UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
2443 WARRENVILLE ROAD, SUITE 210
LISLE, IL 60532-4352

July 24, 2008

Mr. Charles G. Pardee
Chief Nuclear Officer and
Senior Vice President
Exelon Generation Company, LLC
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2
NRC INTEGRATED INSPECTION REPORT 05000254/2008003;
05000265/2008003

Dear Mr. Pardee:

On June 30, 2008, 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 1, 2008, with Mr. Tulon and other members of your staff.

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

Based on the results of this inspection, one self-revealed finding of very low safety significance was identified. The finding involved a violation of NRC requirements. However, because of the very low safety significance, and because the issue was entered into your corrective action program, the NRC is treating the issue as a Non-Cited Violation (NCV) in accordance with Section VI.A.1 of the NRC Enforcement Policy. Additionally, a licensee identified violation which was determined to be of very low safety significance is listed in section 4OA7 of this report.

If you contest the subject or severity of a NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, U.S. Nuclear Regulatory Commission - Region III, 2443 Warrenville Road, Suite 210, Lisle, IL 60532-4352; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the Resident Inspector Office at the Quad Cities Nuclear Power Station.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be made 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), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

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

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

Enclosure: Inspection Report 05000254/2008003; 05000265/2008003
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 and Senior Vice President
Senior Vice President - Midwest Operations
Senior Vice President - Operations Support
Vice President - Licensing and Regulatory Affairs
Director Licensing - Licensing and Regulatory Affairs
Manager Licensing - Clinton, Dresden and Quad Cities
Vice President - Law and Regulatory Affairs
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J. Klinger, State Liaison Officer,
Illinois Emergency Management Agency
M. Rasmusson, State Liaison Officer, State of Iowa
Chairman, Illinois Commerce Commission
Chief Radiological Emergency Preparedness Section,
Dept. Of Homeland Security

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Letter to C. Pardee from M. Ring dated July 24, 2008

SUBJECT: QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2
NRC INTEGRATED INSPECTION REPORT 05000254/2008003;
05000265/2008003

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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:	05000254/2008003 and 05000265/2008003
Licensee:	Exelon Nuclear
Facility:	Quad Cities Nuclear Power Station, Units 1 and 2
Location:	Cordova, IL
Dates:	April 1 through June 30, 2008
Inspectors:	J. McGhee, Senior Resident Inspector R. Jones, Acting Resident Inspector J. Tapp, Acting Resident Inspector B. Cushman, Reactor Engineer W. Slawinski, Senior Health Physicist C. Mathews, Illinois Emergency Management Agency
Approved by:	M. Ring, Chief Branch 1 Division of Reactor Projects

Enclosure

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SUMMARY OF FINDINGS

IR 05000254/2008003, 05000265/2008003; 04/01/08 – 06/30/08; Quad Cities Nuclear Power Station, Units 1 & 2; Other Activities.

This report covers a three-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. One Green finding was identified by the inspectors. The finding was considered a Non-Cited Violation (NCV) of NRC regulations. 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 4, dated December 2006.

A. NRC-Identified and Self-Revealed Findings

Cornerstone: Barrier Integrity

- Green. A self-revealing finding of very low safety significance and a NCV of Technical Specification 3.4.9, "RCS Pressure and Temperature (P/T) Limits," was identified on March 31, 2008, when operators exceeded the Technical Specification limit of ≤ 50°F during the start of the 2A reactor coolant recirculation pump when trend information indicated a potential to exceed that limit. Specifically, operators did not establish effective controls to ensure compliance with the Technical Specification when they started the 2A reactor coolant recirculation pump with temperature in the 2A loop more than 50°F below the bulk temperature in the reactor vessel represented by the 2B loop temperature. Corrective actions for this event included verification that temperature had been restored inside limits within the 30 minutes required by the Technical Specification action completion time, performance of an engineering analysis to determine that the reactor coolant system was acceptable for continued operation, procedure revision for clarification, and training for operating personnel.

  The failure to implement effective controls to prevent exceeding the Technical Specification limit was more than minor because it was associated with the Barrier Integrity Cornerstone attribute of Human Performance and affected the cornerstone objective by challenging the physical design barriers intended to maintain the functionality of the reactor coolant system. Specifically, starting the pump with differential temperatures beyond the applicable limits exceeded design limits that provide a margin to brittle failure of the reactor vessel and piping of the reactor coolant pressure boundary. This finding was determined to be of very low safety significance because the plant conditions were determined to be within the bounds of the existing analysis and therefore the issue did not result in degrading the reactor coolant system boundary, in exceeding the Technical Specification limit for any reactor coolant system leakage, nor could it have likely affected other mitigation systems to result in a loss of their safety functions. This finding had a cross-cutting aspect in the area of Human Performance for the Decision-Making component because the licensee failed to communicate the decisions and the basis for decisions in a timely manner to personnel who had a need to know the information in order to perform work safely (H.1(c)). Specifically, planning decisions such as the compensatory actions for prompt restoration made during the dayshift for this repair were not effectively communicated to those individuals that were called upon to implement the plan in a safe and timely manner. (Section 4OA3)

B. Licensee-Identified Violations

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

REPORT DETAILS

Summary of Plant Status

Unit 1

On April 11, 2008, operators lowered power to 30 percent (275 megawatts-electric (MWe)) as a planned activity to identify and repair main condenser tube leaks. On Saturday, April 12, after de-inerting the drywell atmosphere, power was lowered to 200 MWe for a drywell entry. During the drywell entry, the licensee checked the oil level for the lower motor bearing of the 1A reactor recirculation pump before raising power back to 275 MWe and re-inerting the drywell atmosphere. Full power operation (97 percent) was restored at 0500 on April 14. A control rod pattern adjustment lasting four hours was performed on April 15 with power lowered to 785 MWe for the adjustment before being restored to full electrical power (912 MWe).

On May 10, 2008, at 11:00 p.m., operators lowered reactor power to 43 percent (400 MWe) for planned control rod scram timing testing, control rod pattern adjustment, and main condenser steam jet air ejector operations. The unit returned to full power at noon on May 11.

On May 24, 2008, at 11:00 p.m., operators lowered reactor power to 78 percent (730 MWe) for planned turbine testing and control valve control circuit maintenance. The unit returned to full power at 02:00 a.m. on May 25.

On June 4 at 1:00 p.m., the outboard seal failed on the 1C reactor feed pump. The operators performed an emergency load drop to 82 percent power (770 MWe) to get within the capacity of two reactor feed pumps before securing the 1C reactor feed pump. At 3:00 p.m. that same day, power was raised to 83 percent (785 MWe) following verification of safety limits and restoration of the rod pattern. The 1C reactor feed pump seals were replaced, the pump was restarted, and the unit returned to full power at 2:56 p.m. on June 5, 2008.

Unit 2

Unit 2 completed refueling outage 2QR19 on March 30, 2008, and started this inspection period at 42 percent (400 MWe) and reached full power (96 percent) on April 3, 2008, after completing the post modification testing for the generator rewind and digital electro-hydraulic control system installation during the outage.

On May 17, 2008, at 11:00 p.m., operators lowered power to 80 percent (700 MWe) for control rod pattern adjustment, rod scram timing, and main turbine testing. The unit returned to full power at 07:28 a.m. on May 18.

On June 18, 2008, the unit raised reactor power to 99.7 percent (2947 megawatts-thermal and 941 MWe) as part of a post maintenance test on the Unit 2 generator rewind performed during the most recent refueling outage. Power was raised in increments to 99.7 percent. Plant data was taken at the end of each increment to verify that no complications were created as power was raised and the plant continued to operate as expected. Power was held at 99.7 percent until 10:00 p.m. that night when it was lowered to restore the generator output to 912 MWe.

1. REACTOR SAFETY

Cornerstone: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

.1 Readiness of Offsite and Alternate Alternating Current (AC) Power Systems

a. Inspection Scope

The inspectors verified that plant features and procedures for operation and continued availability of offsite and alternate AC power systems during adverse weather were appropriate. The inspectors reviewed the licensee's procedures affecting these areas and the communication protocols between the transmission system operator and the plant to verify that the appropriate information was being exchanged when issues arose that could impact the offsite power system. Examples of aspects considered in the inspectors' review included:

- The coordination between the transmission system operator and the plant during off-normal or emergency events;
- The explanations for the events;
- The estimates of when the offsite power system would be returned to a normal state; and
- The notifications from the transmission system operator to the plant when the offsite power system was returned to normal.

The inspectors also verified that plant procedures addressed measures to monitor and maintain availability and reliability of both the offsite AC power system and the onsite alternate AC power system prior to or during adverse weather conditions. Specifically, the inspectors verified that the procedures addressed the following:

- The actions to be taken when notified by the transmission system operator that the post-trip voltage of the offsite power system at the plant would not be acceptable to assure the continued operation of the safety-related loads without transferring to the onsite power supply;
- The compensatory actions identified to be performed if it would not be possible to predict the post-trip voltage at the plant for the current grid conditions;
- A re-assessment of plant risk based on maintenance activities which could affect grid reliability, or the ability of the transmission system to provide offsite power; and
- The communications between the plant and the transmission system operator when changes at the plant could impact the transmission system, or when the capability of the transmission system to provide adequate offsite power was challenged.

Documents reviewed are listed in the Attachment to this report. The inspectors also reviewed corrective action program items to verify that the licensee was identifying adverse weather issues at an appropriate threshold and entering them into their corrective action program in accordance with station corrective action procedures.

