

July 20, 2004

Mr. Christopher M. Crane
President and Chief Nuclear Officer
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 05000254/2004005;
05000265/2004005

Dear Mr. Crane:

On June 30, 2004, 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 July 6, 2004, with Mr. Perito and other members of your staff.

The inspection examined 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. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, there was one self-revealed finding of very low safety significance (Green). This finding was not subject to NRC enforcement action since the finding involved non-safety related equipment.

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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 05000254/2004005; 05000265/2004005
w/Attachment: Supplemental Information

cc w/encl: Site Vice President - Quad Cities Nuclear Power Station
Plant Manager - Quad Cities Nuclear Power Station
Regulatory Assurance Manager - Quad Cities Nuclear Power Station
Chief Operating Officer
Senior Vice President - Nuclear Services
Senior Vice President - Mid-West Regional
Operating Group
Vice President - Mid-West Operations Support
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Operating Group
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U. S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report No: 05000254/2004005; 05000265/2004005

Licensee: Exelon Nuclear

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

Location: 22710 206th Avenue North
Cordova, IL 61242

Dates: April 1 through June 30, 2004

Inspectors: K. Stoedter, Senior Resident Inspector
M. Kurth, Resident Inspector
J. House, Senior Radiation Specialist
T. Ploski, Senior Emergency Preparedness Inspector
R. Ganser, Illinois Emergency Management Agency

Approved by: M. Ring, Chief
Branch 1
Division of Reactor Projects

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SUMMARY OF FINDINGS

IR 05000254/2004005, 05000265/2004005; 04/01/2004-06/30/2004; Quad Cities Nuclear Power Station, Units 1 & 2; 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. One Green finding was identified. 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-Revealed Findings

Cornerstone: Initiating Events

Green. A finding of very low safety significance was self-revealed when the Unit 2 main turbine and reactor automatically tripped during thrust bearing wear detector testing. The turbine trip was a result of the licensee's failure to implement the thrust bearing wear detector test program as described in the vendor manual. The inspectors determined that the licensee had modified their test program to gain efficiencies in plant operation, work control, and radiation protection. However, the licensee did not recognize that the increased efficiencies also increased the likelihood of a plant transient during thrust bearing wear detector testing.

This finding was more than minor because it was viewed as a precursor to a significant event (a transient). This finding was of very low safety significance because Unit 2 responded to the turbine trip and reactor trip as designed and all mitigating systems equipment was available following the reactor trip. The finding was not considered a violation of regulatory requirements since the main turbine thrust bearing wear detector was a non-safety related component (Section 4OA3.2).

B. Licensee-Identified Violations

No findings of significance were identified.

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REPORT DETAILS

Summary of Plant Status

Unit 1 operated at 85 percent power during the inspection period due to ongoing extended power uprate concerns. Operations personnel performed planned power reductions on April 25, May 30, June 19 and 20, to complete required control rod pattern adjustments, control rod scram time testing, main turbine surveillance testing, or load following.

Unit 2 also operated at or near 85 percent power due to extended power uprate concerns. On April 7 operations personnel increased Unit 2 reactor power to approximately 96 percent for additional extended power uprate data collection. Control room personnel restored Unit 2 reactor power to 85 percent after performing a load reduction and a control rod pattern adjustment. Operations personnel performed additional planned power reductions on April 1, May 23, June 19 and 20, to complete required control rod pattern adjustments, control rod scram time testing, main turbine surveillance testing, or load following.

On June 28 an Unusual Event was declared for both units due to seismic activity (4.5 magnitude on the Richter scale) in central Illinois. Although the seismic activity was not recorded by the licensee's seismic monitor, or felt in the control room, security personnel reported feeling the tremor. The Unusual Event was terminated after confirming that the seismic event had no impact on plant operation, completing plant inspections, and exiting the seismic event procedure.

1. REACTOR SAFETY

Cornerstone: Initiating Events, Mitigating Systems, Barrier Integrity, and Emergency Preparedness

1R01 Adverse Weather Protection (71111.01)

a. Inspection Scope

The inspectors performed a review of the following equipment to assess its ability to operate under adverse weather conditions:

- 345 kV Switchyard; and
- Various plant heat exchangers and temperature control valves.

This review consisted of walking down in-plant and switchyard equipment with engineering personnel and interviewing operations, maintenance, and engineering personnel regarding the health of each system or piece of equipment. The inspectors reviewed condition reports, maintenance work requests and work orders, system and component health

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reports, and operating experience reports for potential issues that could impact the ability of this equipment to perform its function during adverse weather situations. The inspectors also reviewed any applicable operational decision making documents to ensure that continued plant operation with known material condition deficiencies was acceptable.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

.1 Partial Walkdowns

a. Inspection Scope

The inspectors performed partial walkdowns of the following risk-significant mitigating systems equipment during times when the equipment was of increased importance due to redundant systems or other equipment being unavailable:

- Unit 1 Emergency Diesel Generator;
- Unit 1 Reactor Core Isolation Cooling System; and
- ½ Diesel Generator Cooling Water Pump.

The inspectors utilized the valve and breaker checklists listed at the end of this report to verify that the components were properly positioned and that support systems were configured as required. The inspectors examined the material condition of the components and observed equipment operating parameters to verify that there were no obvious deficiencies. The inspectors reviewed outstanding work orders and condition reports associated with each system to verify that those documents did not reveal issues that could affect the equipment inspected. The inspectors also used the information in the appropriate sections of the Updated Final Safety Analysis Report to determine the functional requirements of the systems.

b. Findings

No findings of significance were identified.

.2 Complete Walkdown

a. Inspection Scope

During the weeks of May 17 and 31, 2004, the inspectors performed a complete walkdown of the accessible portions of the Unit 1 and 2 residual heat removal service water systems. The residual heat removal service water systems were selected due to their high safety-significance and risk-significance. The inspection consisted of the following

activities:

- a review of plant procedures (including selected abnormal and emergency procedures), drawings, Technical Specifications, and the Updated Final Safety Analysis Report to determine the proper system alignment and the system's licensing basis;
- a review of outstanding maintenance work requests to determine items in need of repair;
- 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 condition.

The inspectors also reviewed selected issues documented in condition reports to verify that the issues were appropriately addressed.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

a. Inspection Scope

The inspectors performed routine walkdowns of accessible portions of the following risk significance fire zones:

- Fire Zone 6.1.B - Unit 1 Turbine Building Battery Switchgear Room;
- Fire Zone 8.1 - Turbine Oil Storage Area;
- Fire Zone 8.2.2.1 - Unit 2 Control Rod Drive Pump Area;
- Fire Zone 8.2.7.E - Unit 2 Turbine Building North Mezzanine Floor;
- Fire Zone 8.2.8.E - Unit 2 Turbine Building Main Turbine Floor; and
- Fire Zones 8.2.10 and 14.1.1 - Unit 1 Turbine Building Fan Floor.

The inspectors verified that transient combustibles were controlled in accordance with the licensee's procedures. During a walkdown of each fire zone, the inspectors observed the physical condition of fire suppression devices and passive fire protection equipment such as fire doors, barriers, penetration seals, and coatings. The inspectors also observed the condition and placement of fire extinguishers and hoses against the Pre-Fire Plan fire zone maps.

b. Findings

No findings of significance were identified.

