



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION III
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January 31, 2012

Mr. Michael J. Pacilio
Senior Vice President, Exelon Generation Company, LLC
President and Chief Nuclear Officer (CNO), Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2 -
NRC INTEGRATED INSPECTION REPORT 05000254/2011005;
05000265/2011005

Dear Mr. Pacilio:

On December 31, 2011, 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 results of this inspection, which were discussed on January 11, 2011, with Mr. T. Hanley, 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.

No NRC-identified or self-revealed findings were identified during this inspection.

However, one licensee-identified violation of very low safety significance is listed in this report. The NRC is treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2 of the Enforcement Policy.

If you contest this NCV, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, Region III; the Director, Office of Enforcement, United States 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, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's Agencywide Document Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

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

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

Enclosure: Inspection Report 05000254/2011005; 05000265/2011005
w/Attachment: Supplemental Information

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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: 05000254/2011005 and 05000265/2011005

Licensee: Exelon Generation Company, LLC

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

Location: Cordova, IL

Dates: October 1 through December 31, 2011

Inspectors: J. McGhee, Senior Resident Inspector
B. Cushman, Resident Inspector
R. Orlikowski, Project Engineer
R. Jickling, Senior Emergency Preparedness Inspector
M. Mitchell, Health Physicist
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Approved by: Mark Ring, Branch Chief
Branch 1
Division of Reactor Projects

Enclosure

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SUMMARY OF FINDINGS

IR 05000254/2011005, 05000265/2011005; 10/01/11 - 12/31/11; Quad Cities Nuclear Power Station, Units 1 & 2; Routine Integrated Inspection Report.

This report covers a 3-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. 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

No violations were identified.

B. Licensee-Identified Violations

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

REPORT DETAILS

Summary of Plant Status

Unit 1

Unit 1 operated at 100 percent thermal power throughout the evaluated period from October 1 through December 31, 2011, with the exception of planned power reductions for routine surveillances, main condenser flow reversals, and control rod maneuvers.

Unit 2

Unit 2 operated at 100 percent thermal power throughout the evaluated period from October 1 through December 31, 2011, with the exception of planned power reductions for routine surveillances, planned equipment repair, main condenser flow reversals, and control rod maneuvers. The most significant power reduction occurred on December 10 when the Unit 2 main generator was taken offline during a planned power reduction to repair a leak on main steam piping. During the turbine generator outage, the reactor operated at 24 percent power until the turbine generator was restarted. In addition, the 2B condensate booster pump seal leak was repaired during the downpower. Unit 2 was returned to the grid on December 11, 2011, reaching full power later that day.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

.1 Winter Seasonal Readiness Preparations

a. Inspection Scope

The inspectors conducted a review of the licensee's preparations for winter conditions to verify that the plant's design features and implementation of procedures were sufficient to protect mitigating systems from the effects of adverse weather. Documentation for selected risk-significant systems was reviewed to ensure that these systems would remain functional when challenged by inclement weather. 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. Cold weather protection, such as heat tracing and area heaters, was verified to be in operation where applicable. The inspectors also reviewed corrective action program (CAP) items to verify that the licensee was identifying adverse weather issues at an appropriate threshold and entering them into their CAP in accordance with station corrective action procedures. Specific documents reviewed during this inspection are listed in the Attachment to this report. The inspectors' reviews focused specifically on the following plant systems due to their risk significance or susceptibility to cold weather issues:

- Units 1 and 2 heating steam system; and
- Units 1 and 2 battery HVAC systems.

This inspection constituted one winter seasonal readiness preparations sample as defined in Inspection Procedure (IP) 71111.01-05.

b. Findings

No findings 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 standby liquid control system;
- Unit 1 emergency diesel generator; and
- Unit 2 Division II 4kV electrical distribution.

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 Specification (TS) requirements, outstanding work orders (WOs), 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 CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

These activities constituted three partial system walkdown samples as defined in IP 71111.04-05.

b. Findings

No findings were identified.

.2 Semi-Annual Complete System Walkdown

a. Inspection Scope

On October 19, 2011, the inspectors performed a complete system alignment inspection of the Unit 1 125 Vdc electrical system and Unit 1 250 Vdc electrical system to verify the functional capability of the systems. 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 lineups; 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 WOs was performed to determine whether any deficiencies significantly affected the system function. In addition, the inspectors reviewed the CAP database to ensure that system equipment alignment problems were being identified and appropriately resolved. Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings 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:

- Fire Zone 8.1, Unit 1/2 Turbine Building, Elevation 595'-0," Clean and Dirty Oil Room;
- Unit 1/2 Security Diesel Building;
- Fire Zone 8.2.6.C, Unit 1/2 Turbine Building, Elevation 595'-0," Electro-Hydraulic Fluid Reservoir;
- Fire Zone 8.2.7.D, Unit 2 Turbine Building, Elevation 615'-6," Low Pressure Heater Bay (East)/D Heater Bay; and
- Fire Zone 8.2.7.D, Unit 2 Turbine Building, Elevation 608'-6," Low Pressure Heater Bay (West).

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 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 to this report, 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 CAP. Documents reviewed are listed in the Attachment to this report.

These activities constituted five quarterly fire protection inspection samples as defined in IP 71111.05-05.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program (71111.11)

.1 Resident Inspector Quarterly Review (71111.11Q)

a. Inspection Scope

On November 1, 2011, the inspectors observed a crew 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
- the operator's ability to identify and implement appropriate TS actions and Emergency Plan actions and notifications.

The crew's performance in these areas was compared to pre-established operator action expectations and successful critical task completion requirements. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one quarterly licensed operator requalification program sample as defined in IP 71111.11.

b. Findings

No findings were identified.

.2 Biennial Written and Annual Operating Test Results (71111.11A)

a. Inspection Scope

The inspectors reviewed the overall pass/fail results of the Biennial Written Examination, administered by the licensee from October 13, 2011 through November 17, 2011, and the Annual Operating Test, administered by the licensee from October 11, 2011 through November 30, 2011, required by 10 CFR 55.59(a). The results were compared to the thresholds established in Inspection Manual Chapter 0609, Appendix I, "Licensed Operator Requalification Significance Determination Process (SDP)," to assess the overall adequacy of the licensee's licensed operator requalification training (LORT) program to meet the requirements of 10 CFR 55.59.

This inspection constitutes one biennial licensed operator requalification inspection sample as defined in IP 71111.11A.

b. Findings

No findings were identified.

.3 Biennial Review (71111.11B)

a. Inspection Scope

The following inspection activities were conducted during the weeks of October 17 and October 24, 2011, to assess: 1) the effectiveness and adequacy of the facility licensee's implementation and maintenance of its systems approach to training (SAT) based on the LORT program, put into effect to satisfy the requirements of 10 CFR 55.59; 2) conformance with the requirements of 10 CFR 55.46 for use of a plant referenced simulator to conduct operator licensing examinations and for satisfying experience requirements; and 3) conformance with the operator license conditions specified in 10 CFR 55.53. The documents reviewed are listed in the Attachment to this report.

1. Facility Operating History and Licensee Training Feedback System (10 CFR 55.59(c); SAT Element 5 as Defined in 10 CFR 55.4): The inspectors evaluated the licensee's ability to assess the effectiveness of its LORT program and their ability to implement appropriate corrective actions to maintain its LORT program up to date. The inspectors reviewed documents related to the plant's operating history and associated responses (e.g., plant issue matrix and plant performance review reports, recent examination and inspection reports, and licensee event reports (LERs)). The inspectors reviewed the use of feedback from operators, instructors, and supervisors as well as the use of feedback from plant events and industry experience information. The inspectors reviewed the licensee's quality assurance oversight activities, including licensee training department self-assessment reports.
2. Licensee Requalification Examinations (10 CFR 55.59(c); SAT Element 4 as Defined in 10 CFR 55.4): The inspectors reviewed the licensee's program for development and administration of the LORT biennial written examination and annual operating tests to assess the licensee's ability to develop and administer examinations that are acceptable for meeting the requirements of 10 CFR 55.59(a).