This inspection constitutes one readiness of offsite and alternate AC power systems sample as defined in Inspection Procedure 71111.01-05.

b. Findings

No findings of significance were identified.

.2 Summer Seasonal Readiness Preparations

a. Inspection Scope

The inspectors performed a review of the licensee's preparations for summer weather for selected systems.

During the inspection, the inspectors focused on plant specific design features and the licensee's procedures used to mitigate or respond to adverse weather conditions. Additionally, the inspectors reviewed the Updated Final Safety Analysis Report (UFSAR) and performance requirements for systems selected for inspection, and verified that operator actions were appropriate as specified by plant specific procedures. Specific documents reviewed during this inspection are listed in the Attachment. The inspectors also reviewed corrective action program items to verify that the licensee was identifying adverse weather issues at an appropriate threshold and entering them into the corrective action program in accordance with station corrective action procedures. The inspectors' reviews focused specifically on the following plant systems:

- Unit 2 Main Transformer,
- Unit 1 Emergency Diesel Generator, and
- Unit 1 Emergency Diesel Generator Ventilation.

This inspection constitutes one seasonal adverse weather sample as defined in Inspection Procedure 71111.01-05.

b. Findings

No findings of significance were identified.

.3 External Flooding

a. Inspection Scope

The inspectors evaluated the design, material condition, and procedures for coping with the design basis probable maximum flood. The evaluation included a review to check for deviations from the descriptions provided in the UFSAR for features intended to mitigate the potential for flooding from external factors. As part of this evaluation, the inspectors checked for obstructions that could prevent draining, checked that the roofs did not contain obvious loose items that could clog drains in the event of heavy precipitation, and determined that barriers required to mitigate the flood were in place and operable. Additionally, the inspectors performed a walkdown of the protected area to identify any modification to the site which would inhibit site drainage during a probable maximum precipitation event or allow water ingress past a barrier. The inspectors also

reviewed the abnormal operating procedure for mitigating the design basis flood to ensure it could be implemented as written.

This inspection constitutes one external flooding sample as defined in Inspection Procedure 71111.01-05.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

.1 Quarterly Partial System Walkdowns

a. Inspection Scope

The inspectors performed partial system walkdowns of the following risk-significant systems:

- Unit 1/2 Emergency Diesel Generator with Unit 2 Emergency Diesel Generator Cooling Water Pump Out-of-Service for Preventative Maintenance;
- Unit 2 Reactor Core Isolation Cooling System with Unit 2 High Pressure Coolant Injection Out-of-Service for Preventative Maintenance;
- Unit 1 “A” Residual Heat Removal Loop with Unit 1 “B” Residual Heat Removal Loop Out-Of-Service for Preventative Maintenance; and
- Unit 2 “A” Core Spray with Unit 2 “B Core Spray Out-Of-Service for Preventative Maintenance.

The inspectors selected these systems based on their risk significance relative to the Reactor Safety Cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could impact the function of the system, and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, UFSAR, Technical Specifications (TS), Administrative TS, open work orders, open condition reports, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components and support equipment were aligned correctly and operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no obvious deficiencies. The inspectors also verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers and entered them into the corrective action program with the appropriate significance characterization. For the emergency diesel generator sample, the inspectors used Review of Operating Experience Smart Sample: OpESS FY2008-01, “Negative Trend and Recurring Events Involving Emergency Diesel Generators,” for guidance in conducting the inspection. Documents reviewed are listed in the Attachment.

These activities constituted four partial system walkdown samples as defined in Inspection Procedure 71111.04-05.

b. Findings

No findings of significance were identified.

.2 Semi-Annual Complete System Walkdown

a. Inspection Scope

On June 25, 2008, the inspectors performed a complete system alignment inspection of the Unit 2 high pressure coolant injection system to verify the functional capability of the system. This system was selected because it was considered both safety-significant and risk-significant in the licensee's probabilistic risk assessment. The inspectors walked down the system to review mechanical and electrical equipment line ups, electrical power availability, system pressure and temperature indications, as appropriate, component labeling, component lubrication, component and equipment cooling, hangers and supports, operability of support systems, and to ensure that ancillary equipment or debris did not interfere with equipment operation. A review of a sample of past and outstanding work orders was performed to determine whether any deficiencies significantly affected the system function. In addition, the inspectors reviewed the corrective action program database to ensure that system equipment alignment problems were being identified and appropriately resolved. Documents reviewed are listed in the Attachment.

These activities constituted one complete system walkdown sample as defined in Inspection Procedure 71111.04-05.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours (71111.05Q)

a. Inspection Scope

The inspectors conducted fire protection walkdowns which were focused on availability, accessibility, and the condition of firefighting equipment in the following risk-significant plant areas:

- Unit 2 Turbine Building, Elevation 639', Motor Generator Set 2B, Fire Zone 8.2.8.C;
- Unit 1/2 Turbine Building, Elevation 611'-6", TBCCW Area, Fire Zone 8.2.7.C;
- Unit 1/2 Turbine Building, Elevation 611'-6", Motor Generator Set Oil Coolers, Fire Zone 8.2.7.C;
- Unit 1 Reactor Building, Elevation 647'-6", Third Floor, Fire Zone 1.1.1.4;
- Unit 2 Reactor Building, Elevation 647'-6", Third Floor, Fire Zone 1.1.2.4; and
- Unit 1/2 Station Blackout Building, Elevations 595' and 615', Fire Zone - Station Blackout Building.

The inspectors reviewed areas to assess if the licensee had implemented a fire protection program that adequately controlled combustibles and ignition sources within the plant, effectively maintained fire detection and suppression capability, maintained passive fire protection features in good material condition, and had implemented adequate compensatory measures for out of service, degraded or inoperable fire protection equipment, systems, or features in accordance with the licensee's fire plan. The inspectors selected fire areas based on their overall contribution to internal fire risk as documented in the plant's Individual Plant Examination of External Events with later additional insights, their potential to impact equipment which could initiate or mitigate a plant transient, or their impact on the plant's ability to respond to a security event. Using the documents listed in the Attachment, the inspectors verified that fire hoses and extinguishers were in their designated locations and available for immediate use; that fire detectors and sprinklers were unobstructed, that transient material loading was within the analyzed limits; and fire doors, dampers, and penetration seals appeared to be in satisfactory condition. The inspectors also verified that minor issues identified during the inspection were entered into the licensee's corrective action program.

These activities constituted six quarterly fire protection inspection samples as defined in Inspection Procedure 71111.05-05.

b. Findings

No findings of significance were identified.

.2 Annual Fire Protection Drill Observation (71111.05A)

a. Inspection Scope

On April 16, 2008, the inspectors observed a fire brigade drill for operations crew "A" due to a simulated fire on the 2B DW-Torus Pumpback (Joy) Compressor belts in the Unit 2 Reactor Building Level 595'. Based on this observation, the inspectors evaluated the readiness of the plant fire brigade to fight fires. The inspectors verified that the licensee staff identified deficiencies, openly discussed them in a self-critical manner at the drill debrief, and took appropriate corrective actions. Specific attributes evaluated were: (1) proper wearing of turnout gear and self-contained breathing apparatus; (2) proper use and layout of fire hoses; (3) employment of appropriate fire fighting techniques; (4) sufficient firefighting equipment brought to the scene; (5) effectiveness of fire brigade leader communications, command, and control; (6) search for victims and propagation of the fire into other plant areas; (7) smoke removal operations; (8) utilization of pre-planned strategies; (9) adherence to the pre planned drill scenario; and (10) drill objectives.

These activities constituted one annual fire protection inspection sample as defined in Inspection Procedure 71111.05-05.

b. Findings

No findings of significance were identified

1R11 Licensed Operator Requalification Program (71111.11)

.1 Resident Inspector Quarterly Review (71111.11Q)

a. Inspection Scope

On April 7, and again on April 28, 2008, the inspectors observed crews of licensed operators in the plant's simulator during licensed operator requalification examinations to verify that operator performance was adequate; evaluators were identifying and documenting crew performance problems; and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

- licensed operator performance;
- crew's clarity and formality of communications;
- ability to take timely actions in the conservative direction;
- prioritization, interpretation, and verification of annunciator alarms;
- correct use and implementation of abnormal and emergency procedures;
- control board manipulations;
- oversight and direction from supervisors; and
- ability to identify and implement appropriate TS actions and emergency plan actions, declarations and notifications.

The crew's performance in these areas was compared to pre-established operator action expectations and successful critical task completion requirements.

This inspection constitutes two quarterly licensed operator requalification program samples as defined in Inspection Procedure 71111.11.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Routine Quarterly Evaluations (71111.12Q)

a. Inspection Scope

The inspectors evaluated degraded performance issues involving the following risk-significant system:

- Z5704: Reactor Building Heating, Ventilating and Air Conditioning.

The inspectors reviewed events such as where ineffective equipment maintenance had resulted in valid or invalid automatic actuations of engineered safeguards systems and independently verified the licensee's actions to address system performance or condition problems in terms of the following:

- implementing appropriate work practices;
- identifying and addressing common cause failures;
- scoping of systems in accordance with 10 CFR 50.65(b) of the maintenance rule;

- characterizing system reliability issues for performance;
- charging unavailability for performance;
- trending key parameters for condition monitoring;
- ensuring 10 CFR 50.65(a)(1) or (a)(2) classification or re-classification; and
- verifying appropriate performance criteria for structures, systems, and components/functions classified as (a)(2) or appropriate and adequate goals and corrective actions for systems classified as (a)(1).