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1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

The inspectors conducted an annual review of the licensee's external flooding procedures and analyses. The review included discussing the information with operations, maintenance, engineering, and security personnel to confirm that the actions could be accomplished within the time specified in the documents; verifying that flooding-related equipment was readily available, in the specified location, appropriately labeled, and in good material condition; ensuring that preventive maintenance tasks on external flooding related equipment were completed; and verifying that flooding problems entered into the corrective action program were adequately addressed.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11Q)

a. Inspection Scope

On April 19 and June 14, 2004, the inspectors observed operations crews in the simulator. The April 19 scenario consisted of a reactor pressure vessel instrument failure, the loss of Motor Control Center 15-2, a steam leak inside containment, an anticipated transient without scram, and the need to flood the reactor pressure vessel. In the June 14 scenario, operations personnel were challenged by a simulated circulating water system rupture, the loss of the feedwater system, the loss of all high pressure injection systems, and the need to emergency depressurize the reactor vessel in order to restore water level.

The inspectors evaluated crew performance in the areas of:

- clarity and formality of communications;
- ability to make 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;
- OP-AA-103-102, Watchstanding Practices;
- OP-AA-103-104, Reactivity Management Controls; and

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- OP-AA-104-101, Communications.

The inspectors verified that the crews completed the critical tasks listed in the above scenarios. The inspectors verified that the evaluators effectively identified crews requiring remediation and appropriately indicated when removal from shift activities was warranted. Lastly, the inspectors observed the licensee's critique to verify that weaknesses identified during these observations were noted by the evaluators and discussed with the respective crews.

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 systems listed below:

- Source Range and Intermediate Range Monitoring Instrumentation (Function Z0750); and
- 345 kV Switchyard (Function Z9700).

These systems were selected based on them being designated as risk significant under the maintenance rule; being in increased monitoring (maintenance rule category a(1) group); or due to a work practice, reliability, or common cause issue that impacted system performance.

The inspectors assessed system performance and maintenance work practices by reviewing system health reports, condition reports, apparent cause reports, root cause reports, common cause reports, functional failure determinations, and corrective action effectiveness reviews. The validity of system specific maintenance rule performance criteria was evaluated by comparing the performance criteria to probabilistic risk assessment and industry performance information. Lastly, the inspectors reviewed the licensee's maintenance rule scoping by comparing the scoping information to the design basis.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation (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 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. The activities inspected included:

- Work Week April 5 through 10, including planned maintenance on the Unit 2 residual heat removal system and the 2B reactor building closed cooling water system;
- Work Week April 12 through 16, including planned vibrational testing of the reactor protection system reactor water level instrumentation;
- Work Week April 19 through 24, including planned maintenance on the Unit 1 high pressure coolant injection system and the residual heat removal service water system;
- Work Week April 26 through 30, including planned maintenance on the Unit 1 reactor core isolation cooling system and the residual heat removal system;
- Work Week May 3 through 7, including planned maintenance on the Unit 2 emergency diesel generator and diesel generator cooling water pump;
- Work Week May 10 through 14, including planned maintenance on the Unit 1 125 Vdc system and the Unit 1 station blackout diesel generator;
- Work Week May 17 through 22, including planned maintenance on the Unit 2 high pressure coolant injection system and the 2A reactor building closed cooling water system; and
- Work Week June 21 through 26, including planned maintenance on the Unit 1 residual heat removal system and the residual heat removal service water system.

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Non-Routine Evolutions (71111.14)

.1 Extended Power Uprate Testing and Data Collection

a. Inspection Scope

On April 7, 2004, the licensee momentarily increased Unit 2 reactor power from 85 percent (100 percent power level prior to extended power uprate) to 96 percent to collect plant data for an extended power uprate vibration analysis. The data collected included various vibration readings on systems and components, pressure and flow readings from various steam and water systems, reactor vessel water level readings, and moisture carryover information. The inspectors observed portions of the operators performance during the power ascension to verify that the appropriate procedures were prescribed and implemented. In addition, the inspectors verified that the operators completed several surveillance test procedures at the increased power levels.

b. Findings

No findings of significance were identified.

.2 Seismic Event

a. Inspection Scope

On June 28, 2004, at 1:10 a.m. (CST) a seismic event of magnitude 4.5 occurred in central Illinois. Although the operators did not feel the seismic activity in the control room, the earthquake was felt by security personnel. As a result, the shift manager declared an Unusual Event in accordance with Emergency Action Level HU4, "Natural or Destructive Phenomena Inside the Protected Area." During the time of the seismic event both units were operating at 85 percent power.

The inspectors responded to the station and verified that operators implemented the appropriate procedures and conducted plant walkdowns to verify that no earthquake damage had occurred. Security personnel performed visual inspections outside the vital area and identified no damage. The inspectors also conducted site walkdowns, both inside and outside the vital area, and independently verified no observable earthquake damage.

The shift manager terminated the Unusual Event after confirming that the seismic event had no impact on plant operation, completing the plant inspections, and exiting the seismic event procedure.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors assessed the following operability evaluations or condition reports associated with equipment operability issues:

- 1A Core Spray System Minimum Flow Valve Did Not Perform as Expected (Condition Report 208670);
- Unit 1 High Pressure Coolant Injection System Signal Converter Problem (Condition Report 216372); and
- Minimum 345 kV Switchyard Voltage Not Modeled in State Estimator Program (Condition Report 212837).

The inspectors reviewed the technical adequacy of the evaluations against the Technical Specifications, 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 actions 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 three operator workaround issues to determine the potential effects on the functionality of the corresponding mitigating systems:

- OWA 04-006, Standby Gas Treatment System Flow Transmitter 0-7541-1B has failed;
- OWA 04-008, Unit 2 Station Blackout Diesel Generator has extremely poor voltage control; and
- Cumulative Review of all Operator Workarounds.

During these inspections, the inspectors reviewed the technical adequacy of the workaround documentation against the Updated Final Safety Analysis Report and other

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design information to assess whether the workaround conflicted with any design basis information. 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 when needed. Multiple entries into the corrective action program were also reviewed to ensure that the operator workarounds had been entered into this process.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed the post maintenance testing activities listed below during the inspection period:

- The performance of QCOS 6600-10, ½ Diesel Vent Fan Auto-Transfer Logic Test, following planned maintenance on the Unit ½ emergency diesel generator;
- The performance of MA-MW-773-045, Nuclear Operational Analysis Department High Potential Testing, following replacement of the Unit 2 main power transformer;
- The performance of QCOS 2300-17, HPCI Auxiliary Oil Pump Operability Test, following preventive maintenance on the Unit 1 high pressure coolant injection system;
- The performance of QCOS 6600-53, Unit ½ Emergency Diesel Generator Start Failure Logic Test, following preventive maintenance on the Unit ½ emergency diesel generator;
- The performance of QCOS 1000-04 TIC-868, RHR Service Water Pump Operability Test, following preventive maintenance on the 1C residual heat removal service water pump;
- The performance of QCOS 1400-01, Quarterly Core Spray System Flow Rate Test, following corrective maintenance on the 1A core spray system;
- The performance of QCIS 2300-06, HPCI Steam Line High Flow Transmitter Calibration, following preventive maintenance on the Unit 1 high pressure coolant injection system; and
- The performance of QCOS 6600-06, Diesel Generator Cooling Water Pump Flow Rate Test, following preventive maintenance on the Unit 2 diesel generator cooling water pump.

