July 28, 2000

Mr. Oliver D. Kingsley
President, Nuclear Generation Group
Commonwealth Edison Company
ATTN: Regulatory Services
Executive Towers West III
1400 Opus Place, Suite 500
Downers Grove, IL 60515

SUBJECT: QUAD CITIES INSPECTION REPORT 50-254/200007(DRP);
50-265/200007(DRP)

Dear Mr. Kingsley:

On June 30, 2000, the NRC completed an inspection at your Quad Cities Units 1 and 2 reactor facilities. The results were discussed with Mr. Dimmette and other members of your staff. The enclosed report presents the results of that inspection.

The inspection was an examination of activities conducted under your license as they relate to safety and to compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas the inspection consisted of a selective examination of procedures and representative records, observations of activities, and interviews with personnel. Specifically, this inspection focused on resident inspection activities.

Based on the results of this inspection, the inspectors identified one issue involving several human performance problems for which no risk significance or color was assigned. The NRC also identified two issues for which the risk was not yet categorized. These two issues related to the high pressure coolant injection turbine motor speed changer and a narrow level control band for the high pressure injection system. Both issues were considered unresolved items. Additionally, the NRC identified six issues which were categorized as being of very low risk significance. These issues involve: a procedure violation which resulted in causing a small reactor water leak during maintenance; poor operator response to a transient caused by a Unit 2 reactor trip; failure to follow Technical Specification requirements during emergency diesel generator maintenance; failure to follow procedures during high pressure coolant injection system testing which resulted in a steam leak; failure to properly implement a design change on the high pressure coolant injection system; and failure to follow procedures during instrument calibration which resulted in a Unit 2 reactor trip. Five of these issues were determined to involve violations of NRC requirements. However, due to their very low safety significance and because they have been entered into your corrective action program, these five issues were considered Non-Cited Violations, consistent with Section VIA.1 of the Enforcement Policy. If you contest 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 Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region III; the Director, Office of Enforcement, United

States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Quad Cities facility. These issues are listed in the summary of findings and are discussed in the report.

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/NRC/ADAMS/index.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Mark A. Ring, Chief
Reactor Projects Branch 1

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

Enclosure: Inspection Report 50-254/200007(DRP);
50-265/200007(DRP)

cc w/encl: D. Helwig, Senior Vice President, Nuclear Services
C. Crane, Senior Vice President, Nuclear Operations
H. Stanley, Vice President, Nuclear Operations
R. Krich, Vice President, Regulatory Services
DCD - Licensing
J. Dimmette, Jr., Site Vice President
G. Barnes, Quad Cities Station Manager
C. Peterson, Regulatory Affairs Manager
M. Aguilar, Assistant Attorney General
State Liaison Officer, State of Illinois
State Liaison Officer, State of Iowa
Chairman, Illinois Commerce Commission
W. Leech, Manager of Nuclear
MidAmerican Energy Company

DOCUMENT NAME: G:\QUAD\QUA99018.DRP
To receive a copy of this document, indicate in the box "C" = Copy without attach/encl "E" = Copy with attach/encl "N" = No copy

OFFICE	RIII	E	RIII	E
NAME	Lerch:tr:tn:co:dp		Ring	
DATE	07/28/00		07/28/00	

OFFICIAL RECORD COPY

ADAMS Distribution:
AJM
DFT
SNB (Project Mgr.)
T. Frye, NRR
A. Madison, NRR
S. Stein, NRR
R. Mathew, NRR
J. Dyer, RIII w/encl
J. Caldwell, RIII w/encl
B. Clayton, RIII w/encl
SRI Quad Cities w/encl
DRP w/encl
RIDSRGN3DRS w/encl
RIII_IRTS
JRK1
BAH3

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos:	50-254; 50-265
License Nos:	DPR-29; DPR-30
Report No:	50-254/200007(DRP); 50-265/200007(DRP)
Licensee:	Commonwealth Edison Company (ComEd)
Facility:	Quad Cities Nuclear Power Station, Units 1 and 2
Location:	22710 206th Avenue North Cordova, IL 61242
Dates:	May 17 through June 30, 2000
Inspectors:	C. Miller, Senior Resident Inspector K. Walton, Resident Inspector D. Funk, Emergency Preparedness Analyst R. Ganser, Illinois Department of Nuclear Safety
Approved by:	Mark Ring, Chief Reactor Projects Branch 1 Division of Reactor Projects

NRC's REVISED REACTOR OVERSIGHT PROCESS

The federal Nuclear Regulatory Commission (NRC) recently revamped its inspection, assessment, and enforcement programs for commercial nuclear power plants. The new process takes into account improvements in the performance of the nuclear industry over the past 25 years and improved approaches of inspecting and assessing safety performance at NRC licensed plants.