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the system. In addition, the inspectors verified maintenance effectiveness issues were entered into the corrective action program with the appropriate significance characterization. Documents reviewed are listed in the Attachment.

This inspection constitutes one quarterly maintenance effectiveness sample as defined in Inspection Procedure 71111.12-05.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)

.1 Maintenance Risk Assessments and Emergent Work Control

a. Inspection Scope

The inspectors reviewed the licensee's evaluation and management of plant risk for the maintenance and emergent work activities affecting risk-significant and safety-related equipment listed below to verify that the appropriate risk assessments were performed prior to removing equipment for work:

- Work Week 17 (April 21 – 27, 2008) Service Water Pump and Screen Work, Unit 1 Reactor Core Isolation Cooling System Maintenance and Surveillances, Unit 1 Emergency Diesel Generator Load Test;
- Work Week 19 (May 4 – 10, 2008) Unit 1 Battery Charger Calibrations, 1B Residual Heat Removal Service Water Pump Maintenance, 1A and 1B Residual Heat Removal Pump Maintenance and Surveillances;
- Emergent failure of the Unit 1A 125 Vdc Battery Charger;
- Work Week 22 (May 26 - June 1) 1B Residual Heat Removal Service Water, 1B Residual Heat Removal Heat Exchanger, U1 Residual Heat Removal Valves, and U2 Reactor Core Isolation Cooling Maintenance; and
- Unit 1 Reactor Core Isolation Cooling Availability with Vacuum Pump Emergent Failure.

These activities were selected based on their potential risk significance relative to the Reactor Safety Cornerstones. As applicable for each activity, the inspectors verified that risk assessments were performed as required by 10 CFR 50.65(a)(4) and were accurate and complete. When emergent work was performed, the inspectors verified that the plant risk was promptly reassessed and managed. The inspectors reviewed the scope of maintenance work, discussed the results of the assessment with the licensee's probabilistic risk analyst or shift technical advisor, and verified plant conditions were

consistent with the risk assessment. The inspectors also reviewed TS requirements and walked down portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

These activities constituted five samples as defined in Inspection Procedure 71111.13-05.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

.1 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following issues:

- 1/2 Emergency Diesel Generator Cooling Water Pump Failed QCOS 1000-47 (1C And 1D Residual Heat Removal Service Water Pumps And Unit ½ Diesel Generator Cooling Water Pump Suction Pressure Surveillance) Performance Acceptance Criteria;
- Recirculation Loop 50 Degree Differential Temperature Potentially Exceeded During Reactor Coolant Recirculation Pump Start;
- Vendor Identified Potential Limitations In Diesel Engine Cold Dead Load Pickup Capability;
- Unit 2 Reactor Core Isolation Cooling System High Point Vent Blocked; and
- Main Steam Line Break Calculation 3C2-0181-001 Didn't Consider Opening to the Reactor Building.

The inspectors selected these potential operability issues based on the risk-significance of the associated components and systems. The inspectors evaluated the technical adequacy of the evaluations to ensure that TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TS and the UFSAR to the licensee's evaluations, to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled. The inspectors determined compliance with bounding limitations associated with the evaluations. Additionally, the inspectors also reviewed a sampling of corrective action documents to verify that the licensee was identifying and correcting any deficiencies associated with operability evaluations. Documents reviewed are listed in the Attachment.

This inspection constitutes five samples as defined in Inspection Procedure 71111.15-05.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19)

.1 Post-Maintenance Testing

a. Inspection Scope

The inspectors reviewed the following post-maintenance activities to verify that procedures and test activities were adequate to ensure system operability and functional capability:

- Unit 2 Digital Electro-Hydraulic Control System Upgrade Project Engineering Change 339656 Operating Test;
- Unit 1 Residual Heat Removal Service Water Sump Check Valve Leak Test;
- Unit 1 B Residual Heat Removal Service Water Pump Post-Maintenance Operability Test;
- Unit 1 Station Blackout Diesel Generator Post-Maintenance Operability Test;
- Unit 2 “B” Core Spray Motor Operated Valve 2-1402-38B Post-Maintenance Operability Test; and
- Unit 2 Power Ascension Test to Maximum Thermal Power.

These activities were selected based upon the structure, system, or component's ability to impact risk. The inspectors evaluated these activities for the following (as applicable): the effect of testing on the plant had been adequately addressed; testing was adequate for the maintenance performed; acceptance criteria were clear and demonstrated operational readiness; test instrumentation was appropriate; tests were performed as written in accordance with properly reviewed and approved procedures; equipment was returned to its operational status following testing (temporary modifications or jumpers required for test performance were properly removed after test completion), and test documentation was properly evaluated. The inspectors evaluated the activities against TS, the UFSAR, 10 CFR Part 50 requirements, licensee procedures, and various NRC generic communications to ensure that the test results adequately ensured that the equipment met the licensing basis and design requirements. In addition, the inspectors reviewed corrective action documents associated with post-maintenance tests to determine whether the licensee was identifying problems and entering them in the corrective action program and that the problems were being corrected commensurate with their importance to safety. Documents reviewed are listed in the Attachment.

This inspection constitutes six samples as defined in Inspection Procedure 71111.19-05.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

.1 Routine Surveillance Testing

a. Inspection Scope

The inspectors reviewed the test results for the following activities to determine whether risk-significant systems and equipment were capable of performing their intended safety function and to verify testing was conducted in accordance with applicable procedural and TS requirements:

- Unit 1 Reactor Core Isolation Cooling Isolation Steam Line High Flow Calibration and Functional Test;
- Unit 1 Standby Liquid Control Tank Boron Concentration Surveillance Test;
- Safe Shutdown Makeup Pump System Venting;
- Unit 1 Reactor Coolant System Sampling and Testing for Specific Activity; and
- Unit 2 Reactor Coolant System Sampling and Testing for Specific Activity.

The inspectors observed in-plant activities and reviewed procedures and associated records to determine whether: any preconditioning occurred; effects of the testing were adequately addressed by control room personnel or engineers prior to the commencement of the testing; acceptance criteria were clearly stated, demonstrated operational readiness, and were consistent with the system design basis; plant equipment calibration was correct, accurate, and properly documented; as left setpoints were within required ranges; the calibration frequency was in accordance with TS, the UFSAR, procedures, and applicable commitments; measuring and test equipment calibration was current; test equipment was used within the required range and accuracy; applicable prerequisites described in the test procedures were satisfied; test frequencies met TS' requirements to demonstrate operability and reliability; tests were performed in accordance with the test procedures and other applicable procedures; jumpers and lifted leads were controlled and restored where used; test data and results were accurate, complete, within limits, and valid; test equipment was removed after testing; where applicable, test results not meeting acceptance criteria were addressed with an adequate operability evaluation or the system or component was declared inoperable; where applicable for safety-related instrument control surveillance tests, reference setting data were accurately incorporated in the test procedure; where applicable, actual conditions encountering high resistance electrical contacts were such that the intended safety function could still be accomplished; prior procedure changes had not provided an opportunity to identify problems encountered during the performance of the surveillance or calibration test; equipment was returned to a position or status required to support the performance of the safety functions; and all problems identified during the testing were appropriately documented and dispositioned in the corrective action program. Documents reviewed are listed in the Attachment.

This inspection constitutes five routine surveillance testing samples as defined in Inspection Procedure 71111.22, Sections -02 and -05.

b. Findings

No findings of significance were identified.

.2 Inservice Testing Surveillance

a. Inspection Scope

The inspectors reviewed the test results for the following activities to determine whether risk-significant systems and equipment were capable of performing their intended safety function and to verify testing was conducted in accordance with applicable procedural and TS requirements:

- Unit 2 “B” Core Spray Pump Flow Rate and Differential Pressure Inservice Testing Surveillance Test.

The inspectors observed activities and reviewed procedures and associated records to determine whether: any preconditioning occurred; effects of the testing were adequately addressed by control room personnel or engineers prior to the commencement of the testing; acceptance criteria were clearly stated, demonstrated operational readiness, and were consistent with the system design basis; plant equipment calibration was correct, accurate, and properly documented; as left setpoints were within required ranges; and the calibration frequency was in accordance with TS, the UFSAR, procedures, and applicable commitments; measuring and test equipment calibration was current; test equipment was used within the required range and accuracy; applicable prerequisites described in the test procedures were satisfied; test frequencies met TS requirements to demonstrate operability and reliability; tests were performed in accordance with the test procedures and other applicable procedures; test data and results were accurate, complete, within limits, and valid; test equipment was removed after testing; where applicable for inservice testing activities, testing was performed in accordance with the applicable version of Section XI, American Society of Mechanical Engineers Code, and reference values were consistent with the system design basis; reference setting data were accurately incorporated in the test procedure; equipment was returned to a position or status required to support the performance of its safety functions; and all problems identified during the testing were appropriately documented and dispositioned in the corrective action program. Documents reviewed are listed in the Attachment.

This inspection constitutes one inservice inspection sample as defined in Inspection Procedure 71111.22 Sections -02 and -05.

b. Findings

No findings of significance were identified.

.3 Reactor Coolant System Leak Detection Inspection Surveillance

The inspectors reviewed the test results for the following activities to determine whether the equipment was capable of performing its intended function of monitoring reactor coolant system leakage and to verify testing was conducted in accordance with applicable procedural and TS requirements:

- Unit 2 “Reactor Coolant Leakage in the Drywell.”