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 post maintenance test activity adequately tested the safety function(s) affected by the maintenance, that

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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. The inspectors also performed a condition report word search to ensure that issues identified during the performance of post maintenance testing were being entered into the corrective action process as appropriate.

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:

- QCOS 6600-46, Unit ½ Emergency Diesel Generator Timed Start Test, and QCOS 6600-43, Unit ½ Emergency Diesel Generator Monthly Load Test;
- QCOS 2300-05, Quarterly High Pressure Coolant Injection Pump Operability Test (Unit 1);
- QCOS 2300-05, Quarterly High Pressure Coolant Injection Pump Operability Test (Unit 2); and
- QCOS 1300-01, Periodic Reactor Core Isolation Cooling Pump Operability Test (Unit 2).

The inspectors verified that the structures, systems, and components tested were capable of performing their intended safety function by comparing the surveillance procedure or calibration 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 each test or calibration was performed as written, the data was complete and met the requirements of the procedure, and the test equipment range and accuracy were consistent with the application by observing the performance of the activity. Following test completion, the inspectors conducted walkdowns of the associated areas to verify that test equipment had been removed and that the system or component was returned to its normal standby configuration.

b. Findings

No findings of significance were identified.

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1R23 Temporary Plant Modifications (71111.23)

a. Inspection Scope

The inspectors reviewed documentation for the following temporary configuration change:

- Temporary Modifications 348495 (Unit 1) and 348461 (Unit 2); Installation of Turbine Thrust Bearing Wear Detector Trip Bypass Circuitry.

The inspectors assessed the acceptability of this temporary configuration change by comparing the 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 configuration remained consistent with design basis information. The inspectors reviewed the modification to ensure that installation instructions were clear, the modification would operate as expected, modification testing was appropriate, and that operation of the modification did not impact the operability of any interfacing systems. The inspectors also reviewed condition reports associated with the temporary modification process to ensure that previously identified problems were not repeated.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06)

.1 Review of Simulator Drill

a. Inspection Scope

The inspectors observed an operations crew perform an emergency preparedness simulator drill on April 19. The focus of the inspection activities was to note any weaknesses or deficiencies in the drill performance, ensure that the licensee's evaluators noted the same items, and verify that the licensee entered these items into their corrective action program. The inspectors placed emphasis on observations regarding event classification, notifications, protective action recommendations, and site evacuation and accountability activities. As part of this inspection, the inspectors reviewed the simulator scenario listed at the end of this inspection report and attended the licensee's drill critique.

b. Findings

No findings of significance were identified.

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.2 Review of Emergency Preparedness Pre-Exercise

a. Inspection Scope

The inspectors observed the licensee's emergency preparedness pre-exercise from the simulator and technical support center. The scenario began with a water hammer in the 1B residual heat removal room. The scenario then progressed and included a reactor water cleanup system leak, main turbine high vibrations, the failure of the reactor to scram, and a failure of the 1C main steam line to isolate. The inspectors assessed the accuracy and timeliness of emergency classifications, notifications, and protective action recommendations by observing personnel performing these activities, ensuring that the classifications were made in accordance with the licensee's emergency action levels, and reviewing the notification and protective action recommendation forms. Emergency preparedness personnel initiated Issue Report 229597 to document an unsuccessful emergency classification opportunity. The inspectors also observed the licensee's critique to ensure that items identified by the inspectors were also identified by the licensee.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control to Radiologically Significant Areas (71121.01)

.1 Plant Walkdowns and Radiation Work Permit Reviews

a. Inspection Scope

The inspectors examined the licensee's physical and programmatic controls for highly activated or contaminated materials (nonfuel) stored within the spent fuel or other storage pools. This included discussions with cognizant licensee representatives. This review represented one sample.

b. Findings

No findings of significance were identified.

.2 High Risk Significant, High Dose Rate, High Radiation Area and Very High Radiation Area Controls

a. Inspection Scope

The inspectors evaluated the controls that were in place for special areas that had the potential to become very high radiation areas during certain plant operations including traversing in-core probe operations. Discussions were held with radiation protection supervisors to determine how the required communications between the radiation protection group and other involved groups would occur beforehand in order to allow corresponding timely actions to properly post and control the radiation hazards. This review represented one sample.

b. Findings

No findings of significance were identified.

2OS2 As Low As Is Reasonably Achievable Planning And Controls (71121.02)

.1 Declared Pregnant Workers

a. Inspection Scope

The inspectors reviewed dose records of declared pregnant workers for the current assessment period to verify that the exposure results and monitoring controls employed by the licensee complied with the requirements of 10 CFR 20.1208. This review represented one sample.

b. Findings

No findings of significance were identified.

.2 Problem Identification and Resolution

a. Inspection Scope

The inspectors reviewed the licensee's self-assessments, audits, and Special Reports related to the as low as is reasonably achievable (ALARA) program since the last inspection to determine if the licensee's overall audit program's scope and frequency for all applicable areas under the Occupational Cornerstone met the requirements of 10 CFR 20.1101(c). This review represented one sample.

The inspectors verified that identified problems were entered into the corrective action program for resolution, and that they had been properly characterized, prioritized, and resolved. This included dose significant post-job (work activity) reviews and post-outage

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ALARA report critiques of exposure performance. This review represented one sample. Corrective action reports related to the ALARA program were reviewed and staff members were interviewed to verify that follow-up activities had been conducted in an effective and timely manner commensurate with their importance to safety and risk using the following criteria:

- Initial problem identification, characterization, and tracking;
- Disposition of operability/reportability issues;
- Evaluation of safety significance/risk and priority for resolution;
- Identification of repetitive problems;
- Identification of contributing causes;
- Identification and implementation of effective corrective actions;
- Resolution of non-cited violations tracked in the corrective action system; and
- Implementation/consideration of risk significant operational experience feedback.

This review represented one sample.

The inspectors also determined that the licensee's self-assessment program identified and addressed repetitive deficiencies and significant individual deficiencies that were identified in the licensee's problem identification and resolution process. This review represented one sample.

b. Findings

No findings of significance were identified.

2PS2 Radioactive Material Processing and Transportation (71122.02)

a. Inspection Scope

The inspectors reviewed shipment packaging, surveying, labeling, marking, placarding, vehicle checks, emergency instructions, disposal manifest, shipping papers provided to the driver, and licensee verification of shipment readiness for a shipment of 14 drums of radwaste. The inspectors verified that the receiving licensee was authorized to receive the shipment package. The inspectors observed radiation worker practices to verify that the workers had adequate skills to accomplish each task and to determine if the shippers were knowledgeable of the shipping regulations and whether shipping personnel demonstrate adequate skills to accomplish the package preparation requirements for public transport with respect to NRC Bulletin 79-19 and 49 CFR Part 172 Subpart H. This review represented one sample.

b. Findings

No findings of significance were identified.

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4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

Cornerstones: Initiating Events, Mitigating Systems, and Emergency Preparedness

Reactor Safety Strategic Area

a. Inspection Scope

The inspectors sampled the licensee's performance indicator submittals for the periods listed below. The inspectors used the performance indicator definitions and guidance contained in Revision 2 of Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," to verify the accuracy of the performance indicator data. The following nine performance indicators were reviewed:

Unit 1

- Unplanned Power Changes (June 2003 through April 2004),
- Safety System Functional Failures (June 2003 through April 2004), and
- Safety System Unavailability for the Emergency Alternating Current Power System (June 2003 through April 2004).