- The inspectors reviewed the methodology used to construct the examination including content, level of difficulty, and general quality of the examination/test materials. The inspectors also assessed the level of examination material duplication from week-to-week for both, the operating tests conducted during the current year, as well as the written examinations administered in 2011. The inspectors reviewed a sample of the written examinations and associated answer keys to check for consistency and accuracy.
 - The inspectors observed the administration of the annual operating test to assess the licensee's effectiveness in conducting the examinations, including the conduct of pre-examination briefings, evaluations of individual operator and crew performance, and post-examination analysis. The inspectors evaluated the performance of two crews in parallel with the facility evaluators during two dynamic simulator scenarios, and evaluated various licensed crew members concurrently with facility evaluators during the administration of several job performance measures.
 - The inspectors assessed the adequacy and effectiveness of the remedial training conducted since the last requalification examinations and the training planned for the current examination cycle to ensure that they addressed weaknesses in licensed operator or crew performance identified during training and plant operations. The inspectors reviewed remedial training procedures and individual remedial training plans.
3. Conformance with Examination Security Requirements (10 CFR 55.49):
 The inspectors conducted an assessment of the licensee's processes related to examination physical security and integrity (e.g., predictability and bias) to verify compliance with 10 CFR 55.49, "Integrity of Examinations and Tests."
 The inspectors reviewed the facility licensee's examination security procedure, and observed the implementation of physical security controls (e.g., access restrictions and simulator I/O controls) and integrity measures (e.g., security agreements, sampling criteria, bank use, and test item repetition) throughout the inspection period.
4. Conformance with Simulator Requirements Specified in 10 CFR 55.46:
 The inspectors assessed the adequacy of the licensee's simulation facility (simulator) for use in operator licensing examinations and for satisfying experience requirements. The inspectors reviewed a sample of simulator performance test records (e.g., transient tests, malfunction tests, scenario-based tests, post-event tests, steady-state tests, and core performance tests), simulator discrepancies, and the process for ensuring continued assurance of simulator fidelity in accordance with 10 CFR 55.46. The inspectors reviewed and evaluated the discrepancy corrective action process to ensure that simulator fidelity was being maintained.
 Open simulator discrepancies were reviewed for importance relative to the impact on 10 CFR 55.45 and 55.59 operator actions as well as on nuclear and thermal hydraulic operating characteristics.

5. Conformance with Operator License Conditions (10 CFR 55.53): The inspectors reviewed the facility licensee's program for maintaining active operator licenses and to assess compliance with 10 CFR 55.53(e) and (f). The inspectors reviewed the procedural guidance and the process for tracking on-shift hours for licensed operators, and which control room positions were granted watch-standing credit for maintaining active operator licenses. Additionally, medical records for 12 licensed operators were reviewed for compliance with 10 CFR 55.53(l).

This inspection constitutes one biennial licensed operator requalification inspection sample as defined in IP 71111.11B.

b. Findings

No findings 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 systems:

- Z1100: Standby Liquid Control System, and
- Z5706: Turbine Building Ventilation.

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 CAP with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two quarterly maintenance effectiveness samples as defined in IP 71111.12-05.

b. Findings

No findings 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 (11-42-04): 1/2 standby gas treatment, Unit 2 250 Vdc battery charger, high pressure coolant injection system and reactor core isolation cooling system suction swap to torus, 2A core spray pump seal replacement, and emergent repairs to 2A core spray room watertight door;
- Work Week (11-44-06): Unit 2 emergency diesel generator, Unit 2 diesel generator cooling water pump, motor control center 28/29-5 automatic transfer logic test, and emergent Unit 1 250 Vdc capacitor ripple testing; and
- Work Week (11-49-11): 2A service water pump, 1/2 'A' standby gas treatment system, offsite switching and deenergization of line 0404, and Unit 2 reactor core isolation cooling system.

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.

Specific documents reviewed during this inspection are listed in the Attachment to this report. These maintenance risk assessments and emergent work control activities constituted three samples as defined in IP 71111.13-05.

b. Findings

No findings were identified.

1R15 Operability Determinations and Functional Assessments (71111.15)

.1 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following issues:

- Issue Report (IR) 1279179: Unit 1 250 Vdc Battery Charger Degraded Ripple Voltage;
- IR 1282788: 1/2 Emergency Diesel Generator Circulating Lube Oil Pump Coupling;
- IR 1293749: Review of Dresden IR 1293202 on MOC Switch Linkage Failures; and
- IR 1294079: Relay 590-123C Did Not Drop Out When Pressure Switch Opened.

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 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, where appropriate, compliance with bounding limitations associated with the evaluations. Additionally, the inspectors 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 to this report.

This operability inspection constituted four samples as defined in IP 71111.15-05.

b. Findings

No findings 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:

- QCOS 6600-46: Unit 1/2 Diesel Generator Timed Start Test;
- Work Order 1478073: Replace Latch 2A Core Spray Watertight Door;
- Work Order 1347820: 1A Core Spray Pump Seal Replacement;
- Work Order 1337078: Thermal Overload Replacement on Diesel Generator Cooling Water Pump Cubicle Cooler Fan Motor Breaker; and
- Work Order 1118780: 2D Residual Heat Removal Service Water Suction Pipe Spring Will Not Adjust.

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 TSs, 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 CAP and that the problems were being corrected commensurate with their importance to safety. Documents reviewed are listed in the Attachment to this report.

This inspection constituted five post-maintenance testing samples as defined in IP 71111.19-05.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

.1 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:

- QCOS 6600-06: Diesel Generator Cooling Water Pump Flow Rate Test (IST); and
- QCOS 1600-01: Torus to Drywell Vacuum Breaker Exercise (Routine).

The inspectors observed in-plant activities and reviewed procedures and associated records to determine the following:

- did preconditioning occur;
- were the effects of the testing adequately addressed by control room personnel or engineers prior to the commencement of the testing;
- were acceptance criteria clearly stated, demonstrated operational readiness, and 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 TSs, the USAR, 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 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;
- where applicable, test results not meeting acceptance criteria were addressed with an adequate operability evaluation or the system or component was declared inoperable;
- 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 CAP.

Documents reviewed are listed in the Attachment to this report.

This inspection constituted one routine surveillance testing sample and one inservice testing sample as defined in IP 71111.22, Sections -02 and -05.

b. Findings

No findings were identified.

1EP2 Alert and Notification System Evaluation (71114.02)

.1 Alert and Notification System Evaluation

a. Inspection Scope

The inspectors reviewed documents and conducted discussions with Emergency Preparedness (EP) staff and management regarding the operation, maintenance, and periodic testing of the Alert and Notification System in the Quad Cities Station's plume pathway Emergency Planning Zone. The inspectors reviewed monthly trend reports and the daily and monthly operability records from January 2010 through October 2011. Information gathered during document reviews and interviews was used to determine whether the Alert and Notification System equipment was maintained and tested in accordance with Emergency Plan commitments and procedures. Documents reviewed are listed in the Attachment to this report.

This alert and notification system inspection constituted one sample as defined in IP 71114.02-05.

b. Findings

No findings were identified.

1EP3 Emergency Response Organization Staffing and Augmentation System (71114.03)

.1 Emergency Response Organization Staffing and Augmentation System

a. Inspection Scope

The inspectors reviewed and discussed with plant EP management and staff the emergency plan commitments and procedures that addressed the primary and alternate methods of initiating an Emergency Response Organization (ERO) activation to augment the on shift staff as well as the provisions for maintaining the station's ERO qualification and team lists. The inspectors reviewed reports and a sample of corrective action program records of unannounced off-hour augmentation tests and pager tests, which were conducted between June 2009 and October 2011, to determine the adequacy of the drill critiques and associated corrective actions. The inspectors also reviewed a sample of the EP training records of approximately 24 ERO personnel, who were assigned to key and support positions, to determine the status of their training as it related to their assigned ERO positions. Documents reviewed are listed in the Attachment to this report.

This emergency response organization augmentation testing inspection constituted one sample as defined in IP 71114.03-05.

b. Findings

No findings were identified.

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)

.1 Emergency Action Level and Emergency Plan Changes

a. Inspection Scope

Since the last NRC inspection of this program area, emergency action level and Emergency Plan Annex for Quad Cities Station Revisions 30 and 31 were implemented based on the licensee's determination, in accordance with 10 CFR 50.54(q), that the changes resulted in no decrease in effectiveness of the Plan, and that the revised Plan as changed continued to meet the requirements of 10 CFR 50.47(b) and Appendix E to 10 CFR Part 50. The inspectors conducted a sampling review of the Emergency Plan Annex changes and a review of the Emergency Action Level changes to evaluate for potential decreases in effectiveness of the Plan.

Since the last NRC inspection of the Exelon Nuclear Standardized Radiological Emergency Plan, Revision 20 was implemented based on the licensee's determination, in accordance with 10 CFR 50.54(q), that the changes resulted in no decrease in effectiveness of the Plan, and that the revised Plan as changed continued to meet the requirements of 10 CFR 50.47(b) and Appendix E to 10 CFR Part 50. The inspectors conducted a sampling review of the Standardized Emergency Plan changes to evaluate for potential decreases in effectiveness of the Plan.