The inspectors observed in-plant activities and reviewed procedures and associated records to determine whether: preconditioning occurred; effects of the testing were

adequately addressed by control room personnel or engineers prior to the commencement of the testing; acceptance criteria were clearly stated, demonstrated operational readiness, and were consistent with the system design basis; plant equipment calibration was correct, accurate, and properly documented; as left setpoints were within required ranges; and the calibration frequency was in accordance with TS, the UFSAR, procedures, and applicable commitments; measuring and test equipment calibration was current; test equipment was used within the required range and accuracy; applicable prerequisites described in the test procedures were satisfied; test frequencies met TS requirements to demonstrate operability and reliability; tests were performed in accordance with the test procedures and other applicable procedures; jumpers and lifted leads were controlled and restored where used; test data and results were accurate, complete, within limits, and valid; test equipment was removed after testing; where applicable, test results not meeting acceptance criteria were addressed with an adequate operability evaluation or the system or component was declared inoperable; where applicable for safety-related instrument control surveillance tests, reference setting data were accurately incorporated in the test procedure; where applicable, actual conditions encountering high resistance electrical contacts were such that the intended safety function could still be accomplished; prior procedure changes had not provided an opportunity to identify problems encountered during the performance of the surveillance or calibration test; equipment was returned to a position or status required to support the performance of its safety functions; and all problems identified during the testing were appropriately documented and dispositioned in the corrective action program. Documents reviewed are listed in the Attachment.

This inspection constitutes one reactor coolant system leak detection inspection sample as defined in Inspection Procedure 71111.22, Sections -02 and -05.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Public Radiation Safety

2PS3 Radiological Environmental Monitoring Program and Radioactive Material Control Program (71122.03)

.1 Inspection Planning

a. Inspection Scope

The inspectors reviewed the 2006 and 2007 Annual Radiological Environmental Operating Reports, the results of monthly radiological environmental monitoring analyses for January 2008 through April 2008, and the most recent licensee assessment results to verify that the radiological environmental monitoring program (REMP) was implemented as required by the radiological effluent TSs and the Offsite Dose Calculation Manual (ODCM). The inspectors reviewed the environmental reports for changes to the ODCM with respect to environmental monitoring, commitments in terms of sampling locations, monitoring and measurement frequencies, land use census, interlaboratory comparison program, and analysis of radiological environmental sample

data. The inspectors reviewed the ODCM to identify environmental monitoring stations and evaluated the locations of these stations and the types of samples collected from each to determine if they were consistent with the ODCM and NRC guidance in Regulatory Guide 1.21, "Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes, and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light Water Cooled Nuclear Power Plants;" and in Regulatory Guide 4.8, "Environmental Technical Specifications for Nuclear Power Plants;" and an associated NRC Branch Technical Position. The inspectors also reviewed licensee self-assessments, audits, licensee event reports, and interlaboratory comparison program results. The inspectors reviewed the UFSAR for information regarding the environmental monitoring program and meteorological monitoring instrumentation. The inspectors reviewed the scope of the licensee's audit program to verify that it met the requirements of 10 CFR 20.1101(c).

This inspection constitutes one sample as defined in Inspection Procedure 71122.03-5.

In 2007 the NRC performed confirmatory measurements of water samples to evaluate the licensee's proficiency in collecting and analyzing samples for the presence of tritium. Specifically, in October 2007, the NRC obtained split samples from six different onsite monitoring wells and sent those samples to the NRC's contract laboratory for tritium analyses. The samples were collected from onsite monitoring wells identified in the licensee's Groundwater Monitoring Program and from other monitoring wells established by the licensee as part of its evaluation of potential leakage from underground piping associated with the sites condensate storage tanks, as documented in NRC Inspection Report 05000254/2007-005; 05000265/2007-005. For all six samples, the NRC contract laboratory and the licensee's analyses were "in agreement." The comparison was based on the Confirmatory Measurements Program criteria provided in Inspection Procedure 84750, "Radioactive Waste Treatment, Effluent and Environmental Monitoring," dated March 15, 1994.

b. Findings

No findings of significance were identified.

.2 Onsite Inspection

a. Inspection Scope

The inspectors walked down all eight of the licensee's "indicator" environmental air sampling stations and approximately 20 percent of the thermoluminescence dosimeter monitoring stations to determine whether they are located as described in the ODCM and to determine the equipment material condition. Each station walked down was also examined to assess monitoring station orientation relative to plant effluent release locations, to assess equipment configuration, and to determine whether vegetation growth control allowed for the collection of representative samples. In addition, the inspectors evaluated the surface water and ground/well water sampling locations to verify the suitability of each in complying with REMP requirements.

This inspection constitutes one sample as defined in Inspection Procedure 71122.03-5.

The inspectors observed the collection of surface water samples and the change out of air particulate and charcoal cartridges at selected environmental monitoring locations to

determine whether environmental sampling was representative of the release pathways as specified in the ODCM and that sampling techniques were consistent with procedures.

This inspection constitutes one sample as defined in Inspection Procedure 71122.03-5.

Based on direct observations and records review, the inspectors verified that the meteorological instruments were operable, calibrated, and maintained in accordance with the UFSAR, NRC Safety Guide 23, and licensee procedures. The inspectors verified that the meteorological data readout and recording instruments in the control room and at the meteorological tower were operable. The inspectors compared readout data (i.e., wind speed, wind direction, and delta temperature) in the control room and at the meteorological tower and discussed with the licensee the systems data recording capabilities to verify that data was sampled and compiled consistent with the aforementioned safety guide.

This inspection constitutes one sample as defined in Inspection Procedure 71122.03-5.

The inspectors reviewed each event documented in the 2006 and 2007 Annual Radiological Environmental Operating Reports which involved a missed sample, inoperable sampler, lost thermoluminescence dosimeter, or anomalous measurement for the cause and corrective actions and conducted a review of the licensee's assessment of any positive sample results (i.e., licensed radioactive material detected above the lower-limits-of-detection). The inspectors reviewed the associated radioactive effluent release data that was the likely source of the released material, if applicable.

This inspection constitutes one sample as defined in Inspection Procedure 71122.03-5.

The inspectors reviewed significant changes made by the licensee to the ODCM as a result of changes to the land census or sampler station modifications since the last inspection. The inspectors reviewed technical justifications for changed sampling locations. The inspectors verified that the licensee performed the reviews required to ensure that the changes did not affect its ability to monitor the impacts of radioactive effluent releases on the environment.

This inspection constitutes one sample as defined in Inspection Procedure 71122.03-5.

The inspectors reviewed the calibration and maintenance records for all of the licensee's air sample pumps. The inspectors reviewed calibration records for the environmental sample radiation measurement instrumentation (i.e., count room). The inspectors verified that the appropriate detection sensitivities with respect to ODCM were utilized for counting samples (i.e., the samples meet ODCM required lower-limits-of-detection). The inspectors reviewed quality control charts for maintaining radiation measurement instrument status and actions taken for degrading detector performance, as applicable.

The inspectors reviewed the results of the REMP sample vendor's quality control program including the interlaboratory comparison program to verify the adequacy of the vendor's program and the corrective actions for any identified deficiencies. The inspectors reviewed audits and technical evaluations the licensee performed on the vendor's program since the last inspection, as applicable. Additionally, the inspectors reviewed the results of the licensee's interlaboratory comparison program to verify the

adequacy of environmental sample analyses performed by the licensee. The inspectors reviewed the licensee's determination of any bias to the data and the overall effect on the REMP. The inspectors reviewed Nuclear Oversight Organization audit results of the program to determine whether the licensee met ODCM requirements.

This inspection constitutes one sample as defined in Inspection Procedure 71122.03-5.

b. Findings

No findings of significance were identified.

.3 Unrestricted Release of Material from the Radiologically Controlled Area

a. Inspection Scope

The inspectors observed locations where the licensee monitors potentially contaminated material leaving the radiologically controlled area, and evaluated the procedures and practices used for control, survey, and release from these areas. The inspectors observed the performance of personnel surveying and releasing material for unrestricted use to verify that the work was performed in accordance with plant procedures. Additionally, the inspectors questioned several radiation protection staff which conduct surveys for the unconditional release of material and verified they understood the proper methods and radiation survey equipment to use for various unconditional release applications.

This inspection constitutes one sample as defined in Inspection Procedure 71122.03-5.

The inspectors verified that the radiation monitoring instrumentation was appropriate for the radiation types present and was calibrated with appropriate radiation sources. The inspectors reviewed the licensee's criteria for the survey and release of potentially contaminated material and verified that there was guidance on how to respond to an alarm which indicates the presence of licensed radioactive material. The inspectors reviewed the licensee's equipment to ensure the radiation detection sensitivities were consistent with the NRC guidance contained in Circular 81-07 and Information Notice 85-92 for surface contamination and Health Physics Position (HPPOS) No. 221 for volumetrically contaminated material. The inspectors reviewed the licensee's program to determine if it adequately identified and evaluated the impact of difficult-to-detect radionuclides including those that decay via electron capture. The inspectors reviewed the licensee's procedures and records to verify that the radiation detection instrumentation was used at its typical sensitivity level based on appropriate counting parameters (i.e., counting times and background radiation levels). The inspectors verified that the licensee had not established a "release limit" by altering the instrument's typical sensitivity through such methods as raising the energy discriminator level or locating the instrument in a high radiation background area.

This inspection constitutes one sample as defined in Inspection Procedure 71122.03-5.

b. Findings

No findings of significance were identified.