Unit 2

- Unplanned Power Changes (June 2003 through April 2004),
- Safety System Functional Failures (June 2003 through April 2004), and
- Safety System Unavailability for the Emergency Alternating Current Power System (June 2003 through April 2004).

Common

- Alert and Notification System (October 2002 through December 2003),
- Emergency Response Organization Drill Participation (October 2002 through December 2003), and
- Drill and Exercise Performance (October 2002 through December 2003).

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Routine Review of Identification and Resolution of Problems

a. Inspection Scope

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As discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that they were being entered into the licensee's corrective action system at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. Minor issues entered into the licensee's corrective action system as a result of inspectors' observations are included in the list of documents reviewed which are attached to this report.

b. Findings

No findings of significance were identified.

.2 Semi-Annual Trend Review

a. Inspection Scope

The inspectors interviewed licensee personnel and reviewed licensee system health reports, common cause analyses, trending reports, quality assurance assessment reports, performance indicators, maintenance rule assessments, maintenance backlog lists, and corrective action backlog lists to identify trends that might have indicated the existence of a more significant safety issue which may have been documented outside of the normal corrective action program.

b. Findings

No findings of significance were identified.

4OA3 Event Followup (71153)

- .1 (Closed) Licensee Event Report 05000265/2004-002-00: Axial Flaws Detected in Recirculation Piping During Inservice Inspection. During a March 2004 Unit 2 refueling outage, the licensee identified two axial indications during an inservice inspection of reactor recirculation weld 02B-S7. These indications were identified due to the licensee's chemical decontamination of the reactor recirculation piping which removed a crud layer and made the indications visible. Due to the axial orientation of the indications, the licensee was unable to evaluate the indications for continued service using Article IWB-3000 of Section XI to the American Society of Mechanical Engineers Code. As a result, a two-layer weld overlay was applied to the indications in accordance with Code Case N-504-2. The application of this code case for the repairs of axial indications was previously endorsed by the Nuclear Regulatory Commission in Regulatory Guide 1.147, Revision 13, "Inservice Inspection Code Case Acceptability Section XI, Division 1." The licensee performed inservice inspections of other similar welds and did not identify any other indications. This issue was not subject to NRC enforcement since a violation of NRC requirements did not occur.

Enclosure

.2 (Closed) Licensee Event Report 05000/2004-003-00: Unit Trip from Turbine Trip during Thrust Bearing Wear Detector Testing.

Introduction: A Green finding was self-revealed when Unit 2 automatically tripped during main turbine thrust bearing wear detector testing. The finding was not considered a violation of regulatory requirements since the main turbine thrust bearing wear detector was a non-safety related component.

Description: On March 30, 2004, Unit 2 was in operation at 680 megawatts electric (MWe) after completion of Refueling Outage Q2R17. During the outage, all three low pressure turbines were disassembled and reassembled to allow the turbine buckets to be replaced. After completion of the work a number of post maintenance tests were performed. In particular, the turbine thrust bearing wear detector system was tested using QCOS 5600-10, "Unit 2 Weekly Turbine Generator Tests." As the operators were implementing the surveillance, an inadvertent turbine trip occurred which caused a reactor trip. All of the control rods inserted and the plant responded as designed.

The licensee determined that multiple changes in site work practices resulted in increasing the probability of a turbine trip and a reactor trip during thrust bearing wear detector testing. In particular, the instrument maintenance department had three procedures for calibrating and testing the thrust bearing wear detector. The procedures consisted of an initial adjustment (performed at zero percent power), an intermediate adjustment (performed at approximately 25 percent power), and a final adjustment (performed at greater than 80 percent power). Over time several procedure revisions were implemented which resulted in incorporating some of the initial adjustment procedure steps into the intermediate adjustment procedure. As a result, the initial adjustment procedure was no longer used. The inspectors were informed that the final adjustment procedure was also used infrequently because it required personnel to complete procedural steps inside the turbine shield wall which resulted in significant personnel dose.

The inspectors determined that while the licensee had implemented multiple procedure revisions to gain efficiencies in several areas, the licensee had not recognized that these changes also increased the probability of a plant transient during thrust bearing wear detector testing. For example, the original thrust bearing wear detector testing as described in the vendor manual consisted of three parts for specific reasons. The initial adjustment was performed at zero percent power such that gross adjustments to the thrust bearing wear detector setpoints could be made without any impact on plant operation. The intermediate adjustment was performed at approximately 25 percent because a turbine trip would not cause a reactor trip at this power level. Lastly, the final adjustment phase was implemented to make any fine adjustments to the thrust bearing wear detector setpoints that may have been needed and included instructions for inhibiting a potential turbine trip. Conversely, on March 30, the licensee performed the intermediate adjustment with Unit 2 operating at approximately 70 percent power without implementing appropriate measures to minimize a turbine trip or a reactor trip.

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Analysis: The inspectors determined that the failure to appropriately implement thrust bearing wear detector calibration and testing procedures was more than minor because it was a precursor to a significant event (a transient). The inspectors also determined that this finding should be evaluated in accordance with Inspection Manual Chapter 0609, "Significance Determination Process," because the finding was associated with the increase in the likelihood of an initiating event. The inspectors conducted a Phase 1 Significance Determination Process screening and determined that this finding was of very low safety significance (Green) because it did not contribute to: (1) the likelihood of a primary or secondary system loss of coolant accident initiator, (2) both the likelihood of a reactor trip and that mitigation equipment or functions would not be available, (3) the likelihood of a fire or internal/external flood, or (4) an increase in the initiating event frequency of events described in the individual plant examination of external events or other existing plant-specific analyses (**FIN 050000265/2004005-01**).

Enforcement: This finding was not subject to NRC enforcement because the thrust bearing wear detector and associated equipment are non-safety related components. The licensee initiated Condition Report 211724 to document this event. Corrective actions were to design and install a permanent modification to disable the turbine trip circuitry during future thrust bearing wear detector testing. The licensee has also suspended further thrust bearing wear detector testing until the modification is installed. The inspectors determined that the suspension of this test was acceptable since the probability of a transient due to the failure to perform thrust bearing wear detector testing was low, the test was performed as part of the licensee's turbine warranty, and the test was not required by any NRC regulations.

4OA5 Other Activities

Temporary Instruction 2515/156, "Offsite Power System Operational Readiness"

a. Inspection Scope

The inspectors reviewed licensee maintenance records, event reports, corrective action documents and procedures, and interviewed the station engineering, maintenance, and operations staff to collect data necessary to complete Temporary Instruction 2515/156. This review was conducted to confirm the operational readiness of the offsite power systems in accordance with NRC requirements such as Appendix A to 10 CFR Part 50, General Design Criterion 17; Criterion XVI of Appendix B to 10 CFR Part 50; the Technical Specifications; 10 CFR 50.63; 10 CFR 50.65 (a)(4), and licensee procedures. Specifically, the inspectors reviewed the licensee's procedures and processes for ensuring that the grid reliability conditions were appropriately assessed during periods of maintenance in accordance with 10 CFR 50.65 (a)(4). The inspectors also assessed the reliability and grid performance through a review of historical and current data to verify compliance with 10 CFR 50.63, Technical Specifications, and General Design Criterion 17. Lastly, the

Enclosure

inspectors assessed the licensee's implementation of operating experience that was applicable to the site as well as corrective action documents to ensure issues were being identified at an appropriate threshold, assessed for significance, and appropriately dispositioned.

b. Findings

No findings of significance were identified. Based on the inspection, no immediate operability issues were identified. In accordance with Temporary Instruction 2515/156 reporting requirements, the inspectors transmitted the required temporary instruction data to the headquarters staff for further analysis. The licensee was asked to assess their readiness for summer operation by addressing three "key" questions. The licensee responded to the questions by stating that an agreement was in place to ensure that they were informed if the electrical grid was stressed to the point that a scram of either unit would result in inadequate post-trip switchyard voltages. This agreement included the required voltage range and the post-scram electrical load from each unit that would be expected to be connected to the electrical grid. In addition, the agreement required that post-trip voltages be calculated every few minutes.