However, these reviews do not constitute formal NRC approval of the changes. Therefore, these changes remain subject to future NRC inspection in their entirety.

This emergency action level and emergency plan changes inspection constituted one sample as defined in IP 71114.04-05.

b. Findings

No findings were identified.

1EP5 Correction of Emergency Preparedness Weaknesses (71114.05)

.1 Correction of Emergency Preparedness Weaknesses

a. Inspection Scope

The inspectors reviewed the Nuclear Oversight staff's 2009, 2010, and 2011 audits of the Quad Cities Station's EP program to determine that the independent assessments met the requirements of 10 CFR 50.54(t). The inspectors also reviewed samples of corrective action program records associated with the 2010 biennial exercise, as well as various EP drills conducted in 2010 and 2011, in order to determine whether the licensee fulfilled drill commitments and to evaluate the licensee's efforts to identify and resolve identified issues. The inspectors reviewed a sample of EP items and corrective actions related to the station's EP program and activities to determine whether corrective actions were completed in accordance with the site's corrective action program. Documents reviewed are listed in the Attachment to this report.

This correction of emergency preparedness weaknesses and deficiencies inspection constituted one sample as defined in IP 71114.05-05.

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06)

.1 Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors evaluated the conduct of a routine licensee emergency drill on December 13, 2011, to identify any weaknesses and deficiencies in classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the Technical Support Center to determine whether the event classification, notifications, and protective action recommendations were performed in accordance with procedures. The inspectors also attended the licensee drill critique to compare any inspector-observed weakness with those identified by the licensee staff in order to evaluate the critique and to verify whether the licensee staff was properly identifying weaknesses and entering them into the corrective action program. As part of the inspection, the inspectors reviewed the drill package and other documents listed in the Attachment to this report.

This emergency preparedness drill inspection constituted one sample as defined in IP 71114.06-05.

b. Findings

No findings were identified.

2. RADIATION SAFETY

2RS2 Occupational As-Low-As-Is-Reasonably-Achievable (ALARA) Planning and Controls (71124.02)

The inspection activities supplement those documented in Inspection Report 05000254/2011004; 05000265/2011004, and constitute one complete sample as defined in IP 71124.02-05.

.1 Source Term Reduction and Control (02.04)

a. Inspection Scope

The inspectors used licensee records to determine the historical trends and current status of significant tracked plant source terms known to contribute to elevated facility aggregate exposure. The inspectors assessed whether the licensee had made allowances or developed contingency plans for expected changes in the source term as the result of changes in plant fuel performance issues or changes in plant primary chemistry.

b. Findings

No findings were identified.

2RS3 In-Plant Airborne Radioactivity Control and Mitigation (71124.03)

This inspection constituted one complete sample as defined in IP 71124.03-05.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed the plant Final Safety Analysis Report to identify areas of the plant designed as potential airborne radiation areas and any associated ventilation systems or airborne monitoring instrumentation. Instrumentation review included continuous air monitors (continuous air monitors and particulate-iodine-noble-gas-type instruments) used to identify changing airborne radiological conditions such that actions to prevent an overexposure may be taken. The review included an overview of the respiratory protection program and a description of the types of devices used. The inspectors reviewed Final Safety Analysis Report, TS, and emergency planning documents to identify location and quantity of respiratory protection devices stored for emergency use.

Inspectors reviewed the licensee's procedures for maintenance, inspection, and use of respiratory protection equipment including self-contained breathing apparatus, as well as procedures for air quality maintenance.

The inspectors reviewed reported performance indicators to identify any related to unintended dose resulting from intakes of radioactive material.

b. Findings

No findings were identified.

.2 Engineering Controls (02.02)

a. Inspection Scope

The inspectors reviewed the licensee's use of permanent and temporary ventilation to determine whether the licensee uses ventilation systems as part of its engineering controls (in lieu of respiratory protection devices) to control airborne radioactivity. The inspectors reviewed procedural guidance for use of installed plant systems, such as containment purge, spent fuel pool ventilation, and auxiliary building ventilation; and assessed whether the systems are used, to the extent practicable, during high-risk activities (e.g., using containment purge during cavity floodup).

The inspectors selected installed ventilation systems used to mitigate the potential for airborne radioactivity, and evaluated whether the ventilation airflow capacity, flow path (including the alignment of the suction and discharges), and filter/charcoal unit efficiencies, as appropriate, were consistent with maintaining concentrations of airborne radioactivity in work areas below the concentrations of an airborne area to the extent practicable.

The inspectors selected temporary ventilation system setups (high-efficiency particulate air/charcoal negative pressure units, down draft tables, tents, metal "Kelly buildings," and other enclosures) used to support work in contaminated areas. The inspectors assessed whether the use of these systems is consistent with licensee procedural guidance and the ALARA concept.

The inspectors reviewed airborne monitoring protocols by selecting installed systems used to monitor and warn of changing airborne concentrations in the plant and evaluating whether the alarms and setpoints are sufficient to prompt licensee/worker action to ensure that doses are maintained within the limits of 10 CFR Part 20 and the ALARA concept.

The inspectors assessed whether the licensee had established trigger points (e.g., the Electric Power Research Institute's "Alpha Monitoring Guidelines for Operating Nuclear Power Stations") for evaluating levels of airborne beta-emitting (e.g., plutonium-241) and alpha-emitting radionuclides.

b. Findings

No findings were identified.

.3 Use of Respiratory Protection Devices (02.03)

a. Inspection Scope

For those situations where it is impractical to employ engineering controls to minimize airborne radioactivity, the inspectors assessed whether the licensee provided respiratory protective devices such that occupational doses are ALARA. The inspectors selected work activities where respiratory protection devices were used to limit the intake of radioactive materials, and assessed whether the licensee performed an evaluation concluding that further engineering controls were not practical and that the use of respirators is ALARA. The inspectors also evaluated whether the licensee had established means (such as routine bioassay) to determine if the level of protection (protection factor) provided by the respiratory protection devices during use was at least as good as that assumed in the licensee's work controls and dose assessment.

The inspectors assessed whether respiratory protection devices used to limit the intake of radioactive materials were certified by the National Institute for Occupational Safety and Health/Mine Safety and Health Administration or have been approved by the NRC per 10 CFR 20.1703(b). The inspectors selected work activities where respiratory protection devices were used. The inspectors evaluated whether the devices were used consistent with their National Institute for Occupational Safety and Health/Mine Safety and Health Administration certification or any conditions of their NRC approval.

The inspectors reviewed records of air testing for supplied-air devices and self-contained breathing apparatus bottles to assess whether the air used in these devices meets or exceeds Grade D quality. The inspectors reviewed plant breathing air supply systems to determine whether they meet the minimum pressure and airflow requirements for the devices in use.

The inspectors selected several individuals qualified to use respiratory protection devices, and assessed whether they have been deemed fit to use the devices by a physician.

The inspectors selected several individuals assigned to wear a respiratory protection device and observed them donning, doffing, and functionally checking the device as appropriate. Through interviews with these individuals, the inspectors evaluated whether they knew how to safely use the device and how to properly respond to any device malfunction or unusual occurrence (loss of power, loss of air, etc.).

The inspectors chose multiple respiratory protection devices staged and ready for use in the plant or stocked for issuance for use. The inspectors assessed the physical condition of the device components (mask or hood, harnesses, air lines, regulators, air bottles, etc.) and reviewed records of routine inspection for each. The inspectors selected several of the devices and reviewed records of maintenance on the vital components (e.g., pressure regulators, inhalation/exhalation valves, hose couplings).

b. Findings

No findings were identified.

.4 Self-Contained Breathing Apparatus for Emergency Use (02.04)

a. Inspection Scope

Based on the UFSAR, TS, and emergency operating procedure requirements, the inspectors reviewed the status and surveillance records of self-contained breathing apparatuses staged in-plant for use during emergencies. The inspectors reviewed the licensee's capability for refilling and transporting self-contained breathing apparatus air bottles to and from the control room and operations support center during emergency conditions.

The inspectors selected several individuals on control room shift crews and from designated departments currently assigned emergency duties (e.g., on-site search and rescue duties) to assess whether control room operators and other emergency response and radiation protection personnel (assigned in-plant search and rescue duties or as required by emergency operating procedures or the emergency plan) were trained and qualified in the use of self-contained breathing apparatuses (including personal bottle changeout). The inspectors evaluated whether personnel assigned to refill bottles were trained and qualified for that task.