.4 Identification and Resolution of Problems

a. Inspection Scope

The inspectors reviewed the licensee's self assessments, audits, licensee event reports, and special reports, as applicable related to the radiological environmental monitoring and unconditional release programs since the last inspection to determine if identified problems were entered into the corrective action program for resolution. The inspectors also verified that the licensee's self-assessment program was capable of identifying repetitive deficiencies or significant individual deficiencies in problem identification and resolution.

The inspectors also reviewed corrective action reports related to the REMP and the radioactive material control program since the previous inspection, interviewed staff and reviewed documents to determine if the following activities were being conducted in an effective and timely manner commensurate with their importance to safety and risk:

- 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 NCVs tracked in the corrective action system; and
- Implementation/consideration of risk-significant operational experience feedback.

This inspection constitutes one sample as defined in Inspection Procedure 71122.03-5.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

.1 Reactor Coolant System Specific Activity

a. Inspection Scope

The inspectors sampled licensee submittals for the reactor coolant system specific activity performance for Quad Cities Units 1 and 2 for the period from the first quarter 2007 through April 30, 2008. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in the Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, were used. The inspectors reviewed reactor coolant system chemistry samples, TS requirements, issue reports, event reports and NRC integrated inspection reports for the period of January 1, 2007, through April 30, 2008, to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator

and none were identified. In addition to record reviews, the inspectors observed a chemistry technician obtain and analyze reactor coolant system samples as documented in section 1R22 in this report. Specific documents reviewed are described in the Attachment to this report.

This inspection constitutes two reactor coolant system specific activity samples as defined in Inspection Procedure 71151-05.

b. Findings

No findings of significance were identified.

.2 Reactor Coolant System Leakage

a. Inspection Scope

The inspectors sampled licensee submittals for the reactor coolant system leakage performance indicator for Quad Cities Units 1 and 2 for the period from the first quarter 2007 through the first quarter 2008. To determine the accuracy of the performance indicator data reported during those periods, performance indicator definitions and guidance contained in the NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 5, were used. The inspectors reviewed operator logs, reactor coolant system leakage tracking data, issue reports, event reports and NRC integrated inspection reports for the period of January 1, 2007, through March 31, 2008, to validate the accuracy of the submittals. The inspectors also reviewed the corrective action program database to determine if any problems had been identified with the performance indicator data collected or transmitted for this indicator and none were identified. Specific documents reviewed are described in the Attachment to this report.

This inspection constitutes two reactor coolant system leakage samples as defined in Inspection Procedure 71151-05.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness, Public Radiation Safety, Occupational Radiation Safety, and Physical Protection

.1 Routine Review of Items Entered into the Corrective Action Program

a. Scope

As part of the various baseline inspection procedures 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 program at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and

addressed. Attributes reviewed included: the complete and accurate identification of the problem; that timeliness was commensurate with the safety significance; that evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent of condition reviews, and previous occurrence reviews were proper and adequate; and that the classification, prioritization, focus, and timeliness of corrective actions were commensurate with safety and sufficient to prevent recurrence of the issue. Minor issues entered into the licensee's corrective action program as a result of the inspectors' observations are included in the attached List of Documents Reviewed.

These routine reviews for the identification and resolution of problems did not constitute any additional inspection samples. Instead, by procedure they were considered an integral part of the inspections performed during the quarter and documented in Section 1 of this report.

b. Findings

No findings of significance were identified.

.2 Daily Corrective Action Program Reviews

a. Scope

In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee's corrective action program. This review was accomplished through inspection of the station's daily condition report packages.

These daily reviews were performed by procedure as part of the inspectors' daily plant status monitoring activities and, as such, did not constitute any separate inspection samples.

b. Findings

No findings of significance were identified.

.3 Semi-Annual Trend Review

a. Scope

The inspectors performed a review of the corrective action program and associated documents to identify trends that could indicate the existence of a more significant safety issue. The inspectors' review was focused on repetitive equipment and human performance issues, but also considered the results of the daily inspector corrective action program item screening discussed in Section 4OA2.2 of this report. The inspectors' review nominally considered the six month period of December 1, 2007 through May 31, 2008, although some examples expanded beyond those dates.

The reviews also included issues documented outside the normal corrective action program in major equipment problem lists, repetitive and/or rework maintenance lists, departmental problem/challenges lists, system health reports, quality assurance

audit/surveillance reports, self assessment reports, and Maintenance Rule assessments. The inspectors compared and contrasted their results with the results contained in the corrective action program trending reports. Corrective actions associated with a sample of the issues identified in the licensee's trending reports were reviewed for adequacy.

In particular, the corrective action plan associated with Issue Report 698843, "Receipt of NRC Substantive Crosscutting Issue in the Area of Documentation," was reviewed. The quality of the action closures was reviewed as well as the thoroughness of the ongoing actions. The inspectors monitored implementation of programs put in place to reinforce human performance improvement initiatives both in the office and in the power plant. The inspectors monitored worker training provided to licensee employees and contractor personnel working onsite during the refueling outage and incorporated those observations into the overall trend evaluation as well as the individual human performance issues that impacted plant equipment.

This review constituted one semi-annual trend inspection sample as defined in Inspection Procedure 71152, Sections 02.01 and 05.

b. Findings

No findings of significance were identified.

.4 Selected Issue Follow-up Inspection: Quad Cities Implementation of Generic Letter 82-12, Nuclear Power Plant Staff Working Hours During Refueling Outage Q2R19

a. Scope

As a result of issues at other Exelon sites regarding the implementation of limitations on staff working hours detailed in Generic Letter 82-12, the inspectors reviewed all approved overtime guideline deviation forms for refueling outage Q2R19 to evaluate program procedure detail, implementation compliance with site procedures, adequacy of documentation, and identification of any non-compliance in the corrective action program. The inspectors also reviewed individual work schedules for personnel involved in pre-startup time-critical work activities to ensure program compliance was maintained and any non-compliance was appropriately identified in corrective action reports.

The above constitutes completion of one in-depth problem identification and resolution sample as defined in Inspection Procedure 71152, Section 02.02 and 05.

b. Findings

No findings of significance were identified.

4OA3 Follow-up of Events and Notices of Enforcement Discretion (71153)

.1 Unit 2 Restart of 2A Recirculation Pump in Mode 1

a. Inspection Scope

The inspectors reviewed the plant's response to a restart of the Unit 2 "A" reactor coolant recirculation pump on March 31, 2008, when the pump was started following a

maintenance shutdown. Documents reviewed in this inspection are listed in the Attachment.

This inspection constitutes one sample as defined in Inspection Procedure 71153-05.

b. Findings

Introduction: A self-revealing Green finding of very low safety significance and a NCV of TS 3.4.9, "RCS [Reactor Coolant System] Pressure and Temperature (P/T) Limits," occurred on March 31, 2008, when the differential temperature between the Unit 2 recirculation A loop temperature and the reactor coolant temperature exceeded 50 degrees Fahrenheit (°F).

Description: On March 30, 2008, during Unit 2 startup from refueling outage Q2R19 with the Unit at 14 percent power in Mode 1, a 60 drop per minute leak from reactor building closed cooling water (RBCCW) supply line to the 2A reactor recirculation pump motor cooler was identified. During the day on March 30, a repair plan was developed that required the pump motor to be shut down and pressure to be removed from the supply line. The licensee staff established 20°F differential temperature between the reactor coolant temperature and idle recirculation loop as the point at which the RBCCW piping should be restored. This temperature criterion was selected to allow restart of the pump without challenging the TS limit of ≤ 50°F.

At 02:10 a.m. on March 31, the 2A recirculation pump was shut down to repair the RBCCW leak. The control room monitored the recirculation loop differential temperature after the pump was shut down and determined that it was rising at a rate of 1°F in four minutes, which created a 200 minute maintenance window for the work which was estimated at about 20 minutes at the job site. The control room contacted the Outage Control Center to inquire about the status of the repair when temperature had reached the previously established abort criteria of 20°F. The Outage Control Center contacted the Maintenance personnel in the drywell to inform them of the rising differential temperature and directed them to restore the system to allow restarting of the recirculation pump. Maintenance then informed the staff that the cooling water piping was damaged and that the repairs would have to be completed to restore RBCCW to the 2A recirculation pump.

Recirculation loop differential temperature continued to increase during the second hour at approximately 1°F in three minutes. The unit supervisor determined that the plant would exceed the 50°F differential temperature limit and conducted a briefing for the Unit 2 shutdown per QCGP 2-1, "Unit Shutdown," with the operators. During preparations for the reactor shutdown, the control room was contacted and informed that the RBCCW line to the recirculation pump was repaired. The operators then performed QCOP 202-02, "Reactor Recirculation System Startup," to start the 2A Recirculation Pump. Prerequisites section step C.4 states "Once within 15 minutes prior each Recirculation Pump startup, Verify the difference between the Reactor coolant temperature in the Recirculation loop to be started and RPV coolant temperature is <50°F." The operator determined the temperature to be 49°F and proceeded through the procedure as directed to start the pump. When the operator shut the discharge valve, as directed by the procedure prior to starting the pump, the differential temperature started to increase at a faster rate. The operator started the pump and opened the discharge valve three minutes later. The licensee determined that

differential temperature reached 58°F and performed an engineering analysis to evaluate operability of the structural materials and the fuel.