The new process monitors licensee performance in three broad areas (called strategic performance areas): reactor safety (avoiding accidents and reducing the consequences of accidents if they occur), radiation safety (protecting plant employees and the public during routine operations), and safeguards (protecting the plant against sabotage or other security threats). The process focuses on licensee performance within each of seven cornerstones of safety in the three areas:

Reactor Safety	Radiation Safety	Safeguards
● Initiating Events	● Occupational	● Physical Protection
● Mitigating Systems	● Public	
● Barrier Integrity		
● Emergency Preparedness		

To monitor these seven cornerstones of safety, the NRC uses two processes that generate information about the safety significance of plant operations: inspections and performance indicators. Inspection findings will be evaluated according to their potential significance for safety, using the Significance Determination Process, and assigned colors of GREEN, WHITE, YELLOW or RED. GREEN findings are indicative of issues that, while they may not be desirable, represent very low safety significance. WHITE findings indicate issues that are of low to moderate safety significance. YELLOW findings are issues that are of substantial safety significance. RED findings represent issues that are of high safety significance with a significant reduction in safety margin.

Performance indicator data will be compared to established criteria for measuring licensee performance in terms of potential safety. Based on prescribed thresholds, the indicators will be classified by color representing varying levels of performance and incremental degradation in safety: GREEN, WHITE, YELLOW, and RED. GREEN indicators represent performance at a level requiring no additional NRC oversight beyond the baseline inspections. WHITE corresponds to performance that may result in increased NRC oversight. YELLOW represents performance that minimally reduces safety margin and requires even more NRC oversight. And RED indicates performance that represents a significant reduction in safety margin but still provides adequate protection to public health and safety.

The assessment process integrates performance indicators and inspection so the agency can reach objective conclusions regarding overall plant performance. The agency will use an Action Matrix to determine in a systematic, predictable manner which regulatory actions should be taken based on a licensee's performance. The NRC's actions in response to the significance (as represented by the color) of issues will be the same for performance indicators as for inspection findings. As a licensee's safety performance degrades, the NRC will take more and increasingly significant action, which can include shutting down a plant, as described in the Action Matrix.

More information can be found at: http://www.nrc.gov/NRR/OVERSIGHT/index.html.

SUMMARY OF FINDINGS

IR 05000254-00-07, on 05/17-06/30/2000; Commonwealth Edison; Quad Cities Nuclear Power Plant, Units 1 & 2. Equipment Alignment, Emergent Work, Non-routine Plant Evolutions, Surveillance Testing, Event Follow-up, Human Performance.

The report covers a 6-week period of resident inspection. The inspection identified six green issues, five of which were Non-Cited Violations. The inspection also identified a cross-cutting issue with no color and two issues which did not yet have a color determined. The significance of issues is indicated by their color (green, white, yellow, red) and was determined by the Significance Determination Process in Inspection Manual Chapter 0609.

Initiating Events

- GREEN. On June 10, maintenance workers disconnected a seal line to the 2B reactor water cleanup pump that was not properly isolated by the out-of-service tagout and discovered that the line was pressurized to about 1000 psig. The resulting spray caused a spread of contamination in the room and a potential hazard to the workers. No personnel injuries occurred as a result of this event. Failure to hang the proper out-of-service for the maintenance activity was considered a Non-Cited Violation (NCV) of Technical Specifications.

  The inspectors considered this event of very low safety significance due to the ability to isolate the leak and the availability of mitigating equipment (Section 1R13).

- GREEN. During operator response to a reactor trip on May 22, operators did not control reactor vessel inventory prior to the operating reactor feedwater pump tripping on high reactor vessel water level. Additionally, operators had not started a reactor feedwater pump by the time a reactor low level condition existed. This resulted in a second engineered safety feature actuation.

  The inspectors reviewed this issue using the significance determination process for a transient with a loss of feedwater and determined this was of very low risk significance (Section 1R14).

- GREEN. On May 5 an instrument technician performing a calibration of the main steam line high steam flow detectors made adjustments to the wrong instrument, causing a reactor trip on Unit 2. Failure to implement the calibration procedure for the proper channel instrument was considered an NCV of Technical Specification 6.8.A.1.