The inspectors determined whether appropriate mask sizes and types are available for use (i.e., in-field mask size and type match what was used in fit-testing). The inspectors determined whether on-shift operators had no facial hair that would interfere with the sealing of the mask to the face and whether vision correction (e.g., glasses inserts or corrected lenses) was available as appropriate.

The inspectors reviewed the past two years of maintenance records for select self-contained breathing apparatus units used to support operator activities during accident conditions and designated as "ready for service" to assess whether any maintenance or repairs on any self-contained breathing apparatus unit's vital components were performed by an individual, or individuals, certified by the manufacturer of the device to perform the work. The vital components typically are the pressure-demand air regulator and the low-pressure alarm. For those self-contained breathing apparatuses designated as "ready for service," the inspectors determined whether the required, periodic air cylinder hydrostatic testing was documented and up to date, and the retest air cylinder markings required by the U.S. Department of Transportation were in place.

b. Findings

No findings were identified.

.5 Problem Identification and Resolution (02.05)

a. Inspection Scope

The inspectors evaluated whether problems associated with the control and mitigation of in-plant airborne radioactivity were being identified by the licensee at an appropriate threshold and were properly addressed for resolution in the licensee corrective action program. The inspectors assessed whether the corrective actions were appropriate for a selected sample of problems involving airborne radioactivity and were appropriately documented by the licensee.

b. Findings

No findings were identified.

2RS6 Radioactive Gaseous and Liquid Effluent Treatment (71124.06)

This inspection constituted one complete sample as defined in IP 71124.06-05.

.1 Inspection Planning and Program Reviews (02.01)

Event Report and Effluent Report Reviews

a. Inspection Scope

The inspectors reviewed the radiological effluent release reports issued since the last inspection to determine if the reports were submitted as required by the Offsite Dose Calculation Manual/Technical Specifications. The inspectors reviewed anomalous results, unexpected trends, or abnormal releases identified by the licensee for further inspection to determine if they were evaluated, were entered in the corrective action program, and were adequately resolved.

The inspectors identified radioactive effluent monitor operability issues reported by the licensee as provided in effluent release reports to review these issues during the on-site inspection, as warranted, given their relative significance and determine if the issues were entered into the corrective action program and adequately resolved.

b. Findings

No findings were identified.

Offsite Dose Calculation Manual and Final Safety Analysis Report Review

a. Inspection Scope

The inspectors reviewed Final Safety Analysis Report descriptions of the radioactive effluent monitoring systems, treatment systems, and effluent flow paths so they could be evaluated during inspection walkdowns.

The inspectors reviewed changes to the Offsite Dose Calculation Manual made by the licensee since the last inspection against the guidance in NUREG-1301, 1302, and 0133, and Regulatory Guides 1.109, 1.21, and 4.1. When differences were identified, the inspectors reviewed the technical basis or evaluations of the change during the onsite inspection to determine whether the changes were technically justified and maintained effluent releases ALARA.

The inspectors reviewed licensee documentation to determine if the licensee has identified any non-radioactive systems that have become contaminated as disclosed either through an event report or the Offsite Dose Calculation Manual since the last inspection. This review provided an intelligent sample list for the on-site inspection of any 10 CFR 50.59 evaluations and allowed a determination if any newly contaminated systems have an unmonitored effluent discharge path to the environment, whether any required Offsite Dose Calculation Manual revisions were made to incorporate these new

pathways and whether the associated effluents were reported in accordance with Regulatory Guide 1.21.

b. Findings

No findings were identified.

Groundwater Protection Initiative Program

a. Inspection Scope

The inspectors reviewed reported groundwater monitoring results and changes to the licensee's written program for identifying and controlling contaminated spills/leaks to groundwater.

b. Findings

No findings were identified.

Procedures, Special Reports, and Other Documents

a. Inspection Scope

The inspectors reviewed licensee event reports, event reports and/or special reports related to the effluent program issued since the previous inspection to identify any additional focus areas for the inspection based on the scope/breadth of problems described in these reports.

The inspectors reviewed effluent program implementing procedures, particularly those associated with effluent sampling, effluent monitor set point determinations, and dose calculations.

The inspectors reviewed copies of licensee and third party (independent) evaluation reports of the effluent monitoring program since the last inspection to gather insights into the licensee's program and aid in selecting areas for inspection review (smart sampling).

b. Findings

No findings were identified.

.2 Walkdowns and Observations (02.02)

a. Inspection Scope

The inspectors walked down selected components of the gaseous and liquid discharge systems to evaluate whether equipment configuration and flow paths align with the documents reviewed in 02.01 above and to assess equipment material condition. Special attention was applied to identify potential unmonitored release points (such as open roof vents in boiling water reactor turbine decks, temporary structures butted against turbine, auxiliary or containment buildings), building alterations which could impact airborne, or liquid effluent controls, and ventilation system leakage that communicates directly with the environment.

For equipment or areas associated with the systems selected for review that were not readily accessible due to radiological conditions, the inspectors reviewed the licensee's material condition surveillance records, as applicable.

The inspectors walked down filtered ventilation systems to assess for conditions such as degraded high-efficiency particulate air /charcoal banks, improper alignment, or system installation issues that would impact the performance or the effluent monitoring capability of the effluent system.

As available, the inspectors observed selected portions of the routine processing and discharge of radioactive gaseous effluent (including sample collection and analysis) to evaluate whether appropriate treatment equipment was used and the processing activities align with discharge permits.

The inspectors determined if the licensee has made significant changes to their effluent release points, e.g., changes subject to a 10 CFR 50.59 review or require NRC approval of alternate discharge points.

As available, the inspectors observed selected portions of the routine processing and discharge liquid waste (including sample collection and analysis) to determine if appropriate effluent treatment equipment is being used and that radioactive liquid waste is being processed and discharged in accordance with procedure requirements and aligns with discharge permits.

b. Findings

No findings were identified.

.3 Sampling and Analyses (02.03)

a. Inspection Scope

The inspectors selected effluent sampling activities, consistent with smart sampling, and assessed whether adequate controls have been implemented to ensure representative samples were obtained (e.g., provisions for sample line flushing, vessel recirculation, composite samplers, etc.).

The inspectors selected effluent discharges made with inoperable (declared out-of-service) effluent radiation monitors to assess whether controls were in place to ensure compensatory sampling was performed consistent with the radiological effluent Technical Specifications/Offsite Dose Calculation Manual and that those controls were adequate to prevent the release of unmonitored liquid and gaseous effluents.

The inspectors determined whether the facility was routinely relying on the use of compensatory sampling in lieu of adequate system maintenance, based on the frequency of compensatory sampling since the last inspection.

The inspectors reviewed the results of the inter-laboratory comparison program to evaluate the quality of the radioactive effluent sample analyses and assessed whether the inter-laboratory comparison program included hard-to-detect isotopes, as appropriate.

b. Findings

No findings were identified.

.4 Instrumentation and Equipment (02.04)

Effluent Flow Measuring Instruments

a. Inspection Scope

The inspectors reviewed the methodology the licensee uses to determine the effluent stack and vent flow rates to determine if the flow rates were consistent with radiological effluent Technical Specifications/Offsite Dose Calculation Manual or Final Safety Analysis Report values, and that differences between assumed and actual stack and vent flow rates did not affect the results of the projected public doses.

b. Findings

No findings were identified.

Air Cleaning Systems

a. Inspection Scope

The inspectors assessed whether surveillance test results since the previous inspection for TS required ventilation effluent discharge systems (high-efficiency particulate air and charcoal filtration), such as the standby gas treatment system and the containment/auxiliary building ventilation system, met TS acceptance criteria.

b. Findings

No findings were identified.

.5 Dose Calculations (02.05)

a. Inspection Scope

The inspectors reviewed all significant changes in reported dose values compared to the previous radiological effluent release report (e.g., a factor of 5, or increases that approach Appendix I criteria) to evaluate the factors which may have resulted in the change.

The inspectors reviewed radioactive liquid and gaseous waste discharge permits to assess whether the projected doses to members of the public were accurate and based on representative samples of the discharge path.

Inspectors evaluated the methods used to determine the isotopes that are included in the source term to ensure all applicable radionuclides are included within detectability standards. The review included the current Part 61 analyses to ensure hard-to-detect radionuclides are included in the source term.

The inspectors reviewed changes in the licensee's offsite dose calculations since the last inspection to evaluate whether changes were consistent with the Offsite Dose Calculation Manual and Regulatory Guide 1.109. The inspectors reviewed meteorological dispersion and deposition factors used in the Offsite Dose Calculation Manual and effluent dose calculations to evaluate whether appropriate factors were being used for public dose calculations.