4OA6 Meetings

.1 Exit Meeting

The inspectors presented the inspection results to Mr. M. Perito and other members of licensee management at the conclusion of the inspection on July 6, 2004. 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:

- Access control to radiologically significant areas, the ALARA planning and controls program, and the radioactive material processing and transportation program with Mr. R. Gideon on May 20, 2004.
- Emergency Preparedness inspection with Mr. S. McCain on June 4, 2004.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

T. Tulon, Site Vice President
R. Gideon, Plant Manager
R. Armitage, Training Manager
W. Beck, Regulatory Assurance Manager
G. Boerschig, Engineering Manager
J. DeYoung, Emergency Preparedness Specialist
T. Hanley, Maintenance Manager
D. Hieggelke, Nuclear Oversight Manager
K. Leech, Security Manager
S. McCain, Corporate Emergency Preparedness Manager
K. Moser, Chemistry/Environ/Radwaste Manager
K. Ohr, Acting Radiation Protection Manager
M. Perito, Operations Manager

Nuclear Regulatory Commission

M. Ring, Chief, Reactor Projects Branch 1
L. Rossbach, Project Manager

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000265/2004005-01	FIN	Failure to Appropriately Implement Turbine Thrust Bearing Wear Detector Calibration and Surveillance Testing Procedures
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Closed

05000265/2004005-01	FIN	Failure to Appropriately Implement Turbine Thrust Bearing Wear Detector Calibration and Surveillance Testing Procedures
05000265/2004-002-00	LER	Axial Flaws Detected in Recirculation Piping During Inservice Inspection
05000265/2004-003-00	LER	Unit Trip from Turbine Trip During Thrust Bearing Wear Detector Testing

LIST OF DOCUMENTS REVIEWED

The following is a list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspectors reviewed the documents in their entirety but rather that selected sections or portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

1R01 Adverse Weather

OP-AA-108-109; Seasonal Readiness; Revision 1
NOS-04-007; Nuclear Oversight Department Assessment for Summer Readiness; dated April 15, 2004
System Health Report for the 345 kV Switchyard

1R04 Equipment Alignment

QOM 1-6600-01; Unit 1 Diesel Generator Valve Checklist; Revision 17
QCOP 1300-01; RCIC System Preparation for Standby Operation; Revision 26
QCOP 1300-09; RCIC System Local Manual Operation; Revision 16
QCOP 6600-15; ½ Diesel Generator Cooling Water Pump Cross Connect Alignment; Revision 7
QCOS 0005-09; Unit 2 Electrical Distribution Breaker and Voltage Verification; Revision 11
QCOS 1000-13; RHR Service Water Flush of Loop B for Appendix R; Revision 14
QCOP 1000-16; RHR Service Water Vault Sump Pumps Operation; Revision 0
QCOP 1000-15; RHR Service Water Operation Using Loop A Cross-Tie Header; Revision 11
QCOP 1000-04; RHR Service Water System Operation; Revision 15
QCOS 1000-28; RHR Service Water Pump Performance Test; Revision 7
QCOS 1000-04; RHR Service Water Pump Operability Test; Revision 39
TIC-949; Temporary Revision to QCOS 1000-04; RHR Service Water Pump Operability Test; Revision 0
Updated Final Safety Analysis Report
Condition Report 129737; 2A RHR Heat Exchanger Leaking from Reactor Side into Service Water Side
Condition Report 152960; RHRSW Line 2-1043B-14": Localized Thin Spot Detected
Condition Report 160663; 1D RHRSW Breaker Closed in with Racking Shutter Partially Open
Condition Report 189928; Additional Corrective Action Prudent for RHRSW Screens
M-79; Diagram of RHR Service Water Piping; November 28, 1997
M-37; Diagram of RHR Service Water Piping; December 10, 1986
QOM2-1000-07; RHR Fuse Checklist; Revision 4
QOM1-1000-05; Unit 1 RHR Service Water Valve Checklist; Revision 15
QOM2-1000-05; Unit 2 RHR Service Water Valve Checklist; Revision 15
QOM1-1000-07; RHR and RHRSW System Fuse and Breaker Checklist; Revision 3

Attachment

1R05 Fire Protection

QCMMS 4100-01; Fire Extinguisher and Hose Reel Inspection; Revision 18
Quad Cities Units 1 and 2 Pre-Fire Plans
OP-AA-201-001; Fire Marshall Tours; Revision 2
Quad Cities Units 1 and 2 Updated Fire Hazards Analysis

1R06 Flood Protection

QCOA 0010-16; Flood Emergency Procedure; Revision 8
QCOP 0201-06; Filling the Reactor Vessel/Reactor Cavity Using the Core Spray System;
Revision 15
QCOP 4300-08; Makeup Demineralizer System Mobile Demineralizer; Revision 6
QCOP 1400-02; Core Spray System Manual Initiation; Revision 9
QCOP 1400-07; Core Spray Operation with Torus Unavailable; Revision 5
QCOP 4100-11; Using Diesel Fire Pumps via Safe Shutdown Hose Line for Reactor Vessel
Level Control of Flood Emergency Injection Source; Revision 9
Condition Report 177026; Manholes 3 and 4 Have Water in the Cable Tunnel; dated
September 23, 2003
Piping and Instrumentation Diagram M-27, Sheet 1; Diagram of Fire Protection Piping;
Revision PN
Piping and Instrumentation Diagram M-27, Sheet 2; Diagram of Fire Protection Piping;
Revision WM

1R11 Licensed Operator Regualification

QCAN 901(2)-3 A-16; Primary Containment High Pressure; Revision 10
QCOA 0201-01; Increasing Drywell Pressure; Revision 16
QCOP 0300-28; Alternate Control Rod Insertion; Revision 22
QCOP 1000-04; Residual Heat Removal Service Water System Operation; Revision 15
QCOP 1000-30; Post Accident Residual Heat Removal Operations; Revision 16
QCOS 1600-05; Post Accident Monitoring Instrumentation Outage Report; Revision 13
QCOS 1600-06; Emergency Core Cooling System and Primary Containment Isolation Trip
Instrumentation Outage Report; Revision 15
QCGP 2-3; Reactor Scram; Revision 49
QCGP 3-1; Reactor Power Operations; Revision 40
QCOA 0201-01; Increasing Drywell Pressure; Revision 16
QCOA 2300-01; High Pressure Coolant Injection Auto Initiation; Revision 18
QCOA 4400-01; Loss of all Circulating Water Pumps; Revision 6
QOA 0030-01; Condenser Pit Room or Condensate Pump Room Flooding; Revision 9
QOA 900-7 D-10; Panel 901-7 Row D Annunciators; Revision 2
QOA 900-7 E-10; Panel 901-7 Row E Annunciators; Revision 3
QOA 900-7 F-10; Panel 901-7 Row F Annunciators; Revision 2
QGA 100; Reactor Pressure Vessel Control
QGA 101; Reactor Pressure Vessel Control - Anticipated Transient Without Scram