  The safety significance of this event was minimal due to the availability of mitigating equipment (Section 4OA.3).

Mitigating Systems

- GREEN. On May 23, the licensee removed the Unit 1 emergency diesel generator from service for maintenance and testing, but failed to comply with a Technical Specification action within the time requirement. Operator failure to comply with the Technical Specifications was considered an NCV.

  This issue was of very low safety significance since the surveillance was later completed satisfactorily (Section 1R22.1).

- GREEN. On June 14, control room operators failed to close two drain valves during a pre-start check of the Unit 1 high pressure coolant injection system. The room filled with steam which caused low level contamination of the room and resulted in operators isolating the system. Failure to close the valves in accordance with the procedure was considered an NCV of Technical Specifications.

  The inspectors considered the Unit 1 high pressure coolant injection system to have been available in this condition since the drain valves were designed to automatically close during an automatic system start signal. Since all other mitigating systems were available at the time, this issue was considered to be of very low risk significance (Section 1R22.2).

- GREEN. On June 27, 2000, inspectors found that licensee implementation of a 1992 modification failed to implement procedure changes for the high pressure coolant injection system. This was considered an NCV of 10 CFR Part 50, Appendix B, "Design Control."

  Risk was considered very low since the information missing from the procedure should not have prevented operators from accomplishing key steps in the procedure (Section 1R04).

- TBD. On June 27, 2000, inspectors found that some high pressure coolant injection design deficiencies, which had been identified by licensee engineers in 1996 and 1998, had not been corrected and had not been evaluated for adverse effects on system operation. The 1996 design issue involved a condition in which the Unit 1 or Unit 2 high pressure coolant injection turbine motor speed changer could fail. The 1998 issue involved the adverse effects of a narrow reactor level control band for high pressure coolant injection on the station 250 Vdc battery. Both of these issues were considered unresolved items pending further investigation and their risk significance has not yet been determined (Section 1R04).

Cross-Cutting Issues: Human Performance

- NO COLOR. Inspectors found that several recent events which affected plant operations and/or had the potential to adversely affect personnel safety involved elements of human performance deficiencies. An apparent adverse trend in human performance during the period May 5, 2000 to June 30, 2000, was evidenced by the following incidents. A senior reactor operator failed to implement a Technical Specification surveillance requirement

for removing an emergency diesel generator from service. Control room operators experienced problems controlling reactor vessel water level during post-scram recovery efforts and failed to close a pair of drain valves during a pre-start of the Unit 1 high pressure coolant injection system. Maintenance personnel errors were involved in a reactor trip on May 5, and spread of contamination in the 2B reactor water cleanup room when a fitting was disconnected under 1000 psig pressure on June 10 (Section 4OA.4).

Report Details

Plant Status (71150)

Operators maintained Unit 1 at or near full power operations during the period, except for minor power decreases for testing or control rod positioning. On June 14 operators reduced Unit 1 power to 95 percent of rated power due to a reactor feedwater pump minimum flow valve opening from a failed solenoid. The solenoid was replaced, and full power was achieved several hours later.

Operators maintained Unit 2 at full power operations until May 22. The Unit 2 reactor tripped automatically due to high power caused by turbine control valve positioning problems following maintenance on a turbine control valve solenoid. Operators returned Unit 2 to full power operation on May 25. Unit 2 remained at or near full power operations for the rest of the period except for minor power decreases for testing or control rod positioning.

1. REACTOR SAFETY

1R04 Equipment Alignments (71111-04)

a. Inspection Scope

The inspectors reviewed the following system alignments related to the Mitigating System Cornerstone:

- Unit 1 High Pressure Coolant Injection (semi-annual)
- Units 1 and 2 High Pressure Coolant Injection (quarterly)

During the semi-annual system walkdown for Unit 1, inspectors compared valve lineups with system piping and instrument diagrams and with system lineup procedures, and reviewed documents related to the material condition of the system. These documents included Problem Identification Forms related to component or procedure discrepancies, open design change requests and engineering requests, operator work-arounds and operator challenges, and operator turnover sheets. Inspectors also reviewed abnormal operating procedures.

b. Issues and Findings

Although the inspectors found generally good agreement among piping and instrumentation diagrams, plant procedures and system configuration, some configuration discrepancies and some material condition problems were noted. One procedure problem found was due to an inadequate modification. Some system deficiencies had been identified by engineers in 1996 and 1998, but had not been corrected or evaluated for their effect on system operation.