The inspectors reviewed the latest Land Use Census to assess whether changes (e.g., significant increases or decreases to population in the plant environs, changes in critical exposure pathways, the location of nearest member of the public or critical receptor, etc.) have been factored into the dose calculations.

For the releases reviewed above, the inspectors evaluated whether the calculated doses (monthly, quarterly, and annual dose) are within the 10 CFR Part 50, Appendix I and TS dose criteria.

The inspectors reviewed, as available, records of any abnormal gaseous or liquid tank discharges (e.g., discharges resulting from misaligned valves, valve leak-by, etc) to ensure the abnormal discharge was monitored by the discharge point effluent monitor. Discharges made with inoperable effluent radiation monitors, or unmonitored leakages were reviewed to ensure that an evaluation was made of the discharge to satisfy 10 CFR 20.1501 so as to account for the source term and projected doses to the public.

b. Findings

No findings were identified.

.6 Groundwater Protection Initiative Implementation (02.06)

a. Inspection Scope

The inspectors reviewed monitoring results of the Groundwater Protection Initiative to determine if the licensee had implemented its program as intended and to identify any anomalous results. For anomalous results or missed samples, the inspectors assessed whether the licensee had identified and addressed deficiencies through its corrective action program.

The inspectors reviewed identified leakage or spill events and entries made into 10 CFR 50.75 (g) records. The inspectors reviewed evaluations of leaks or spills and reviewed any remediation actions taken for effectiveness. The inspectors reviewed on-site contamination events involving contamination of ground water and assessed whether the source of the leak or spill was identified and mitigated.

For unmonitored spills, leaks, or unexpected liquid or gaseous discharges, the inspectors assessed whether an evaluation was performed to determine the type and amount of radioactive material that was discharged by:

Assessing whether sufficient radiological surveys were performed to evaluate the extent of the contamination and the radiological source term and assessing whether a survey/evaluation had been performed to include consideration of hard-to-detect radionuclides.

Determining whether the licensee completed offsite notifications, as provided in its Groundwater Protection Initiative implementing procedures.

The inspectors reviewed the evaluation of discharges from on-site surface water bodies that contain or potentially contain radioactivity, and the potential for ground water leakage from these on-site surface water bodies. The inspectors assessed whether the licensee was properly accounting for discharges from these surface water bodies as part of their effluent release reports.

The inspectors assessed whether onsite ground water sample results and a description of any significant on-site leaks/spills into ground water for each calendar year were documented in the Annual Radiological Environmental Operating Report for the radiological environmental monitoring program or the Annual Radiological Effluent Release Report for the Radiological Effluent Technical Specifications.

For significant, new effluent discharge points (such as significant or continuing leakage to ground water that continues to impact the environment if not remediated), the inspectors evaluated whether the offsite dose calculation manual was updated to include the new release point.

b. Findings

No findings were identified.

.7 Problem Identification and Resolution (02.07)

a. Inspection Scope

Inspectors assessed whether problems associated with the effluent monitoring and control program were being identified by the licensee at an appropriate threshold and were properly addressed for resolution in the licensee corrective action program. In addition, the inspectors evaluated the appropriateness of the corrective actions for a selected sample of problems documented by the licensee involving radiation monitoring and exposure controls.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

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

4OA1 Performance Indicator Verification (71151)

.1 Mitigating Systems Performance Index - Emergency Alternating Current (AC) Power System

a. Inspection Scope

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index (MSPI) - Emergency AC Power System performance indicator (PI) for Quad Cities Unit 1 and Unit 2 for the period from the fourth quarter 2010 through third quarter 2011. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the Nuclear Energy Institute (NEI) Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, dated October 2009, were used. The inspectors reviewed the licensee's operator narrative logs, MSPI derivation reports, issue reports, event reports and NRC integrated inspection reports for the period of October 2010 through September 2011 to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator, and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two MSPI emergency AC power system samples as defined in IP 71151-05.

b. Findings

No findings were identified.

.2 Mitigating Systems Performance Index - High Pressure Injection Systems

a. Inspection Scope

The inspectors sampled licensee submittals for the MSPI - High Pressure Injection Systems performance indicator for Quad Cities Unit 1 and Unit 2 for the period from the fourth quarter 2010 through third quarter 2011. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, dated October 2009, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, MSPI derivation reports, event reports, and NRC integrated inspection reports for the period of October 2010 through September 2011 to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to

determine if any problems had been identified with the PI data collected or transmitted for this indicator, and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two MSPI high pressure injection system samples as defined in IP 71151-05.

b. Findings

No findings were identified.

.3 Mitigating Systems Performance Index - Heat Removal System

a. Inspection Scope

The inspectors sampled licensee submittals for the MSPI - Heat Removal System performance indicator for Quad Cities Unit 1 and Unit 2 for the period from the fourth quarter 2010 through third quarter 2011. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, dated October 2009, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, event reports, MSPI derivation reports, and NRC integrated inspection reports for the period of October 2010 through September 2011 to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator, and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two MSPI heat removal system samples as defined in IP 71151-05.

b. Findings

No findings were identified.

.4 Mitigating Systems Performance Index - Residual Heat Removal System

a. Inspection Scope

The inspectors sampled licensee submittals for the MSPI - Residual Heat Removal System performance indicator for Quad Cities Unit 1 and Unit 2 for the period from the fourth quarter 2010 through third quarter 2011. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, dated October 2009, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, MSPI derivation reports, event reports and NRC integrated inspection reports for the period of October 2010 through September 2011 to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the

previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator, and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two MSPI residual heat removal system samples as defined in IP 71151-05.

b. Findings

No findings were identified.

.5 Mitigating Systems Performance Index - Cooling Water Systems

a. Inspection Scope

The inspectors sampled licensee submittals for the MSPI - Cooling Water Systems performance indicator for Quad Cities Unit 1 and Unit 2 for the period from the fourth quarter 2010 through third quarter 2011. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, dated October 2009, were used. The inspectors reviewed the licensee's operator narrative logs, issue reports, MSPI derivation reports, event reports and NRC integrated inspection reports for the period of October 2010 through September 2011 to validate the accuracy of the submittals. The inspectors reviewed the MSPI component risk coefficient to determine if it had changed by more than 25 percent in value since the previous inspection, and if so, that the change was in accordance with applicable NEI guidance. The inspectors also reviewed the licensee's issue report database to determine if any problems had been identified with the PI data collected or transmitted for this indicator, and none were identified. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two MSPI cooling water system samples as defined in IP 71151-05.

b. Findings

No findings were identified.

.6 Emergency Response Organization (ERO) Drill/Exercise Performance

a. Inspection Scope

The inspectors sampled licensee submittals for the Drill/Exercise Performance (DEP) performance indicator (PI) for the period from the fourth quarter 2010 through third quarter 2011. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, were used. The inspectors reviewed the licensee's records associated with the PI to verify that the licensee accurately reported the DEP indicator in accordance with relevant procedures and the NEI guidance. Specifically, the inspectors reviewed licensee records and

processes including procedural guidance on assessing opportunities for the performance indicator, assessments of PI opportunities during pre-designated control room simulator training sessions, performance during the 2010 biennial exercise, and performance during other drills. Specific documents reviewed are described in the Attachment to this report.

This inspection constitutes one drill/exercise performance sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.7 Emergency Response Organization Readiness

a. Inspection Scope

The inspectors sampled licensee submittals for the ERO Drill Participation PI for the period from the fourth quarter 2010 through third quarter 2011. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, were used. The inspectors reviewed the licensee's records associated with the PI to verify that the licensee accurately reported the indicator in accordance with relevant procedures and the NEI guidance. Specifically, the inspectors reviewed licensee records and processes including procedural guidance on assessing opportunities for the PI; performance during the 2010 biennial exercise and other drills; and revisions of the roster of personnel assigned to key emergency response organization positions. Specific documents reviewed are described in the Attachment to this report.

This inspection constitutes one ERO drill participation sample as defined in Inspection Procedure 71151-05.

b. Findings

No findings were identified.

.8 Alert and Notification System Reliability

a. Inspection Scope

The inspectors sampled licensee submittals for the Alert and Notification System PI for the period from the fourth quarter 2010 through third quarter 2011. To determine the accuracy of the PI data reported during those periods, PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, were used. The inspectors reviewed the licensee's records associated with the PI to verify that the licensee accurately reported the indicator in accordance with relevant procedures and the NEI guidance. Specifically, the inspectors reviewed licensee records and processes including procedural guidance on assessing opportunities for the PI and results of periodic alert and notification system operability tests. Specific documents reviewed are described in the Attachment to this report.