Attachment

QGA 200; Primary Containment Control

QGA 500-1; Reactor Pressure Vessel Blowdown

QGA 500-4; Reactor Pressure Vessel Flooding

Technical Specifications

Boiling Water Reactor Owners Group Emergency Procedure Guidelines and Severe Accident Guidelines; Revision 2

1R12 Maintenance Rule

Source Range Monitoring and Intermediate Range Monitoring System Health Overview Report; dated March 2004

System Health Indicator Program Uncounted Issues Summary Report; dated March 2004

System Health Indicator Program Report; dated March 2004

ER-AA-2002; System Health Indicator Program; Revision 3

Work Order 411773; Unit 1 Intermediate Range Monitor 12 Inoperable; dated March 7, 2002

Work Order 417078; Replace Intermediate Range Monitor 13; dated April 22, 2002

Work Order 628839; Troubleshoot Intermittent Loss of Full In Indication on Source Range Monitor 15; dated December 20, 2003

Work Order 659876; Intermediate Range Monitor 16 Inoperable Alarm and Light; dated February 24, 2004

Work Order 408224; Troubleshoot Unit 1 Source Range Monitors During Outage; dated November 13, 2003

Condition Report 216941; Common Cause for Source Range and Intermediate Range Monitor Problems; dated April 26, 2004

Maintenance Rule Scoping Information

Maintenance Rule Performance Criteria Information

Maintenance Rule Evaluation History Information

General Electric Services Information Letter 409, Revision 2; Incore Dry Tube Cracks; dated February 8, 2002

Maintenance Rule (a)(1) Action Plan for Function Z9700-01 - 345 kV Switchyard; dated March 27, 2003

Condition Report 145407; Corrective Maintenance Unexpected - Line 0401 Disconnect; dated February 20, 2003

Condition Report 186225; Loss of Line 0401; dated November 12, 2003

Condition Report 191734; 345 kV Breakers 9-10 and 10-11 Auto Tripped Open; dated December 18, 2003

Condition Report 208879; Line 0404 Tripped; dated March 17, 2004

1R13 Maintenance Risk Assessment and Emergent Work

Daily Work Schedule; dated April 5, April 14, April 19, April 26, May 3, May 10, 2004

Work Week Safety Profile for Weeks Ending April 10, April 17, April 24, May 1, May 8, May 15, 2004

Attachment

Exelon Risk Analyst's Review Notes for Weeks of 4/5, 4/14, 4/19, 4/26, 5/3, 5/10,
WC-AA-104; Review and Screening for Production Risk; Revision 7
WC-AA-101; On-Line Work Control Process; Revision 8

1R14 Personnel Performance During Non-Routine Evolutions

TIC-972; Temporary Procedure to Monitor Steam Dryer and Plant Performance During Q2R17 Startup to EPU Power (912 Mwe); dated April 14, 2004
QCOP 0201-04; RVLIS Backfill System Operation; dated April 14, 2004
QCOS 1300-01; Periodic RCIC Pump Operability Test (Unit 2); dated April 7, 2004;
QCOS 2300-05; Quarterly HPCI Pump Operability Test (Unit 2); dated April 7, 2004
QCOS 5600-05; Turbine Generator Monthly Testing; dated April 7, 2004
Operator Logs
Updated Final Safety Analysis Report
Technical Specifications
QCOA 0010-09; Earthquake; Revision 6
QCOP 0010-07; Seismic Event Retrieval; Revision 2
QCOA 0010-06; Phone Numbers and Checklist for Referenced QCOA 0010 Block Procedures; Revision 10
EP-AA-1006; Radiological Emergency Plan Annex for Quad Cities Station; Revision 18

1R15 Operability Evaluations

Condition Report 212837; Minimum 345 Switchyard Voltage Not Modeled in State Estimator Program; dated April 2, 2004
Dresden Condition Report 212836; State Estimator No Longer Predicts 345 kV Voltages; dated April 2, 2004
Dresden Operability Evaluation 04-005; Minimum Switchyard Voltage is Below Requirements; Revision 1
Engineering Change 348513; Evaluate Unit 1 and Unit 2 Unit Auxiliary Transformer and Reserve Auxiliary Transformer Parameters to Provide Exelon Energy Delivery with the Information Required to Update the State Estimator Program; dated April 9, 2004
Exelon Transmittal of Design Information QDC-04-013; Quad Cities Unit 1 and Unit 2 Unit Auxiliary Transformer and Reserve Auxiliary Transformer Critical Characteristics, Minimum Required Switchyard Voltage, and Maximum Allowable Switchyard Voltage; dated April 9, 2004
Condition Report 208670; 1A Core Spray Motor Operated Valve 1-1402-38A Breaker Trip
QCOS 1400-1; Quarterly Core Spray System Flow Rate Test; Revision 26
QCAP 0230-19; Equipment Operability; Revision 14
Work Order 676589; Troubleshoot/Repair Tripped Breaker at MCC 18-1A-1 Cubical C4; dated March 16, 2004
Condition Report 216372; Unit 1 HPCI Signal Converter Trouble
QCAN 901-3 H-9; HPCI Controller Signal Converter Output Failed

1R16 Operator Workarounds

Attachment

Condition Report 193417; Rework on Flow Transmitter 0-7541-1B - Continues to Act Erratic; dated January 5, 2004

Condition Report 210224; B Standby Gas Treatment System Flow Transmitter is Out of Tolerance; dated March 23, 2004

Condition Report 209697; Extremely Poor Voltage Control on Unit 2 Station Blackout Diesel; dated March 20, 2004

Condition Report 207287; Toxic Gas Analyzer False High Concentration Inops Control Room Ventilation; dated March 10, 2004

Condition Report 161391; 1B Reactor Recirculation Motor Generator Set Voltage Regulator Issues; dated June 1, 2003

Condition Report 129665; 2B3 Heater Trip; dated October 31, 2002

Condition Report 136806; 2A Moisture Separator Drain Tank Level Indication is Pegged High; dated December 19, 2002

QCOP 7500-01; Standby Gas Treatment System Standby Operation and Startup; Revision 17

QCOA 6100-03; Loss of Offsite Power; Revision 16

QCOA 6100-04; Station Blackout; Revision 9

Quarterly Operator Burden Review; dated March 2004

1R19 Post Maintenance Testing

Condition Report 206708; Transformer 2 A Phase Differential Relay Found Out of Tolerance; dated February 25, 2004

Condition Report 206710; Transformer 2 B Phase Differential Relay Found Out of Tolerance; dated February 25, 2004

Condition Report 206714; Transformer 2 Out of Step Relay Found Out of Tolerance; dated February 25, 2004

Condition Report 205341; New Main Power Transformer COPS Tank Gauge is Difficult to Read; dated February 29, 2004