Analysis: Technical Specification 3.4.9, "RCS Pressure and Temperature (P/T) Limits," provides the following limiting condition of operation: "RCS pressure, RCS temperature, RCS heatup and cooldown rates, and the recirculation pump starting temperature requirements shall be maintained within limits." Surveillance Requirement (SR) 3.4.9.4 is intended to provide assurance that the limiting condition of operation is maintained during the applicable modes. Surveillance Requirement 3.4.9.4 is applicable any time a recirculation pump is started and states, "Verify the difference between the reactor coolant temperature in the recirculation loop to be started and the RPV coolant temperature is ≤ 50°F." The surveillance is required to be performed "Once within 15 minutes prior to each startup of a recirculation pump." Although the operator performing the task did complete the verification within the required time frame, the rate of temperature change and the time required to perform the pump start activities allowed differential temperature to exceed the limit specified in TSs. The TS bases for SR 3.4.9.3 and SR 3.4.9.4 states in part, "Differential temperatures within the applicable limits ensure that thermal stresses resulting from the startup of an idle recirculation pump will not exceed design allowances. In addition, compliance with these limits ensures that the assumptions of the analyses for the startup of an idle recirculation loop are satisfied." The inspectors determined that the failure of the operators to establish effective controls to prevent exceeding the TS limit where trend information indicated a potential to exceed the limit during the pump start evolution was a performance deficiency warranting further evaluation.

Using the issue screening criteria of IMC 0612, Appendix B, the inspectors determined that the issue was more than minor because it was associated with the Barrier Integrity Cornerstone attribute of Human Performance and affected the cornerstone objective by challenging the physical design barriers intended to maintain the functionality of the reactor coolant system. Specifically, allowing differential temperature to exceed the TS limits during the pump start exceeded the design allowances that provide a margin to brittle failure of the reactor vessel and piping of the reactor coolant pressure boundary.

The inspectors also reviewed the engineering evaluation performed by the licensee to determine the effect on the structural integrity of the reactor coolant pressure boundary components. Plant data indicated that the temperature in the newly stated loop equalized with bulk temperature within three minutes on pump start so the duration of the operating transient was very short and the magnitude of the temperature excursion was 58°F vice the limit of 50°F. The licensee determined that the temperature transient was within the bounds of the existing analysis for transients assumed in the reactor pressure vessel stress report, the jet pump design and performance report, and as part of the fatigue and transient monitoring program. The licensee analysis and operability evaluation determined that continued operation of Quad Cities Unit 2 was supported.

The inspectors reviewed this finding in accordance with IMC 0609, Appendix A, "Determining the Significance of Reactor Inspections Findings for At-Power Situations." Specifically the inspectors performed a Phase 1 SDP evaluation of this issue. While this issue affected the Barrier Integrity Cornerstone, the inspectors determined that this finding was of very low safety significance, Green, because the plant conditions were determined to be within the bounds of the existing analysis. Therefore, the issue did not result in degrading the reactor coolant system boundary, in exceeding the TS limit for

any reactor coolant system leakage, nor could it have likely affected other mitigation systems to result in a loss of their safety functions.

This finding has a cross-cutting aspect in the area of Human Performance for the Decision-Making component because the licensee failed to communicate the decisions and the basis for decisions to personnel who have a need to know the information in order to perform work safely, in a timely manner (H.1(c)). Specifically, planning decisions such as the compensatory actions for prompt restoration made during the dayshift for this repair were not effectively communicated to those individuals that were called upon to implement the plan in a safe and timely manner.

Enforcement: Technical Specification 3.4.9, "RCS Pressure and Temperature (P/T) Limits," provides the following Limiting Condition of Operation: "RCS pressure, RCS temperature, RCS heatup and cooldown rates, and the recirculation pump starting temperature requirements shall be maintained within limits." The TS bases states in part, "...the P/T (pressure/temperature) limits are acceptance limits themselves since they preclude operating in an analyzed condition." One of the limits is "The temperature difference between the reactor coolant in the respective recirculation loop and in the reactor vessel is ≤50°F during recirculation pump startup in Modes 1, 2, 3, and 4."

Contrary to the requirements of the limiting condition of operation above, on March 31, 2008, during Unit 2 Startup from refueling outage Q2R19 with the Unit at 14 percent power in Mode 1, operators started the 2A reactor coolant recirculation pump with temperature in the 2A loop more than 50°F below the bulk temperature in the reactor vessel represented by the 2B loop temperature. The licensee's corrective action document identified two apparent causes for this condition: (1) contingencies were not implemented including abort criteria and alternate repair methods and (2) ambiguous instructions and procedure followed incorrectly in that the intent of the procedure was not accomplished although the steps were implemented as written. Because this violation was of very low safety significance and the issue was entered into the licensee's corrective action program as Issue Report 757378, this violation is being treated as a NCV, consistent with Section VI.A.1 of the Enforcement Policy **(NCV 05000265/2008003-01)**. Immediate corrective actions taken by the operators included verification that temperature was restored within limits and that there was no evidence of primary system leakage.

.2 Units 1 and 2 Response to Earthquake on April 18, 2008

a. Inspection Scope

The inspectors reviewed the plant's response to an earthquake and associated aftershocks on the morning of April 18, 2008. Documents reviewed in this inspection are listed in the Attachment.

This inspection constitutes one sample as defined in Inspection Procedure 71153-05.

b. Findings

Introduction: At 04:37 a.m. on April 18, 2008, a seismic event occurred in southeastern Illinois and large aftershocks occurred at 05:36 a.m. and 10:15 a.m. Although the epicenter was located approximately 300 miles away from the plant, some plant

personnel felt the earth tremors associated with the event. The site considered, but did not declare, an Unusual Event emergency plan classification during the event.

Description: Upon arrival at the site, the inspectors conferred with control room personnel regarding emergency plan event classification and actions being taken by the site. On April 18, 2008 at 04:38 a.m., security officers within the protected area at Quad Cities felt vibrations associated with an earthquake. The officers reported the "tremors" to the control room at 04:38 a.m. and the control room entered QCOA 0010-09, "Earthquake." At 10:17 a.m. plant staff in the service building and security officers within the protected area again reported feeling tremors. In both cases, the shift manager reviewed the Emergency Action Levels and associated thresholds for an earthquake (natural and destructive phenomena affecting the PROTECTED AREA) and determined that the Emergency Action Level (EAL) for the event was not met and that the event was therefore not reportable. The EAL Threshold for an Unusual Event at Quad Cities is established to coincide with NEI 99-01 Revision 5, "Methodology for Development of Emergency Action Levels," and states, "Seismic event as indicated by any TWO of the following: Earthquake felt in plant, Seismic event confirmed by station seismic monitor procedure, or National Earthquake Center."

The shift manager determined that the earthquake was not felt in the plant because no one within the power block or the main control room felt the tremors (the residents confirmed with the site emergency preparedness group that this is how the site trains the emergency response organization to classify this event). The quake and subsequent aftershocks were only 0.002 – 0.003 g's on the seismograph and did not reach the actuation set point of .025g. The shift could not contact the National Earthquake Center but did get confirmation of the southern Illinois earthquake via a web page. Thus in the shift manager's evaluation, only one of the criteria was met and the site did not declare an Unusual Event.

While executing the steps of QCOA 0010-09, operators and engineers walked down the plant looking for damage and possible leaks, including the fuel pools and their associated cooling systems, steam piping, safety systems and outbuildings/surrounding area. Air sample activities were monitored for the drywell and turbine building. Key plant parameters such as offgas flow, drywell sump flow, steam flow, feed flow, etc. were also monitored for abnormal indications. These actions had just been completed when the 10:15 a.m. aftershock we reported to the control room, so the procedure was re-entered and the steps were executed again. All walkdowns and monitoring activities were completed with no impact to the plant identified. The resident inspectors performed an independent assessment of plant condition, including area walkdowns to confirm the reports of the operators and engineers performing the plant walkdowns.

The inspectors questioned whether the first EAL threshold value was being interpreted correctly by the licensee. Specifically, the site interpretation that "earthquake felt in plant" is limited to the control room and power block does not seem to support the EAL for issues "affecting the protected area" or the NEI bases discussion in NEI 99-01 for this event. The NEI bases document states, "As defined in the EPRI-sponsored Guidelines for Nuclear Plant Response to an Earthquake, dated October 1989, a "felt earthquake" is: An earthquake of sufficient intensity such that: (a) the vibratory ground motion is felt at the nuclear plant site and recognized as an earthquake based on a consensus of control room operators on duty at the time, and (b) for plants with operable seismic instrumentation, the seismic switches of the plant are activated." As Quad Cities had

transferred this statement to their own bases document, the use of "felt in plant" and "felt at the nuclear plant site" do not appear to be as limiting as the site interpretation. Examples of risk-significant or safety equipment such as underground piping that could be impacted outside of the power block were of particular concern. This issue is considered an unresolved item pending clarification of the apparent conflict in the reference documents for the EAL **(URI 05000254/2008003-02; 05000265/2008003-02).**

.3 Unit 1 "C" Reactor Feed Pump Seal Failure and Emergency Downpower

a. Inspection Scope

On June 4 at 1:00 p.m., the outboard pump seal failed on the 1C Reactor Feed Pump. The inspectors responded to the control room when the operators directed station personnel to stay clear of the turbine building. Operators performed an emergency load drop to 82 percent power (770 MWe) in accordance with QCGP 3-1, "Reactor Power Operations." Recirculation flow was lowered and two control rods from the cram array were inserted to lower power as rapidly as possible to get within the capacity of two reactor feed pumps before securing the 1C reactor feed pump. The 1C reactor feed pump was secured and isolated to support cleanup and repair activities. At 3:00 p.m. that same day, power was raised to 83 percent (785 MWe) following verification of safety limits, reactor engineering evaluation of the transient, and restoration of the rod pattern. The 1C reactor feed pump seals were replaced, the pump was restarted and the unit returned to full power at 2:56 p.m. on June 5, 2008.