This inspection constitutes one alert and notification system sample as defined in IP 71151-05.

b. Findings

No findings 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. Inspection 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 CAP 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: identification of the problem was complete and accurate; timeliness was commensurate with the safety significance; evaluation and disposition of performance issues, generic implications, common causes, contributing factors, root causes, extent-of-condition reviews, and previous occurrences 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 CAP as a result of the inspectors' observations are included in the Attachment to this report.

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 were identified.

.2 Daily Corrective Action Program Reviews

a. Inspection Scope

In order to assist with the identification of repetitive equipment failures and specific human performance issues for followup, the inspectors performed a daily screening of items entered into the licensee's CAP. 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 were identified.

.3 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a review of the licensee's CAP 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 issues, but also considered the results of daily inspector CAP item screening discussed in Section 4OA2.2 above, licensee trending efforts, and licensee human performance results. The inspectors' review nominally considered the 6-month period of April 1, 2011 through September 30, 2011, although some examples expanded beyond those dates where the scope of the trend warranted.

Reviews also included issues documented outside the normal CAP 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 licensee's CAP trending reports. Corrective actions associated with a sample of the issues identified in the licensee's trending reports were reviewed for adequacy.

This review constituted a single semi-annual trend inspection sample as defined in IP 71152-05.

b. Findings/Observations.

No findings were identified. In the first quarter of 2011 the inspectors identified a trend that plant personnel were not always complying with site-wide procedure use and adherence expectations and first line supervisors across the site had a high tolerance for procedure deficiencies when those deficiencies did not prevent the completion of the task. The inspectors chose to follow up on that trend and to review the licensee's causal evaluations and proposed corrective actions to address the trend.

The inspectors noted that the licensee has written several Action Requests (ARs) to document adverse trends in procedure use and adherence:

- AR 1203291: Operations Procedure Adherence Window is Yellow for 1Q2011;
- AR 1245599: Operations Procedure Adherence Window is Yellow for 2Q2011;
- AR 1222812: NOS Identified Procedure Placekeeping Deficiencies; and
- AR 1205773: NOS Identified Procedure Use Issues for Corrective Action Products.

The inspectors reviewed causal analyses that were performed to evaluate the declining performance in procedure use and adherence. Apparent Cause Evaluation (ACE) 1187221-05, "Perform Apparent Cause Evaluation and Obtain Department Head Approval," was completed on April 26, 2011. This ACE identified the apparent cause as supervision's failure to effectively enforce procedure use and placekeeping standards in the field. This evaluation identified a contributing cause as management's failure to

develop and implement effective corrective actions to correct procedure use and adherence behaviors. Many of the corrective actions resulting from this evaluation were either recently completed in the third quarter of 2011 or still in progress at the time of this inspection. Additionally, effectiveness reviews are scheduled to be completed in 2012.

The inspectors also reviewed a common cause analysis (CCA) performed as part of AR 1262130, "Operations Fundamentals and Procedure Use and Adherence CCA." This CCA, completed on October 19, 2011, reviewed previous root cause evaluations, ACEs, focused area self-assessments (FASAs), as well as previous Issue reports, department clock resets, and other station indicators. The CCA concluded that, "Based on the evaluations performed, Quad Cities is experiencing issues with procedure use and adherence, as well as reinforcement of fundamental behaviors for use of Human Performance Tools." Corrective actions associated with this CCA were still in progress at the time of this inspection.

The inspectors identified multiple causal evaluations that had a cause of station personnel failing to follow and enforce Standards, Policies, and Administrative Controls (SPAC). A root cause evaluation performed for AR 961927, "Procedure Use ID'd [Identified] in CCA for 2009 Department Clock Resets," completed in October 2009, determined the root cause as management systems, specifically that enforcement of SPAC needed to be improved. Common Cause Analysis 1219087, "Station Configuration Controls Events," completed in July of 2011, also identified that the station's failure to follow SPAC on a consistent basis was the common cause among five configuration control events analyzed in the CCA. Focused Area Self-Assessment 1016632, "FASA - Procedure Use and Adherence," completed June 2010, identified issues with craft personnel improperly completing paperwork.

The inspectors have noted that the station has had an ongoing trend of failing to implement and enforce SPAC dating back to 2009. There have been multiple causal evaluations performed with multiple corrective actions implemented to address weaknesses in implementing and enforcing SPAC, and there continues to be weaknesses in Quad Cities implementation and enforcement of SPAC as evidenced by the conclusions of the CCA performed for AR 1262130. Because many of the corrective actions have only been recently implemented, and additional corrective actions are yet to be implemented, the inspectors recommend that this issue and the corrective actions implemented by Quad Cities Nuclear Power Station be reviewed during a future biennial problem identification and resolution inspection.

4OA3 Followup of Events and Notices of Enforcement Discretion (71153)

.1 (Closed) Licensee Event Report (LER) 05000254/2011-003-00; 05000265/2011-003-00: Control Room Emergency Ventilation Air Conditioning System Inoperable

On July 6, 2011, at 2:10 p.m., the Unit 1/2 'B' control room emergency ventilation (CREV) refrigeration condensing unit (RCU) was declared inoperable due to an increase in vibrations caused by a broken chiller compressor connecting rod. This resulted in the station entering a 30 day action under Technical Specification 3.7.5, Condition A. This event affected both the Unit 1 and Unit 2 control rooms since they share a common control room and CREV system.

The licensee determined CREV RCU chiller compressor connecting rod failure was caused by flooded starts of the compressor. The flooded starts were the result of liquid refrigerant migrating to the compression cylinder during long standby conditions. Since this cylinder was designed for refrigerant vapor, the piston was subjected to stresses in excess of design when attempting to compress the residual liquid refrigerant, and cracks begin to form in the piston connecting rod. This was a repeat occurrence of a CREV RCU chiller compressor failure that occurred in April 2009 that was also the result of a broken chiller compressor connecting rod. In response to the April 2009 failure, the licensee performed an equipment apparent cause evaluation that determined the connecting rod failed due to flooded starts of the compressor. In response to this failure, the licensee implemented three modifications to the compressor during the next 24 months.

The licensee installed the first modification in May 2009. This modification installed a time delay to the starting circuit of the compressor. The licensee had observed when the compressor started, it drew sufficient suction to cause the suction low pressure switch to shut off the RCU drive motor. Almost immediately, the suction pressure increased, the pressure switch reset and the drive motor start signal returned. The compressor had not come to a complete stop before the motor contactor would pick up a second time causing a large current spike resulting in breaker trips of the RCU. The time delay prevented these double starts and increased the pump down cycle on a normal compressor cycle. The longer pump down cycle helped to reduce the potential of a "flooded start" condition.

The second modification was installed in October 2010. This modification relocated the liquid line solenoid valve closer to the thermal expansion valves. This reduced the amount of liquid refrigerant that could potentially migrate back to the compressor during standby conditions.

The third modification was installed in April 2011. This modification replaced the flow control valve on the service water side that provided cooling to the compressor. The compressor occasionally tripped on high discharge pressure due to insufficient cooling water flow to the compressor.

In May 2009, a broken connecting rod resulted in the failure of a similar compressor at another Exelon Nuclear Generating Station. The other Exelon Nuclear Generating Station chose to install a pump-down modification to the compressor. This modification would periodically pump down refrigerant from the compressor while in a standby condition to prevent flooded starts. Quad Cities Engineering and Exelon Corporate Engineering evaluated if this modification should be implemented at Quad Cities. It was determined that the previous approved course of action for Quad Cities would be sufficient to prevent recurrence and did not warrant the addition of this pump back modification. The modification plan for Quad Cities was implemented with the three previously discussed modifications. The other Exelon Nuclear Generating Station installed this modification in November 2009 and has not had compressor failure as of November 2011.

Immediate corrective actions from the July 6, 2011, failure of the CREV RCU was the replacement of the compressor, more frequent vibration measurements, and the scheduling of a pump down modification installation. The compressor was replaced with a new compressor on July 12, 2011. Vibrations will be measured during monthly

surveillances for trending purposes. Also, the licensee scheduled the pump-down modification to be installed during January 2012.

Based on previous actions taken, the schedule for the installation of the pump down modification, and the effect of pump down modifications on similar equipment with similar construction characteristics and duty cycle, the inspectors have confidence that these actions will give reasonable assurance to prevent recurrence.

Documents reviewed as part of this inspection are listed in the Attachment to this report. This LER is closed.