The procedure problem which was identified by the inspectors related to Quad Cities Operations Abnormal Procedure 2300-04, “HPCI TurbineTrip/Isolation Recovery.” Step 2 referred operators to possible high pressure coolant injection isolation alarms for

Panel 901-3. Step 2g referred to annunciator G-9, "HPCI Vault Fire." Inspectors found that this annunciator no longer existed on panel 901-3. Information regarding an isolation associated with a fire was located in another annunciator system due to a 1992 modification. Engineers completed the modification to change many annunciators as part of the detailed control room design review. The failure to change the procedure was considered a **Non-cited Violation (50-254/200007-01)** of 10 CFR Part 50, Appendix B, Criterion III "Design Control," consistent with Section VI.A.1 of the May 1, 2000, Enforcement Policy. This issue was considered more than minor due to many other annunciators and procedures potentially being affected.

Engineers indicated that the reason the procedure was not changed when the modification was installed was that the design control process was not as careful in 1992 as it should have been. Operators changed the procedure when informed of the discrepancy, but failed to write a problem identification form to investigate the cause of the problem and the extent of condition. Later, after further discussion with the inspectors, the licensee documented these issues on Problem Identification Forms Q2000-02360 and Q2000-02414. Many other annunciators were changed using the same modification. The licensee indicated plans to review other potentially affected procedures.

Some material condition problems previously identified by a work request are listed below:

- Work Request 990167039, speed oscillation during operation,
- Work Request 990102050, turning gear motor heater not working,
- Work Request (numerous), repair flow accelerated corrosion on steam drain line to condenser,
- Work Request 990102837, turbine leaking steam when running.

In addition to these, the inspectors noted that insulation was missing from a section of a normally insulated condensate drain return line which had been identified to have flow accelerated corrosion problems. The licensee planned to correct these discrepancies, and none was deemed to prevent the system from performing design functions.

The inspectors reviewed system design changes and noted certain design changes considered important for operations had been approved but not installed, including:

- Design Change Package 9600063. This package was requested in 1996 to correct a potential design problem with the high pressure coolant injection motor speed changer unit. The motor speed changer logic allowed the motor to remain energized with a loss of coolant accident signal present, even after contacting the mechanical stop. Inspectors found the licensee had not installed the modification to correct the design concern and had not addressed potential operability concerns of the system with the motor speed changer logic allowing continued operation of the motor against the high speed mechanical stop. If the motor speed changer failed while energized with a loss of coolant accident signal present, high pressure coolant injection could operate until reactor level reached the high level trip setpoint of 48 inches above reference zero, and then fail to

restart when level dropped to the reset point of 44 inches. Updated Final Safety Analysis Section 6.3.2.3.8 indicated the system "will automatically maintain reactor water level between low-low level and high level if the break size is within the capacity of the pump and the reactor is not depressurized below 150 psig."

The inspectors used Phase 2 of the Significance Determination Process, and determined the risk from internal events of high pressure coolant injection being inoperable for automatic starts for approximately 1 year was very low (GREEN). The Inspectors continued to evaluate other system outages that may have affected either unit concurrently with high pressure coolant injection system being inoperable.

The inspectors determined additional information was needed to fully evaluate risk due to external events, specifically fires. Therefore, this issue was considered an **Unresolved Item (50-254/200007-02).** The license documented the potential concerns identified by the inspectors on Problem Identification Form Q2000-02372.

- Design Change Package 9800238. This package was requested in 1998 to widen the automatic level control band for high pressure coolant injection from four inches to about 100 inches. The intent of this modification was to minimize starts and stops of the high pressure coolant injection turbine which would reduce pump and valve operation and could save battery capacity. The licensee had identified the design issue but had not corrected it, and had not evaluated the adverse effects of the present design on the station battery. Inspectors asked if frequent auto cycling of the high pressure coolant injection system to maintain a four inch control band would adversely affect battery capacity or the battery sizing calculation, since the high pressure coolant injection system is a major battery load. Licensee engineers were continuing to evaluate this issue at the end of the period. This was considered an **Unresolved Item (50-254/200007-03**) pending evaluation of frequent system cycling on the battery load profile.

- Design Change Package 9900079. This package was requested in 1999 to install a seal-in circuit for the auxiliary oil pump. The seal-in would help ensure adequate auxiliary oil pressure during a turbine start.

- Design Change Package 980017. This package was requested in 1998 to improve the turbine turning gear which had experienced a number of problems in the past.