Condition Report 207262; Water Intrusion into Unit 2 Main Power Transformer Control Panel from Deluge Test; dated March 9, 2004

Condition Report 202966; Spare Main Power Transformer Current Transformer Shorting Switches Incorrectly Configured; dated February 19, 2004

Updated Final Safety Analysis Report

Unit 2 Main Power Transformer Thermography Data; dated March 28, 2004

TIC-0904; Quad Cities Q2R17 Main Power Transformer and Unit Auxiliary Transformer 21 Through Fault Test; Revision 0

Condition Report 214761; 1/2EDG TD-7 Timer Failed Surveillance; dated April 13, 2004

QCOS 6600-53; Unit ½ Emergency Diesel Generator Start Failure Logic Test; dated April 13 and 14, 2004

Lesson Plan Module LN-6600; Emergency Diesel Generator; Revision 8

QCEPM 0400-14; Emergency Diesel Generator Electrical Preventive Maintenance;

Attachment

Revision 6

QCMPM 6600-02; Diesel Engine Thermostatic Valve Inspection; Revision 7

QCMMS 6600-04; Emergency Diesel Generator Alternate Refuel Cycle Preventive Maintenance Inspection; Revision 4

QCMMS 6600-03; Emergency Diesel Generator Periodic Preventive Maintenance Inspection; Revision 20

QCOS 6600-10; ½ Emergency Diesel Generator Ventilation Fan Auto-Transfer Logic Test; dated April 16, 2004

QCOS 6600-03; Diesel Fuel Oil Transfer Pump Monthly Operability; dated April 14, 2004

QCOS 1000-04 TIC-868; RHR Service Water Pump Operability Test; dated June 3, 2004

Work Order 00447367-01; Inspect Internals/Overhaul 1C RHRSW Booster Pump

Condition Report 208670; 1A Core Spray Motor Operated Valve 1-1402-38A Breaker Trip

QCOS 1400-1; Quarterly Core Spray System Flow Rate Test; Revision 26

Work Order 676589; Troubleshoot/Repair Tripped Breaker at MCC 18-1A-1 Cubical C4; dated March 16, 2004

Work Order 659627; Operations - QCOS 2300-05; HPCI Pump Flow Rate; performed April 22, 2004

QCOS 2300-17; HPCI Auxiliary Oil Pump Operability Test; performed April 21, 2004

Work Order 514302; Check HPCI Auxiliary Oil Pump Impeller Setting/Coupling Alignment

Work Order 658663; HPCI Steam Line High Flow Analog Trip Calibration/Functional Test

QCIS 2300-06; HPCI Steam Line High Flow Transmitter Calibration; Revision 9

QCOS 660-06; Diesel Generator Cooling Water Pump Flow Rate Test; dated May 4, 2004

Work Order 596690; Inspect/Prepare a Spare Diesel Generator Cooling Water Pump for Installation

Condition Report 218770; Unit 2 Diesel Generator Cooling Water Pump Dp Close to Required Action Range on the High End

1R22 Surveillance Testing

Updated Final Safety Analysis Report

Technical Specifications

QCOS 6600-43; Unit ½ Diesel Generator Load Test; dated April 14, 2004

QCOS 6600-46; Unit ½ Diesel Generator Timed Start Test; dated April 14 and April 16, 2004

QCMMS 6600-04; Emergency Diesel Generator Alternate Refuel Cycle Preventive Maintenance Inspection; Revision 4

QCMMS 6600-03; Emergency Diesel Generator Periodic Preventive Maintenance Inspection; Revision 20

QCOS 2300-05; Quarterly HPCI Pump Operability Test (Unit 1); dated April 22 and 23, 2004

TIC-0979; QCOS 2300-05 - Add Step to Perform Leak Check of Restricting Orifice 1-2301-63C; dated April 12, 2004

Work Order 659627; HPCI Pump Operability; Task 01; dated April 19, 2004

QCOS 1300-01; Periodic RCIC Pump Operability Test (Unit 2); dated April 7, 2004;

Attachment

QCOS 2300-05; Quarterly HPCI Pump Operability Test (Unit 2); dated April 7, 2004

1R23 Temporary Modifications

Exelon Power Labs Report for Technical Services Request Number 957
Condition Report 211724; Unit 2 Scram During Turbine Testing; dated March 30, 2004
Prompt Investigation Report for Condition Report 211724; dated April 1, 2004
Temporary Configuration Change Report 348495; Install Turbine Thrust Bearing Wear
Detector Trip Circuit Bypass Switch to Support Weekly Testing of Thrust Bearing Wear
Detector; dated April 8, 2004
Operational Decision Making Document SER 04-018; Thrust Bearing Wear Detector Test
Circuit; dated June 7, 2004

1EP6 Drill Evaluation

QCGP 2-3; Reactor Scram; Revision 49
QCGP 3-1; Reactor Power Operations; Revision 40
QCOA 0201-01; Increasing Drywell Pressure; Revision 16
QCOA 0250-02; Main Steam Isolation Valve Failure; Revision 8
QCOA 0500-01; Partial Scram Actuation; Revision 5
QCOA 2300-01; High Pressure Coolant Injection Auto Initiation; Revision 18
QCOA 3700-04; RBCCW Expansion Tank High/Low Level; Revision 6
QCOA 4400-01; Loss of all Circulating Water Pumps; Revision 6
QCOA 6800-05; ATWS/ECCS System Trouble; Revision 2
QOA 0030-01; Condenser Pit Room or Condensate Pump Room Flooding; Revision 9
QOA 900-7 D-10; Panel 901-7 Row D Annunciators; Revision 2
QOA 900-7 E-10; Panel 901-7 Row E Annunciators; Revision 3
QOA 900-7 F-10; Panel 901-7 Row F Annunciators; Revision 2
QCOP 0300-16; Addition of Water to the Reactor Vessel Using the Control Rod Drive
Hydraulic System; Revision 4
QCAN 901(2)-4 A-11; RWCU Filter Demin Panel 2201(2)-61 Trouble; Revision 1
QCAN 901(2)-4 A-12; RWCU System Piping Leak as Detected by Temperature Sensors;
Revision 5
QCAN 901(2)-4 B-10; RWCU Filter Demin A Low Flow; Revision 3
QCAN 901(2)-4 D-10; RWCU Filter Demin B Low Flow; Revision 3
QCAN 901(2)-4 E-10; RWCU High Differential Across Filter Demineralizer; Revision 3
QCAN 901(2)-4 F-12; RWCU Non Regenerative Heat Exchanger Outlet High Temperature;
Revision 6
QCAN 901(2)-5 A-6; High Neutron Flux Sensed by APRM; Revision 7
QGA 100; Reactor Pressure Vessel Control

Attachment

QGA 101; Reactor Pressure Vessel Control (Anticipated Transient Without Scram)
QGA 200; Primary Containment Control
QGA 300; Secondary Containment Control
QGA 500-1; Reactor Pressure Vessel Blowdown
QGA 500-4; Reactor Pressure Vessel Flooding
EP-AA-1006; Emergency Action Levels Quad Cities Annex
Nuclear Accident Reporting System Form for April 19, 2004 Drill
Nuclear Accident Reporting System Forms and Event Notification Worksheets from
June 16, 2004 Pre-Exercise