This event followup review constituted one sample as defined in IP 71153-05.

4OA6 Management Meetings

.1 Exit Meeting Summary

On January 11, 2012, the inspectors presented the inspection results to T. Hanley, Site Vice President, 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

Interim exits were conducted for:

- The results of the licensed operator requalification training program inspection were discussed with T. Hanley, Site Vice President, on October 28, 2011, and the results of the 2011 test review were discussed with E. Pannell on November 30, 2011. The inspectors confirmed that none of the potential report input discussed was considered proprietary. Proprietary material received during the inspection was returned to the licensee.
- The results of the Emergency Preparedness program inspection with M. Prospero, Plant Manager, conducted at the site on December 2, 2011.
- The results of the annual review of Emergency Action Level and Emergency Plan change inspection with the licensee's Emergency Preparedness Coordinator, S. Frey, via telephone on December 8, 2011; and
- The results of the Occupational as-low-as-is-reasonably-achievable (ALARA) Planning and Controls; In-Plant Airborne Radioactivity Control and Mitigation; Radioactive Gaseous and Liquid Effluent Treatment with Mr. W. Beck, Regulatory Assurance and Mr. D. Collins, Radiation Protection Manager.

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 the NRC Enforcement Policy for being dispositioned as an NCV.

- The licensee identified that 12 fire damper inspections in the main control room, performed as part of one work order, were not completed before the 25 percent grace period expired. This occurred because the inspections were delayed and then rescheduled past the drop dead date. In addition, departmental and

organizational tools used to track the WO did not identify that the planned maintenance was past due since it was still in a working status. The issue is more than minor because, if left uncorrected, the programmatic breakdowns, which allowed the inspections to go beyond the designated frequency, could lead to a more significant safety concern with fire protection equipment or barriers potentially degraded and not evaluated. Technical Specification 5.4.1.c requires written procedures be established, implemented, and maintained to cover Fire Protection Program implementation. Contrary to this requirement, the preventative maintenance work order for control room fire damper inspections was not implemented as required by the program frequency. The issue was identified by the station nuclear oversight auditors and documented in the CAP as IR 1286382. The issue was determined to be of very low safety significance since the inspections were subsequently completed with no problems identified. Corrective actions included completing the inspections and changing organizational tracking tools to identify similar work orders to management when the task went into the grace period.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

T. Hanley, Site Vice President
M. Prospero, Plant Manager
C. Alguire, System Engineering Manager
W. Beck, Regulatory Assurance Manager
D. Collins, Radiation Protection Manager
S. Darin, Engineering Director
J. Garrity, Work Control Director
A. Misak, Nuclear Oversight Manager
K. Moser, Training Director
V. Neels, Chemistry/Environ/Radwaste Manager
K. O'Shea, Acting Operations Director
S. Piepenbrink, Security Manager
T. Scott, Work Management Director

Nuclear Regulatory Commission

M. Ring, Chief, Reactor Projects Branch 1

Illinois Emergency Management Agency (IEMA)

R. Zuffa, IEMA

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Closed

05000254/2011-003-00;	LER	Control Room Emergency Ventilation Air Conditioning
05000265/2011-003-00;		System Inoperable (Section 4OA3.1)

LIST OF DOCUMENTS REVIEWED

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

Section 1R01

- EC 380825; U1 Battery Room Thermostat Mod and Relocation
- WO 1451207; U1 Battery Room Thermostat Mod and Relocation
- WO 1451208; U2 Battery Room Thermostat Mod and Relocation
- EC 380826; U2 Battery Room Thermostat Mod and Relocation
- WO 1392949; Annual Heating Steam PMT Review
- QCOP 0010-01; Winterizing Checklist

Section 1R04

- QOP 6900-01; 250 Vdc Electrical System; Revision 34
- QOP 6900-02; 125 Vdc Electrical System; Revision 33
- WO# 1080079; Replace Breaker at 1B1 Cub C1 (Feed to bus 1B-2)
- IR 1218843; Deferral of WO 1032166-01 & 1080079-01 Needs to be Requested; 5/20/11
- Drawing M-40, Diagram of Standby Liquid Control Piping
- TS 3.1.7, Standby Liquid Control (SLC) System
- QCOP 6600-01; Diesel Generator 1(2) Preparation for Standby Operation; Revision 39
- IR 1293096; 5 DPM Coolant Leak During EDG Start; 11/20/2011

Section 1R05

- Fire Zone 8.1; Unit 1/2 Turbine Building 595'-0" Elev. Clean and Dirty Oil Room
- Pre-Fire Plan for Unit 1/2 Security Diesel Building
- Fire Zone 8.2.7.D; Unit 2 Turbine Building 615'-6" Elev. LP Heater Bay (East)/D' Heater Bay
- Fire Zone 8.2.7.D; Unit 2 Turbine Building 608'-6" Elev. LP Heater Bay (West)
- Fire Zone 8.2.6.C; unit 1/2 Turbine Building 595'-0" Elev. EHC Fluid Reservoir

Section 1R11

- OP-AA-105-102; NRC Active License Maintenance; Revision 9
- TQ-JA-150-12; Simulator Evaluation - Individual Competency Standards; Revision 0
- TQ-AA-306; Simulator Management; Revision 4
- TQ-AA-306-F-06; Simulator Core Model Test Report – Cold Start-Up; Revision 0
- TQ-AA-306-F-06; Simulator Core Model Test Report – Cold Start-Up; Revision 1
- TQ-AA-306-F-07; Simulator Core Model Test Report – Reactivity and Rod Worth; Revision 0
- TQ-AA-306-F-07; Simulator Core Model Test Report – Reactivity and Rod Worth; Revision 1
- TQ-AA-306-F-08; Simulator Core Model Test Report – Xenon Worth; Revision 0
- TQ-AA-306-F-08; Simulator Core Model Test Report – Xenon Worth; Revision 1
- TQ-AA-306-F-09; Simulator Core Model Test Report – SDM and Reactor Anomaly; Revision 0
- TQ-AA-306-F-09; Simulator Core Model Test Report – SDM and Reactor Anomaly; Revision 1
- SWR# 13084; Main Turbine Turning Gear Failed to Auto Start on Turbine Coastdown; 2/15/11
- SWR# 11392; Implement Dresden's FW Heater and Main Turbine Models in the Simulator; 12/31/08

- EC 383333; U-2 Condenser Reversing Valves Temperature Compensated Thermal Overload (TOL) Relays; Revision 0
- Simulator Evaluations; LORT Cycle 11-6; dated 10/25/11
- Remedial Training Records from 10/11/11 individual operating exam failure
- Remedial Training Records from 5, 2010 Operating Test Failures
- Self Assessment 1150962; Pre-71111.11 Inspection Including Training Warning Flags
- Operating Exam Number 21; Revision 13; dated 08/11
- Operating Exam Number 34; Revision 10; dated 08/11
- JPM LP-031-1; Revision 13; dated 8/16/2011
- JPM LP-042-11-A; Revision 0; dated 8/18/2011
- JPM LS-060-1-A; Revision 03; dated 8/19/2011
- JPM LS-06531-1; Revision 01; dated 8/16/2011
- JPM LS-003-1; Revision 17; dated 9/07/2011
- Quad Cities Station TAC Report; License Operator Training/Continuing, Initial; Observation Date 04/18/11 12:00AM, 07/08/11 11:59PM
- Evaluation Summary; LORT/Cycle 10-3; Operations
- Evaluation Summary; LORT/Cycle 11-3; Operations
- LORT Curriculum Review Committee Minutes 2011, 1st 2nd 3rd Quarters
- TAC Curriculum Review Committee Minutes 2011, 1st 2nd 3rd Quarters
- 2010 and 2011 LORT Continuing Training Classroom Schedule
- TR-1; Quad Cities Simulator Transient Test – Manual Reactor Trip; 2/28/11
- TR-2; Quad Cities Simulator Transient Test – Simultaneous Trip of All Main Feedwater Pumps; 2/28/11
- TR-3; Quad Cities Simulator Transient Test – Simultaneous Closure of All Main Steam Isolation Valves; 2/28/11
- TR4; Quad Cities Simulator Transient Test – Simultaneous Trip of All Reactor Recirculation Pumps; 2/28/11
- TR5; Quad Cities Simulator Transient Test – Trip of Single Reactor Recirculation Pump; 2/28/11
- TR6; Quad Cities Simulator Transient Test – Main Turbine Trip (Maximum Power Level Which Does Not Result in a Reactor Trip); 2/28/11
- TR7; Quad Cities Simulator Transient Test – Maximum Rate Power Ramp; 2/28/11
- TR8; Quad Cities Simulator Transient Test - Maximum Size Reactor Coolant System Rupture Combined with Loss of Off-Site Power; 2/28/11
- TR9; Quad Cities Simulator Transient Test – Maximum Size Unisolable Main Steam Line Rupture; 2/28/11
- TR-10; Quad Cities Simulator Transient Test – Simultaneous Closure of All Main Steam Isolation Valves Combined with Single Stuck Open Safety/Relief Valve (Inhibit Actuation of High Pressure ECCS); 2/28/11
- Simulator Real Time Test; 3/2/11
- Simulator 1 Hr. Steady State Stability Test; 3/4/11
- Simulator Steady State Test; 3/4/11