Other issues in the corrective action program included three problems since 1999 with instrument drift on pressure switch PS 1-2354, the pressure switch for the minimum flow valve for the high pressure coolant injection pump. While the licensee had scheduled many of the modifications for installation, at least one had been postponed, and some did not have a firm date for installation.

1R05 Fire Protection (71111-05)

a. Inspection Scope

The inspectors toured the facility to determine availability of fire detection and suppression systems and to identify fire impairment for the following areas:

- Motor generator set lubricating oil coolers area,
- Station Blackout Diesel Generators, reactor feed pump areas, and fire pump areas,
- Units 1 and 2 turbine deck,
- Unit 1 high pressure coolant injection room and upper level torus areas,
- Both units electro-hydraulic control system areas, and condensate pump areas.

b. Issues and Findings

There were no issues or findings associated with this activity.

1R12 Maintenance Rule Implementation (71111-12)

a. Inspection Scope

The inspectors reviewed the following equipment problems for proper maintenance rule classifications in the Mitigating Systems Cornerstone:

- Station Blackout Emergency Diesel Generator performance problems,
- Residual Heat Removal Service Water Pump 1D failures,
- Unit 2 Turbine Solenoid Valve failures.

b. Issues and Findings

There were no observations or findings for this inspection activity.

1R13 Maintenance Risk and Emergent Work (71111-13)

a. Inspection Scope

The inspectors verified that there was no adverse risk to the facility for the following emergent activities:

- Troubleshoot the Unit 2 main turbine master trip solenoid,
- Repair of the Unit 1 combined vent piping from high pressure coolant injection and reactor core isolation cooling system to the main condenser,
- Repair of the “2B” reactor water cleanup pump seal.

b. Issues and Findings

On June 10, maintenance requested operations to hang tags for an out-of-service for seal repair on the “2B” reactor water cleanup pump. After the out-of-service tags were

hung, workers disconnected the seal cooling line. The workers discovered that the disconnected line was pressurized to about 1000 psig, and the resulting spray caused a spread of contamination in the room. No personnel injuries occurred as a result of this event. The licensee documented this event on Problem Identification Form Q2000-02154. Subsequent investigation revealed that the out-of-service tags were incorrectly hung on the reactor building closed cooler water side of the heat exchanger instead of on the reactor water cleanup side.

Failure to hang the proper out-of-service for the maintenance activity was considered a violation of the out-of-service procedure, Technical Specifications 6.8.1.A, and Regulatory Guide 1.33. This violation is being treated as a **Non-Cited Violation (50-265/200007-04)**, consistent with Section VI.A.1 of the May 1, 2000, Enforcement Policy. The inspectors considered this event of very low safety significance (GREEN) due to the ability to isolate the leak and the availability of mitigating equipment.

1R14 Nonroutine Plant Evolutions (71111-14)

.1 Unit 2 Reactor Scram on May 22

a. Inspection Scope

The inspectors reviewed events surrounding the scram on Unit 2 on May 22, 2000. The inspectors reviewed the licensee's sequence of events report, operator logs, and corrective actions.

b. Issues and Findings

On May 22, with Unit 2 at full power operation, the licensee identified that the number 1 main turbine control valve did not adequately respond during testing. The licensee isolated electro-hydraulic control fluid to the number 1 control valve to effect repairs. During the return to service of the component, control room operators received a high neutron flux scram due to a main steam system pressure spike. Automatic systems responded appropriately following the trip. The licensee attributed the cause of the reactor scram to an unanticipated response of the control valves and the electro-hydraulic system during the return to service of the number 1 control valve. The licensee documented this event on Problem Identification Form Q2000-01919 and had implemented corrective actions to this event.

During the trip recovery, operators did not adequately control reactor vessel water level. Reactor feedwater pumps tripped after a high reactor vessel water level condition occurred due to the operator's not reducing feedwater flow. About ½ hour later, operators had not started a reactor feedwater pump by the time a low reactor vessel water level condition existed. The low level condition resulted in a primary containment isolation signal actuation.

The licensee documented on Problem Identification Form Q2000-01933 that the training simulator had delay times that could condition operators to expect greater time for reactor water level recovery after a trip. The licensee previously knew of this condition

and implemented simulator model improvements after this event. The licensee continued to address corrective actions to improve operator post-trip performance.

Using the Significance Determination Process, the inspectors identified that this event was of very low safety significance (GREEN) due to operators being able to recover the reactor feedwater pump and the availability of other mitigating equipment.

