactor Building Vent/Fuel Pool Radiation Monitor; January 8, 2003

ATP 131; Germanium Detector Calibration Verification; December 11, 2001

ATP 368; Germanium Detector Calibration Verification; December 11, 2001

ATP 477; Germanium Detector Calibration Verification; December 11, 2001

ATP 787; Germanium Detector Calibration Verification; December 11, 2001

Tennelec LB5100 Series (1,2 & 3); Gas Flow Proportional Counter Calibration; December 28, 2001

Packard Tri-Carb 2900TR; Liquid Scintillation Counter Calibration; October 2, 2002

CR Q2001-03159; 1A RHR Heat Exchanger Leaking From Reactor Side into Service Water Side; October 11,2001

CR 2001-01759; Main Chimney Noble Gas Grab Sample Obtained Through Contaminated Sample Lines; June 6, 2001

CR108530; U-2 Service Water Rad Monitor Spiked; May 17, 2002

CR133233; NOS Identified Corrective Action Not Established For 1A RHR Heat Exchanger Leak; November 26, 2002

CR133236; NOS Identified Issue With 2A RHR Heat Exchanger Leak Operability Evaluation; November 26, 2002

CR1411761; SA Findings in the Area of Radiological Effluents; January 29, 2003

CR (AT) 125316-16; N.O. Observation, RHR Heat Exchanger Leaks Responses and Evaluations; November 26, 2002

Offsite Dose Calculation Manual; Revision 4

Analytics Radiochemistry Cross Check Program Results; Year 2002

Focus Area Self Assessment: Radiological Effluent Controls Program; February 1, 2003

4OA1 Performance Indicator Verification

Nuclear Energy Institute Document 99-02; Regulatory Assessment Performance Indicator Guideline; Revision 2

Handouts from the Performance Indicator Challenge Board held on January 15, 2003

LS-AA-2110; Monthly Performance Indicator Data Elements for ERO Drill Participation; Revision 2

LS-AA-2120; Monthly Performance Indicator Data Elements for Drill/Exercise Performance; Revision 2

LS-AA-2130; Monthly Performance Indicator Data Elements for ANS Reliability; Revision 2

Monthly and Daily ANS Operability Test Results for April 2002 through September 2002

Condition Report 00106480; ERO Indicator for April 2002 Has Downward Trend

Condition Report 00106639; Scheduled May 2002 Drill Terminated Due to Need to Staff the Outage Control Center

LS-AA-2070; Monthly Performance Indicator Data Elements for Safety System Unavailability - Residual Heat Removal Systems; Revision 2

LS-AA-2030; Monthly Performance Indicator Data Elements for Unplanned Power Changes per 7000 Critical Hours; Revision 2

LS-AA-2020; Monthly Performance Indicator Data Elements for Scrams with Loss of Normal Heat Removal; Revision 2

LS-AA-2100; Monthly Performance Indicator Data Elements for Reactor Coolant System Leakage; Revision 3

Condition Report Q2000-01741; Unit 2 Reactor Scram; dated May 5, 2000

Condition Report Q2001-07441; Loss of Unit 2 Main Power Transformer; dated August 2, 2001

Condition Report Q2001-02743; NRC Performance Indicator is in Action Range; dated August 30, 2001

4OA3 Event Followup

Condition Report 131373; Bus 14-1 Pot Fuse Drawer Opened and the Emergency Diesel Generator Started; dated November 13, 2002

Prompt Investigation Report for Condition Report 131373; dated November 18, 2002

Root Cause Report for Condition Report 131373; dated December 9, 2002

RM Documentation No. SA-1155; Quad Cities Phase III SDP Input to NRC for Q1 Bus 14-1 PT Door Ajar During Q1R17 - Seismic Concern; dated January 30, 2003

Event Notification Worksheet; dated November 13, 2002

Condition Report 132496; Pot Fuse Drawer for Bus 14 Was Not Properly Latched; dated November 18, 2002

Condition Report 131952; Verify Condition of Pot Fuse Drawers for Other Safety-Related Busses; dated November 25, 2002

Condition Report 138696; Low Pressure Injection was Inoperable for Both Residual Heat Removal Loops Due to Inadequate Procedure Review

QCOA 1000-04; LPCI Automatic Initiation; Revision 12

QCOS 1600-44; Unit 2 PCI Group 2 Partial Isolation Test at Power; Revision 6

QCOS 1000-09; RHR Power Operated Valve Test; Revision 15

Work Order 99271040; Perform Recirculation Motor Generator Set Field Breaker Inspection Per QCEPM 0200-10

General Electric letter to Mr. John Bailey dated December 13, 2002; Report for Failure to Open Circuit Breaker AKF-2-25, S/N 179A5094-186LD

QCEPM 0200-10; Recirc M/G Field Breaker Inspection and Test; Revision 8

Condition Report 115362; Apparent Cause Evaluation Report for Failed Recirc MG Set Circuit Breaker

General Electric letter to Mr. Larry Bukantis dated November 6, 1998; GE Type AK-25 Circuit Breaker Interlock Adjustments

QCOS 0202-17; Functional Testing of Unit 1 ATWS Recirculation Pump Trip and Alternate Rod Insertion (ARI) Logic; Revision 0

NRC Information Notice 87-12 dated February 13, 1987; Potential Problems with Metal Clad Circuit Breakers, General Electric Type AKF-2-25

4OA7 Licensee-Identified Violations

Technical Specifications

Post Accident Sample System Inspections dated March 18, 2003

Condition Report 149403; Technical Specification Leakage Reduction Program does not Include the PASS System