2OS1 Access Control to Radiologically Significant Areas

2OS2 ALARA Planning And Controls

RP-AB-460; Tip Area Access Controls; Revision 0
RP-AA-460; Controls For High And Very High Radiation Areas; Revision 4
RP-QC-460-1003; Additional High Radiation Exposure Controls; Revision 2
LS-AA-126-1005; Check In Report: Access Control; dated May 7, 2004
LS-AA-126-1005; Check In Report: Access Control; dated April 5, 2004
QCFHP 0500-01; Spent Fuel Storage Pool Inventory Control and Audit; Revision 4
QCFHP 0500-01; Spent Fuel Storage Pool Inventory Log; Revision 4
Condition Report 213930; Evaluation Of Personnel Contamination Events For 1st Quarter
2004; dated May 5, 2004
RP-AA-270; Prenatal Radiation Exposure; Revision 2
RP-AA-401; ALARA Post Job Review: RWP 10003171; dated April 1, 2004
RP-AA-401; ALARA Post Job Review: RWP 10004219; dated March 31, 2004
Three Year Rolling TLD Average, Department 08431
Top Ten Q2R17 Radiation Work Permits
RWP10003287; ALARA/RP Briefing Summary; dated May 17, 2004
NOSPA-QC-04-1Q; N.O. Quarterly Report, January - March 2004; dated April 23, 2004
Condition Report 208190; OLL-1ARHR Corner Room Entry Without Daily Brief; dated
March 13, 2004
Condition Report 207496; NOS Identified Incomplete ALARA Plan Waiver Issue; dated
March 10, 2004
Condition Report 213221; Elevated Dose Rates For The 2-1001-21 Valve; dated April 5,
2004
Condition Report 217648; Security Guard Drove Through Transient HRS; dated April 28,
2004
Action Request 219473; Enhancements to LHRA Controls; dated May 7, 2004
Action Request 202191; Unplanned Spread of Contamination Due to Leaching; dated
February 14, 2004
Action Request 205964; Blatant Disregard For RP Instrumentation; dated March 3, 2004
Condition Report 197647; Workers Entered HRA Without Briefing; dated January 27, 2004
Action Request 207500; Bags Cut Open Exposing Highly Contaminated Material; dated
March 9, 2004
Action Request 208784; Q2R17 RP BRAC Point Survey Improvement; dated March 16,

2004

Action Request 209127; Diver's Head TLD Switched With Dive Tender's Chest TLD; dated March 18, 2004

Action Request 209592; Sandblast Grit Disposal Method Needs Improvement; dated March 9, 2004

Action Request 215712; Exposure Control; dated April 19, 2004

Radiation Work Permit 10003278; Radwaste Shipping Activities: ALARA/RP Brief Summary; dated May 17, 2004

2PS2 Radioactive Material Processing and Transportation

NRC Form 540; Uniform Low-Level Radioactive Waste Manifest Shipping Papers For Shipment Number QC-04-120; dated May 18, 2004

4OA1 Performance Indicator Verification

Monthly Operating Reports; dated April 2003 - March 2004

Nuclear Regulatory Commission Integrated Inspection Reports; dated June 2003 - January 2004

LS-AA-2030; Monthly Performance Indicator Data Elements for Unplanned Power Changes per 7000 Critical Hours; Revision 3

LS-AA-2080; Monthly Performance Indicator Data Elements for Safety System Functional Failures; Revision 3

LS-AA-2040; Monthly Performance Indicator Data Elements for Alternating Current Unavailability; Revision 3

EP-AA-125-1001; EP Performance Indicators Guidance; Revision 2

EP-AA-125-1002; ERO Performance - Performance Indicators Guidance; Revision 2

EP-AA-125-1003; ERO Readiness - Performance Indicators Guidance; Revision 2

Quad Cities Station Off-Site Sirens Test Plan; Revision 3

Quad Cities Station EPZ Sirens' Daily and Monthly Operability Reports - October 2002 through December 2003

LS-AA-2110; Monthly PI Data Elements for ERO Drill Participation - October 2002 through December 2003; Revisions 4, 5, and 6

LS-AA-2120; Monthly PI Data Elements for Drill/Exercise Performance - October 2002 through December 2003; Revision 3

LS-AA-2130; Monthly Data Elements for ANS Reliability - October 2002 through December 2003; Revision 4

4OA2 Problem Identification and Resolution

Quarterly Nuclear Oversight Assessment Reports

Component Health Report

System Health Report

Attachment

Common Cause Analyses performed from December 2003 - May 2004
Condition Reports dated January 1 through June 1, 2004
Listing of Part 21 Notifications dated January 1 - June 1, 2004
Listing of Condition Reports Initiated by Outside Organizations from January 1 through June 1, 2004
Listing of Condition Reports Initiated due to Parts Issues from January 1 through June 1, 2004
Listing of Condition Reports Related to NRC Non-Cited Violations from June 1, 2003 through March 31, 2004
Listing of Level 1 and 2 Condition Reports Initiated from June 1, 2003, through March 31, 2004

4OA3 Event Followup

Condition Report 207086; Q2R17 Inservice Inspection Weld 02B-S7 Exhibits Ultrasonic Examination Flaws; dated March 9, 2004
Condition Report 212007; Reportability of Q2R17 Axial Flaw Indications; dated March 31, 2004
Apparent Cause for Condition Report 212007; dated April 26, 2004
Condition Report 211724; Unexpected U2 Reactor Scram During Turbine Weekly Testing; dated March 30, 2004
GEK-179917B; Thrust Bearing Wear Detector Instructions
4E-7823Q; Electro-Hydraulic Control System Schematic Diagram Remote Testing of Thrust Bearing; February 11, 2000
QCOS 5600-10; Unit 2 Weekly Turbine Generator Tests; Revision 2
Updated Final Safety Analysis Report

4OA5 Other

OP-AA-101-113-1004; Guidelines for the Morning Plant Status Reports; Revision 0
WC-AA-101; Online Work Control; Revision 2
OP-MW-108-107; Interface Agreement Between ComEd Energy Delivery and Exelon Nuclear; Revision 0
Updated Final Safety Analysis Report
Technical Specifications
OP-MW-108-107-1001; Station Response to Grid Capacity Conditions; Revision 0
Licensee Event Report 05000265/85-011-00; Loss of Auxiliary Power to Unit in Refueling and Unit 1 Reactor Scram; dated June 3, 1985
Licensee Event Report 05000265/91-037-00; Unit 2 Shutdown due to Auxiliary Power Not Available from Unit 1; dated April 6, 1991
Condition Report 210832; Summer Readiness - Loss of Grid Lessons; dated March 25, 2004
Condition Report 175196; INPO SEN 242 - Grid Instability/Transmission Line Failures;

Attachment

dated September 10, 2003

Nuclear Event Report NC-04-002; Degraded Switchyard Voltage

Condition Report 215208; Evaluate Past Operability for Historical Switchyard Voltage;

dated April 15, 2004

Transmittal of Design Information QDC-04-013; Quad Cities Units 1 and 2 Unit Auxiliary

Transformer and Reserve Auxiliary Transformer Critical Characteristics, Minimum Required

Switchyard Voltage, and Maximum Allowable Switchyard Voltage; dated April 9, 2004

LIST OF ACRONYMS USED

ALARA As Low As Is Reasonably Achievable
CFR Code of Federal Regulations
MWe Megawatts Electric
SDP Significance Determination Process