1R15 Operability Evaluations (71111-15)

a. Inspection Scope

The inspectors reviewed operability evaluations for the following systems in the Mitigating Systems Cornerstone:

- 1D Residual Heat Removal Service Water Pump,
- Ultimate Heat Sink Stationary Screens,
- Unit 1 High Pressure Coolant Injection Problems.

b. Issues and Findings

There were no observations or findings for this inspection activity.

1R19 Post Maintenance Testing (71111-19)

a. Inspection Scope

The inspectors reviewed and/or observed the following post maintenance tests:

Mitigating Systems Cornerstone:

- Quad Cities Operating Surveillance 1000-04, "Quarterly RHR Service water Pump Operability Test," following repair of the 1D RHRSW pump,

Barrier Systems Cornerstone:

- Work Request 990131783 Standby Gas Treatment Heater Instrument Loop Calibration,
- Work Request 990177258 "B" Train Control Room Emergency Ventilation Switch Repair.

b. Issues and Findings

There were no findings identified.

1R22 Surveillance Testing (71111-22)

.1 Missed Surveillance Test

a. Inspection Scope

The inspectors reviewed the licensee's investigation for not implementing a Technical Specification action statement in a timely manner.

b. Issues and Findings

The licensee removed the Unit 1 emergency diesel generator from service for maintenance and testing on May 23. The unit supervisor did not complete the outage report for the emergency diesel generator as required by licensee administrative procedures. The outage report included instructions for implementing Technical Specification 3.9.A, Action Statement 2. This action statement required performance of a surveillance test to verify breaker alignments and power availability within one hour of declaring the emergency diesel generator inoperable. The unit supervisor had recently received a senior reactor operator's license and was distracted by other responsibilities. The oncoming unit supervisor identified that the surveillance test was not completed within the 1 hour requirement. The surveillance was subsequently completed satisfactorily. This issue was documented on Problem Identification Form Q2000-01931.

Failure to complete the required surveillance test was considered to be a violation of Technical Specification 3.9.A. However, this violation is being treated as a **Non-Cited Violation (50-254/200007-05)**, consistent with Section VI.A.1 of the May 1, 2000, Enforcement Policy. Since the breaker alignment and power availability test was completed satisfactorily, the inspectors determined that the risk significance of this issue was very low.

.2 Valve Mispositioning During Surveillance Test (71111-22)

a. Inspection Scope

The inspectors reviewed the licensee's prompt investigation associated with valves not being returned to required positions and reviewed Quad Cities Operating Surveillance (QCOS) 2300-05, "Quarterly HPCI Pump Operability Test."

b. Issues and Findings

On June 14, during performance of QCOS 2300-05, control room operators failed to close two above seat drain valves during pre-startup of the Unit 1 high pressure coolant injection pump. Upon startup of the pump, operators in the pump room noted an excessive amount of steam. Control room operators tripped the pump and later identified that a step in the procedure to close the two above seat drains was not completed. This event resulted in a slight increase in contamination levels in the room. The licensee documented this event on problem identification form Q2000-02200.

The inspectors considered the Unit 1 high pressure coolant injection system to have been available in this condition since the valves received close signals during an automatic initiation signal. This produced a very low risk (green) finding using the Significance Determination Process. Failure to close valves 1-2301-65 and 1-2301-66 as required by Step H.27 of QCOS 2300-05, was considered to be a violation of Technical Specification 6.8.A.1. and Regulatory Guide 1.33. However, this violation is being treated as a **Non-Cited Violation (50-254/200007-06)**, consistent with Section VI.A.1 of the May 1, 2000, Enforcement Policy.

.3 Routine Surveillance Tests

a. Inspection Scope (71111-22)

The inspectors reviewed or observed the following Quad Cities Operating Surveillance (QCOS) tests and Quad Cities Instrument Surveillance (QCIS) tests in the Mitigating Systems Cornerstone:

QCIS 0200-07,	"Power Operation APRM [Average Power Range Monitor] Functional Test,"
QCOS 6600-44	"Unit 1 Emergency Diesel Generator Semi Annual Timed Start Test."

The inspectors reviewed the test results to ensure that Technical Specification requirements were satisfied.

b. Issues and Findings

There were no findings associated with this inspection activity.

1R23 Temporary Plant Modifications (71111-23)

a. Inspection Scope

The inspectors reviewed the following temporary modifications (TMOD) to ensure that system availability was not adversely effected:

- TMOD 9900363 Install fans on Unit 1 reactor water feed regulating valve hydraulic skid,
- TMOD 9900385 Inject Furmanite Upstream of Valve 1-3299-219A.

b. Issues and Findings

There were no findings associated with this inspection.