This inspection constitutes one sample as defined in Inspection Procedure 71153-05.

b. Findings

No findings of significance were identified.

.4 Unit 1 Steam Jet Air Ejector Train Swap

a. Inspection Scope

The inspectors reviewed the licensee's response to an increase in condenser backpressure and hotwell temperature while swapping from the Unit 1 "A" steam jet air ejector (SJAE) train to the Unit 1 "B" SJAE train on April 26, 2008. This evolution was being performed in order to conduct maintenance on the 1A SJAE train. Due to the increased condenser backpressure seen by station operations, steam was isolated to the 1B SJAE train per the administrative condenser backpressure limit discussed during the pre-job brief. The inspectors reviewed applicable plant procedures and operations logs, interviewed knowledgeable personnel, and attended licensee meetings to review lessons learned and actions going forward. The licensee successfully performed the SJAE train swap on May 10, 2008, with adequate compensatory actions and revised procedural requirements in place. Documents reviewed in this inspection are listed in the Attachment.

This inspection constitutes one sample as defined in Inspection Procedure 71153-05.

b. Findings

No findings of significance were identified.

4OA5 Other Activities

.1 Quarterly Resident Inspector Observations of Security Personnel and Activities

a. Inspection Scope

During the inspection period, the inspectors conducted the following observations of security force personnel and activities to ensure that the activities were consistent with licensee security procedures and regulatory requirements relating to nuclear plant security. These observations took place during both normal and off-normal plant working hours.

- Multiple tours of operations within the central and secondary security alarm stations;
- Tours of selected security towers/security officer response posts;
- Direct observation of personnel entry screening operations within the plant's main access facility;
- Security force shift turnover activities; and
- Security training drills.

These quarterly resident inspector observations of security force personnel and activities did not constitute any additional inspection samples. Rather, they were considered an integral part of the inspectors' normal plant status review and inspection activities.

b. Findings

No findings of significance were identified.

4OA6 Management Meetings

.1 Exit Meeting Summary

On July 1, 2008, the inspectors presented the inspection results to Mr. T. Tulon, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

.2 Interim Exit Meetings

Inspectors conducted an interim exit for the REMP inspection with Mr. T. Tulon and other licensee staff on June 6, 2008. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

4OA7 Licensee-Identified Violations

The following violation of very low significance (Green) was identified by the licensee and is a violation of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as an NCV.

Unit 1 Diesel Generator Cooling Water Pump Failed Inservice Test

On January 16, 2008, the Unit 1 diesel generator cooling water pump failed to produce the required differential pressure required for inservice testing surveillance criteria. Issue Report 723296 was written to document this event. In this instance, the recorded pressure was less than the minimum requirement of 79 psid. Analysis of pump performance and work performed revealed that an internal pump condition was the most likely the cause of the degraded pump performance. Disassembly under Work Order 098052 revealed cracking in the wear ring on the inboard side of the impeller. The wear ring had also moved slightly from its original seated position. Engineering trending had previously identified the step changes in pump performance, and identified potential causes. Work orders were developed to eliminate the identified causes, but had not been implemented when the pump failed to develop the required differential pressure. The apparent cause of the cracked inboard impeller wear ring was pump overheating due to insufficient system filling and venting following pump replacement in May 2007. The licensee determined that the improper venting was the result of procedure weakness after draining the suction line for maintenance and the unique suction piping configuration for this pump. The inspectors determined that inadequate venting during restoration for post modification testing in May 2007 due to the lack of clear procedural guidance for the venting activity was a performance deficiency and a violation of TS 5.4.1 requirements to develop and maintain adequate procedures for this system.

The procedure deficiency was more than minor as it impacted the Mitigating Systems Cornerstone attribute of Equipment Performance because it impacted the availability of the diesel generator cooling pump. This finding was determined to be of very low safety significance because all of the questions in the SDP Phase 1 worksheet for the Mitigating Systems Cornerstone were answered “NO” and the issue screened as Green. Corrective actions included overhauling the pump to restore full function and procedure revisions to provide additional detail for complete system venting.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

T. Tulon, Site Vice President
R. Gideon, Plant Manager
R. Svaleson, Operations Manager
H. Madronero, Engineering Manager
D. Barker, Work Control Manager
W. Beck, Regulatory Assurance Manager
D. Craddick, Maintenance Manager
J. Burkhead, Nuclear Oversight Manager
K. Moser, Training Manager
V. Neels, Chemistry/Environ/Radwaste Manager
K. Ohr, Radiation Protection Manager

Nuclear Regulatory Commission

M. Ring, Chief, Reactor Projects Branch 1
J. Wiebe, NRR Project Manager

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000265/2008003-01	NCV	Unit 2 Restart of 2A Recirculation Pump in Mode 1
05000254/2008003-02; 05000265/2008003-02	URI	Units 1 and 2 Response to Earthquake on April 18, 2008

Closed

05000265/2008003-01	NCV	Unit 2 Restart of 2A Recirculation Pump in Mode 1

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 of 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.

CALCULATIONS

Number	Description or Title	Revision
QDC-1000-M-131	NPSH Availability vs. Requirements for DGCW and RHRSW Pumps	2B, 2C, 2D, 2E, and 2F
BSA-Q-97-04	Quad Cities ECCS Pump Room Thermal Response to a Loss of Room Cooler under Appendix R Assumptions	4
	Murray and Trettel, Inc. Meteorological Equipment Calibration Reports for Quad Cities Station	02/19/07 06/11/07 10/11/07 02/14/08
07-IRT-00	Unconditional Release Detection Thresholds and Dose Consequences	10/30/07

CORRECTIVE ACTION PROGRAM DOCUMENTS REVIEWED

Number	Description or Title	Date
IR 759807	1/2 EDGCWP Failed QCOS 1000-47 Performance Acceptance Criteria	04/06/08
IR 757378	Recirc Loop 50 Degree Delta-T Potentially Exceeded	03/31/08
IR 699034	2D RHRSW Vault Sump Pump Interferes with Float	11/14/07
IR 706919	Potential Interference Between 1D RHRSW Sump Pump and Float	12/04/07
IR 754003	Pump Shifts Position when Running and Disables Float Switch	03/24/08
IR 767280	SBLC Sparge Pressure Clarification	04/24/08
IR 766594	Unable to Sparge U1 SBLC	04/23/08
IR 776314	Fuel Oil Leaks During Unit 1 SBO DG Mod Testing	05/16/08
IR 758609	Ineffective Implementation of the Snubber Service Life Monitoring Program Resulted in Higher Than Normal failure During Q2R19	05/17/08
IR 698843	Receipt of NRC Substantive Crosscutting Issue in the Area of Documentation	08/31/07
IR 698239	RX BLD HVAC Isolation Damper failure due to FME	11/13/07
IR 697457	Unit 1 Reactor building Vent Isolation Damper INOP	11/11/07

CORRECTIVE ACTION PROGRAM DOCUMENTS REVIEWED

Number	Description or Title	Date
IR 684885	1-5742-A Replace Solenoid Valve	10/15/07
IR 671636	Unit 1 RB Vent Outlet Isolation Damper B Inoperable	09/14/07
IR 789044	Blown Fuse in U2 RBV Rad Monitor Circuitry	06/21/08
IR 692548	NRC ID'D Issue Associated with OPEV 684885 (EC 367817)	10/31/07
IR 785076	U1 RCIC Vacuum Pump Failed to Start	06/10/08
IR 779715	Operations Zero Tolerance – Attention to Detail	05/27/08
IR 780322	Light Pack 21B Not Fully Charged	05/28/08
IR 778254	Minor Corrosion on Containment Penetration	05/21/08
IR 778252	Housekeeping Issues	05/21/08
IR 766811	ELP #43G Trickle Charge Light Out	04/23/08
IR 768055	U1 SJAE Train Swap Aborted	04/26/08
IR 00625089	Meteorology Instrument Accuracy Does Not Meet Requirement	04/25/07
IR 00778970	South Met Tower Temperature Reading Abnormal	05/23/08
IR 00516058	Vendor Using Wrong Efficiency for REMP Air Iodine Analysis	07/31/06
IR 00526546	REMP Sample Lower-Limits-of-Detection not Met	08/28/06
IR 006623322	Weekly REMP Particulate Papers Damaged in Transit	08/16/07
IR 00678476	Particulates Have Shorter Than Expected Collection Times	09/20/07
IR 00726100	Anomalous Fourth Quarter 2007 TEMP TLD Results	01/23/08
IR 00776375	Excessive Power Interruptions at REMP Locations	05/07/08
IR 00674987	Unconditional Release of Self-Contained Breathing Apparatus Parts	09/24/07

DRAWINGS

Number	Description or Title	Revision
M-89, Sheet 1	Diagram of Reactor Core Isolation Cooling RCIC Piping	AX
M-39, Sheet 1	Diagram of Residual Heat Removal RHR Piping	BO
M-39, Sheet 2	Diagram of Residual Heat Removal RHR Piping	BC
M-78	Diagram of Core Spray Piping	BI

MISCELLANEOUS

Number	Description or Title	Date or Revision
LOCT-1081-ECORE	Bus 14 Trip/Control Rod Scram/Stuck Control Rod/Fuel Failure/RCIC Steam Line Rupture	3
Pre-plan RB-19	Unit 2 Reactor Building Ground Floor El. 595'-0", Fire Zone 1.1.2.2	20
Fire Drill Scenario	Fire Drill Crew "A"	04/16/08