Emergency Preparedness (EP)

1EP4 Emergency Action Level and Emergency Plan Changes (71111-14)

a. Inspection Scope

The inspectors reviewed Revisions 8P and 9 to the Quad Cities Emergency Plan which were submitted by licensee letters, dated August 19, 1998, and May 14, 1999, to verify that the changes did not decrease the effectiveness of the plan. The emergency plan revisions were submitted in accordance with 10 CFR 50.54(q).

b. Observation and Findings

There were no findings identified and documented during this inspection. Initial review of these changes will be subject to onsite inspection by an Emergency Preparedness Specialist.

4. OTHER ACTIVITIES (OA)

4OA2 Performance Indicator Verification

.1 High Pressure Coolant Injection System

a. Inspection Scope (71151)

The inspectors reviewed control room operator logs, system unavailability logs and maintenance rule documents for the high pressure coolant injection systems for both units for the first quarter of the year 2000 to verify that performance indicators reported to the NRC were accurate. The inspectors directed questions generated as a result of this inspection to system engineering personnel.

b. Issues and Findings

There were no findings associated with this inspection activity.

.2 Reactor Core Isolation Cooling System

a. Inspection Scope (71151)

The inspectors reviewed licensee logs, unavailability logs and maintenance rule documents for Unit 1 and Unit 2 reactor core isolation cooling systems for the first quarter of the year 2000 to verify that performance indicators reported to the NRC were accurate. The inspectors directed questions generated as a result of this inspection to system engineering personnel.

b. Issues and Findings

There were no findings associated with this inspection activity.

.3 Items Closed

a. Inspection Scope

The inspectors reviewed licensee actions regarding performance indicator reporting associated with **Unresolved Items 50-254/99020-06;50-265/99020-06** and spoke with the data steward for the Safety System Unavailability: Emergency A.C. Power performance indicator.

b. Issues and Findings

The inspectors reviewed a sample of performance indicator data which indicated the licensee was correctly reporting fault exposure hours. Engineers reviewed previously submitted data, and determined a color change from green for the indicator would not have occurred with the corrected data. This item is closed.

4OA3 Event Follow-up (71153)

a. Inspection Scope

The inspectors reviewed Licensee Event Reports and other items using Inspection Procedure 71153. The inspectors reviewed the licensee's root cause report and corrective actions for an event involving a Unit 2 reactor trip on May 5, 2000.

b. Observations and Findings

(Closed) Licensee Event Report 50-265/00006: Primary Coolant Isolation and Reactor Trip due to Human Error. On May 5, an instrument technician performing a calibration of the main steam line flow instruments caused a reactor trip on Unit 2. All safety-related equipment operated as designed but some minor equipment problems occurred (see Inspection Report 50-254/200005; 50-265/200005). During performance of Quad Cities Instrument Surveillance (QCIS) 0200-17, "Main Steam Line High Flow Calibration & Functional Test," the technician tested a "B" channel instrument and determined that the instrument needed to be calibrated. The instrument technician performed Step H.8 to calibrate the detector but inadvertently calibrated an "A" channel instrument instead. With both channels above the trip set points, the Unit 2 reactor scrammed. Failure to properly implement Quad Cities Instrument Surveillance 0200-17 was considered a violation of Technical Specification 6.8.A.1 and Regulatory Guide 1.33. However, this violation is being treated as a **Non-cited Violation (50-265/200007-07)**, consistent with Section VI.A.1 of the May 1, 2000, Enforcement Policy.

Using the significance determination process, this issue was screened out in Phase 1 for an initiating event since all mitigating equipment was available. Using the significance determination process for barrier systems, this issue was also screened out in Phase 1 since the primary containment isolation system was not degraded and operated as designed. The safety significance of this issue was considered to be very low (GREEN).

4OA4 Human Performance Issues

a. Inspection Scope

The inspectors reviewed human performance errors associated with several events and two licensee prompt investigations that were initiated for events that were caused by human errors. The events spanned a time from May 5, 2000, to June 14, 2000.

b. Issues and Findings

Inspectors found that several recent events which affected operations or had the potential to adversely affect personnel safety involved elements of human performance deficiencies. Control room operators failed to close a pair of above seat drain valves during a pre-start of the Unit 1 high pressure coolant injection system (see Section 1R22.2). The steam filled the high pressure coolant injection pump room and caused operators to secure the system. Maintenance personnel disconnected a seal cooling line to the 2B reactor water cleanup pump without proper out-of-service tagging (see Section 1R13). This resulted in a near miss injury to the mechanics from disconnecting the piping, which was pressurized to 1000 psig by reactor pressure. Both of these events resulted in a spread of radioactive contamination. Another maintenance activity caused a reactor scram on May 5 due to an error by technicians performing a calibration of main steam line high steam flow detectors (see Section 4OA3). All of the above events were evidence of a lack of self-check and/or peer-check.

An additional event (see Section 1R14) indicated control room operators were not diligent in returning a reactor feedwater pump to service after a reactor scram on May 22. This resulted in a second reactor water low level condition and actuation of engineered safeguards equipment. A lack of attention to detail by a control room senior reactor operator resulted in a missed surveillance test (see Section 1R22.1).

Licensee management acknowledged a declining trend in human performance at the station and had conducted all-hands meetings, shop tailgate meetings, and a stand down with station employees in an attempt to promote better performance.

4OA6 Management Meetings

The inspectors presented the inspection results to Mr. Dimmette and other members of licensee management at the conclusion of the inspection on June 30, 2000. In addition, the unresolved items noted in Section IR04 were further discussed with Mr. Peterson on July 26, 2000. The licensee acknowledged the findings presented. No proprietary information was identified.

PARTIAL LIST OF PERSONS CONTACTED

Licensee
G. Barnes, Station Manager
R. Chrzanowski, Nuclear Oversight Manager
J. Dimmette, Site Vice President
R. Krich, Vice President, Regulatory Services
M. Perito, Maintenance Manager

NRC
G. Grant, Division Director, Division of Reactor Projects
M. Ring, Branch Chief, Division of Reactor Projects

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-254/200007-01	NCV	Equipment Alignments
50-254/200007-02	URI	HPCI motor speed changer deficiencies
50-254/200007-03	URI	frequent system cycling on the battery load profile
50-265/200007-04	NCV	maintenance work and emergent work
50-254/200007-05	NCV	missed surveillance test
50-254/200007-06	NCV	valve mispositioning during surveillance test
50-265/200007-07	NCV	failure to implement QCIS

Closed

50-254/99020-06	UNR	Emergency A.C. Power Performance Indicator
50-265/99020-06	UNR	Emergency A.C. Power Performance Indicator
50-254/200007-01	NCV	Equipment Alignments
50-265/200007-04	NCV	maintenance work and emergent work
50-254/200007-05	NCV	missed surveillance test
50-254/200007-06	NCV	valve mispositioning during surveillance test
50-265/200007-07	NCV	failure to implement QCIS
50-265/0006-00	LER	primary coolant isolation and reactor trip due to human error

LIST OF BASELINE INSPECTIONS PERFORMED

The following inspectable-area procedures were used to perform inspections during the report period. Documented findings are contained in the body of the report.

Inspection Procedure		Report
Number	Title	Section
71111-04	Equipment Alignment	1R04
71111-05	Fire Protection	1R05
71111-12	Maintenance Rule Implementation	1R12
71111-13	Maintenance Work Prioritization & Control	1R13
71111-14	Nonroutine Evolutions	1R14
71111-15	Operability Evaluations	1R15
71111-16	Operator Workarounds	1R16
71111-17	Permanent Plant Modifications	1R17
71111-19	Post Maintenance Testing	1R19
71111-22	Surveillance Testing	1R22
71111-23	Temporary Plant Modifications	1R23
71114-04	Emergency Action Level Revisions	1EP4
71151	Performance Indicator Verification	4OA2
71153	Event Follow-up	4OA3
(none)	Other	4OA4
(none)	Management Meetings	4OA5

LIST OF ACRONYMS AND INITIALISMS USED

AC	Alternating Current
APRM	Average Power Range Monitor
CFR	Code of Federal Regulations
HPCI	High Pressure Coolant Injection
IDNS	Illinois Department of Nuclear Safety
IFI	Inspection Follow-up Item
LER	Licensee Event Report
NCV	Non-cited Violation
PS	Pressure Switch
psig	Pounds per square inch gauge
QCIS	Quad Cities Instrument Surveillance
QCOS	Quad Cities Operations Surveillance
RHR	Residual Heat Removal
RHRSW	Residual Heat Removal Service Water
TMOD	Temporary Modification
URI	Unresolved Item
VIO	Violation