MISCELLANEOUS

Number	Description or Title	Date or Revision
UFSAR Section 3.4	Water Level (Flood) Design	6
LOCT-1151-ACORE	Group 1 Isolation/ATWS/Safeties Pop/Reset LPCI Injection Signal/Reopen MSIVs/Leak in Torus	8
LOCT-1091-ECORE	Recirc Controller Failure/Turbine Building Steam Leak/QGA 400 Blowdown	5
TS 3.4.4	RCS Operational Leakage	Amend. 199/195
Pre-plan TB-114	Fire Zone 8.2.7.C, Unit 1/2 TB 611'-6", MG Set Oil Coolers	17
Pre-plan TB-116	Fire Zone 8.2.7.C, Unit 1/2 TB 611'-6", TBCCW Area	22
Pre-plan TB-118	Fire Zone 8.2.8.C, Unit 1/2 TB El. 639', MG Set 2B	11
SVP-08-030	Letter from Tim Tulon to Stephen Kuczynski, describing Quad Cities Summer Readiness	05/08/08
USBWR-06-9	Startup of an Idle Recirculation Loop Analysis for Exelon Nuclear Quad Cities Nuclear Power Station Units 1 and 2 and Dresden Units 2 and 3	April 2006
Pre-plan RB-9	Fire Zone 1.1.1.4, Unit 1 RB 647'-6", Third Floor	11
Pre-plan RB-21	Fire Zone 1.1.2.4, Unit 2 RB 647'-6", Third Floor	11
GL 82-12	Nuclear Power Plant Staff Working Hours	06/15/1982
Pre-plan SBO-120	Fire Zone – Station Blackout Building, Unit 1/2 Station Blackout Building, Elevations 595' and 615'	11
Z5704	System Engineer Performance Summary for Z5704, Reactor Building HVAC for the period 5/01/08 to 6/01/08	N/A
MA-AA-716-004, Att. 2	Complex Troubleshooting Plan, SJAE Train Swap	6
Report	Quad Cities Nuclear Power Station Annual Radiological Environmental Operating Report for 2006 and 2007	05/11/07 05/09/08
Manual	Environmental Inc. Midwest Laboratory Sampling Procedures Manual	11
Record	Field Rotameter (Serial Nos. 91W505576 and 90W113974) Quarterly Flow Verifications for 2007	
Record	Environmental Air Sample Pump Annual Maintenance Records for 2007	02/2008
Report	Master Rotameter (Serial No. 91W513308) Calibration Test Report	07/24/07
Report	Self-Assessment Report; Radiological Effluents and Radiological Environmental Monitoring	03/31/08
Report	Report of Audit NOSA-QDC-08-04; Chemistry, Radwaste, Effluent and Environmental Monitoring	04/16/08
Record	Efficiency Calibrations and LLD Determinations for Gamma Spectroscopy Systems (each of four detectors used for	Dates in 2007 and

MISCELLANEOUS

Number	Description or Title	Date or Revision
	effluent or REMP sample analyses)	2008
Record	Results of Radiochemistry Cross Check Program Results for Quad Cities Station	05/07/07, 07/05/07, 09/06/07, and 01/10/08

MODIFICATIONS

Number	Description or Title	Date or Revision
EC 370166	Unit 2 Reactor Recirculation (2A Loop) Temperature Transient Evaluation	000
EC 367817	OPEVAL for RB HVAC Isolation Dampers	000
EC 370997	OPEVAL for MSLB Calc 3C2-0181-001 Didn't Consider Opening to Rx Bldg	000

OPERABILITY EVALUATIONS

Number	Description or Title	Date
759807	0-3903 DGCW Pump	0
762327	EDG Cold Deadload Pickup Capability	0
IR 781442	Unit 2 RCIC High Point Vent Line Blocked	05/31/08
IR 785076	U1 RCIC Vacuum Pump Failed to Start	06/10/08

PROCEDURES

Number	Description or Title	Revision
TIC-2081	Unit 2 Digital EHC Control Upgrade Project EC 339656 Operability Test	0
QCOS 0010-11	RHR Service Water Vault Sump Discharge Check Valve and Area Level Alarm Test	4
QCOS 0010-06	Key Phone Numbers and Checklist for Referenced QCOA 0010 Block Procedures	12
QCOA 0010-16	Flood Emergency Procedure	12
QCOA 6000-03	Low Switchyard Voltage	8
QCIS 1300-03	RCIC Steam Line High Flow Calibration and Functional Test	10
CY-QC-130-703	Boron Determination Using the Mettler DL25 Auto-titrator	7
QCOP 1100-05	Air Sparging SBLC Tank	11
QCOS 1600-07	Reactor Coolant Leakage in the Drywell	26

PROCEDURES

Number	Description or Title	Revision
QCOP 6600-04	Diesel Generator 0 Preparation for Standby Operation	27
QCOS 1000-04	RHR Service Water Pump Operability Test	48
QCOP 2900-01	Safe Shutdown Makeup Pump System Preparation for Standby Operation	26
OP-AA-108-111-1001	Severe Weather and Natural Disaster Guidelines	2
WC-AA-107	Seasonal Readiness Re-write	5
QCOP 4100-11	Using Diesel Fire Pumps Via Safe Shutdown Hose Line for Reactor Vessel Level Control or Flood Emergency Injection Source	Temp Change 2091
QCOP 1300-01	RCIC System Preparation for Standby Operation	30
QCOS 1300-11	RCIC Valve Position Verification	10
QCOS 6620-01	SBO DG 1(2) Quarterly Load Test	31
QCOS 6620-11	SBO DG 1(2) Semi-Annual Remote / Local / PLC Bypass Emergency Start Test	15
QCOP 1000-02	RHR System Preparation for Standby Operation	24
CY-QC-110-608	Reactor/Turbine Building Sample Panel Sample Collection	10
CY-AA-130-3000	Gamma Isotopic Review	3
QCCP 0200-01	Reactor Water Iodine Analysis	17
LS-AA-2090	Monthly Data Elements for NRC Reactor Coolant System (RCS) Specific Activity	4
LS-AA-119	Overtime Controls	6
QCOP 1300-01	RCIC System Preps for Standby Operation	30
QCOS 1300-10	RCIC Vent Verification	Temp Change 2139
QCOS 1400-01	Quarterly Core Spray System Flow Rate Test	36
QCOS 1400-04	Core Spray Pump Operability Test	15
QCOS 1400-08	Core Spray System Power Operated Valve Test	22
MA-AA-723-300	Diagnostic Testing of Motor Operated Valves	3
QCOP 1400-01	Core Spray System Preparation for Standby Operation	18
QOM 2-1400-09	Unit 2 Core Spray Valve Checklist	5
QCMMS 4100-01	Fire Extinguisher Inspection	29
TIC-2135	Quad Cities Unit 2 Power Ascension Test to Maximum Thermal Power	0
QCGP 3-1	Reactor Power Operations	Temp Change 2143
QOM 2-2300-01	Unit 2 HPCI Valve Checklist	16
QCOP 5400-16	Off Gas SJAE Train Operation	7

PROCEDURES

Number	Description or Title	Revision
CY-QC-170-301	Quad Cities Station Offsite Dose Calculation Manual	8
CY-AA-170-000	Radioactive Effluent and Environmental Monitoring Programs	3
CY-AA-170-100	Radiological Environmental Monitoring Program	2
RP-AA-503	Unconditional Release Survey Method	1

WORK DOCUMENTS

Number	Description or Title	Date or Revision
WO 899821	Inspect/Replace RHRSW Sump Pump Discharge Valve	04/18/08
WO 988082	Inspect/Replace RHRSW Sump Pump Discharge Valve	04/18/08
WO 1088570	FNM 2D RHRSW Vault Sump Pump Interferes with Float	04/03/08
WO 1099052	Potential Interference Between 1D RHRSW Sump Pump and Float	01/22/08
WO 1127847	Unable to Sparge U1 SBLC	04/30/08
WO 880544	(LR) Inspect pump internals-low pressure pump	03/25/08
WO 371010	Clean Spring Can Support 1(M)994D-601 for Inspection	05/08/08
WO 1122561	Safe S/D Make-Up Pump System Venting	05/05/08
WO 928490	MM Replacement of U1 SBO DG Governor Actuator per EC 350828	05/17/08
WO 885605	Perform Static Diagnostic Testing (MOV)	03/24/08
WO 1118319	MO 2-1402-38A Dual Indication Core Spray Pump Min Flow Valve	03/29/08

LIST OF ACRONYMS USED

AC	Alternating Current
CFR	Code of Federal Regulations
DRP	Division of Reactor Projects
EAL	Emergency Action Level
IMC	Inspection Manual Chapter
IR	Inspection Report
LPCI	Low Pressure Coolant Injection
MSIV	Main Steam Isolation Valve
MWe	Megawatts Electric
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
PARS	Publicly Available Records
psid	Pounds Per Square Inch Differential
RBCCW	Reactor Building Closed Cooling Water
RCIC	Reactor Core Isolation Cooling
RCS	Reactor Coolant System
REMP	Radiological Environmental Monitoring Program
RHRSW	Residual Heat Removal Service Water
RPV	Reactor Pressure Vessel
SDP	Significance Determination Process
SJAE	Steam Jet Air Ejector
SR	Surveillance Requirement
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
Vdc	Volts Direct Current