Section 1R12

- Enterprise Maintenance Rule Production Database for the following systems:

- Z1100: Standby Liquid Control system
- Z5706: Turbine Building Ventilation

- USAR Chapter 9.3.5, Standby liquid Control System

- USAR Chapter 9.4.4 Turbine Building Area Ventilation System

Section 1R13

- Safety Work Week Profile 11-42-04

- Safety Work Week Profile 11-44-06

Section 1R15

- QCEMS 0210-02; Battery Charger Testing for Safety Related 125 Vdc and 250 Vdc Batteries; Revision 2

- IR 1276063; CDBI – ID Deviation from VETIP Replacement Guide for E. Caps

- IR 1279179; CDBI – Degraded Condition Not Reported (IR) See WO 1252888-01

- WO 1482655; FNE U-1 250 VDC Bat Charger Capacitor/Ripple Voltage 1-8350

- IR 1282788; ½ EDG Circulating Lube Oil Pump Coupling

- QCOA 6600-15; Emergency Diesel Generator Circulating Oil Pump Failure; Revision 2

- IR 1294079; Relay 590-123C Did Not Drop Out When Press Switch Opened

- Technical Specification 3.3.1.1 and Bases, RPS Instrumentation

- IR 1293749; Review of Dresden IR 1293202 on MOC Switch Linkage Failures

- IR 1294079; Relay 590-123C Did Not Drop Out When Pressure Switch Opened

Section 1R19

- QCOS 6600-46; Unit 1/2 Diesel Generator Timed Start Test; Revision 16

- WO 1478073; Replace Latch 2A Core Spray Watertight Door

- WO 1347820; A Core Spray Pump Flow Rate Comp Test (IST)

- QCOS 1400-01; Quarterly Core Spray System Flow Rate Test

- EC 386424; Replace Thermal Overload Heater at 2-7800-29-2-F1

- WO 1337078; MCC 29-2 CUB F1 DG Cooling WTR PMP Cooler Fan 'B' Normal Speed

- QCOS 6600-06; Diesel Generator Cooling Water Pump Flow Rate Test

- WO 1118780; 2D RHRSW Suction Pipe Spring Can Will Not Adjust

- QCOS 1000-04; RHR Service Water Pump Operability Test

Section 1R22

- QCOS 6600-06; Diesel Generator Cooling Water Pump Flow Rate Test

- QCOS 1600-01; Torus to Drywell Vacuum Breaker Extension

Section 1EP2

- EP-AA-1000; Exelon Nuclear Standardized Radiological Emergency Plan-Section E, Notification Methods; Revision 20

- FEMA Approved Design Report for Quad Cities Nuclear Power Station Offsite Emergency Plan Alert and Notification System Addendum; November 2009

- Quad Cities Plant Warning System Annual Maintenance and Operational Reports; November 2011
- Quad Cities Plant Warning System Annual Maintenance and Operational Reports; October 2010 - November 2010
- Semi-Annual Quad Cities Siren Reports; January 2010 - June 2011
- Quad Cities Monthly Siren Availability Reports; January 2010 - October 2011
- IR 01246542; Single Siren Failure; August 1, 2011

Section 1EP3

- Exelon Nuclear Standardized Radiological Emergency Plan; Section B-Exelon Nuclear Emergency Response Organization; Revision 20
- EP-AA-112-100-F-06; Midwest ERO Notification or Augmentation; Revision 0
- TQ-AA-113, Attachment 3; Station ERO Position Qualification Requirements; Revision 18
- Quad Cities Station Emergency Response Organization Roster; October 27, 2011
- Off-Hours Drive-In Augmentation and Performance Indicator Drill Report; December 11, 2009
- Off-Hours Unannounced Quarterly Call-In ERO Augmentation Drill Reports; June 26, 2009 - October 11, 2011
- IR 01236436; On-Call ERO Member Non-Response to Announced Drill; July 5, 2011

Section 1EP4

- EP-AA-1000; Exelon Nuclear Standardized Radiological Emergency Plan; Revisions 19 and 20
- EP-AA-120-1001; 50.54(q) Program Evaluation and Effectiveness Reviews for Standardized Radiological Emergency Plan; Revision 20
- EP-AA-120-F-01; EP Document Approval Form for the Exelon Nuclear Standardized Radiological Emergency Plan; Revision 20
- EP-AA-1006; Exelon Nuclear Radiological Emergency Plan Annex for Quad Cities Station; Revisions 29, 30, and 31
- EP-AA-120-1001; 50.54(q) Program Evaluation and Effectiveness Reviews for Revisions 30 and 31
- EP-AA-120-F-01; EP Document Approval Forms for Revisions 30 and 31

Section 1EP5

- EP-AA-1006; Exelon Nuclear Radiological Emergency Plan Annex for Quad Cities Station, Section 5, Emergency Facilities and Equipment; Revision 31
- FASA 1242012; Focused Self Assessment of Emergency Preparedness for 2011 NRC Baseline Inspection; September 7, 2011
- NOSA-QDC-11-03; Emergency Preparedness 10 CFR 50.54(t) April 8, 2011, Audit Report
- NOSA-QDC-10-03; Emergency Preparedness 10 CFR 50.54(t) April 30, 2010, Audit Report
- NOSA-QDC-11-03; Emergency Preparedness 10 CFR 50.54(t) April 24, 2009, Audit Report
- QC-EP-11-15; Quad Cities 3rd Quarter 2011 TSC Key Decision Maker and SAMG Tabletop Drill Report; October 19, 2011
- QCOS 9000-04; PA Speaker or Emergency Siren Inaudible Tracking; Revision 2
- Quad Cities 2011 Off-Year Exercise Evaluation Report; April 20, 2011
- Quad Cities 2010 NRC Evaluated Exercise Report; November 17, 2010
- IR 1291907; NOS: PA Speakers in Locked Areas Not Tested; November 17, 2011
- IR 1288361; TSC Water In-Seepage and Roof Leak; November 9, 2011
- IR 1276601; EP Damage Control Line Continues to Malfunction; October 14, 2011

- IR 1257424; Off-Year Exercise-REAC Response to Site's State (NARS) Notification; August 30, 2011
- IR 1255263; Loss of NARS Phone; August 25, 2011
- IR 1244754; Reactor Building Area Temperature Recorder Not Working; July 28, 2011
- IR 1242452; Emergency Plan Implementation Non-PI Failures in LORT Training; July 21, 2011
- IR 1233620; NOS: RPT Medical Drill Participation Improvement Item; June 28, 2011
- IR 1217103; Exercise-Interface with NRC Incident Response Teams; May 17, 2011
- IR 1208980; Off-Year 2011 Exercise-OSC Response Team Unsat Demo; April 28, 2011
- IR 1206474; Seismograph Red Light is Lit with a Solid Light; April 22, 2011
- IR 1071678; Inaccurate Wind Direction Reported During Unusual Event; May 20, 2010
- IR 1071374; Quad Cities Declaration of an Unusual Event per HU-7; May 20, 2010

Section 1EP6

- Drill Scenario for December 13, 2011 PI Drill

Section 2RS2

- Unit 1 Quad Cities BRAC Milestones; December, 2010
- Unit 2 Quad Cities BRAC Milestones; June 2009
- RP-AA-551; Cobalt Reduction Program; Revision 0
- RP-AA-551-1002; Evaluation and Estimation of Cobalt Introduction Into Systems by Valves; Revision 0
- RP-AA-551-1003; Cobalt Reduction Program Work Process; Revision 3

Section 2RS3

- AR 1259360; Control Room Ventilation Isolated Due to Toxic Gas Concentration; September 4, 2011
- RP-AA-302; Determining of Alpha Levels and Monitoring; Revision 4
- RP-AA-400-1007; Elevated Dose Rate Response Planning; Revision 0
- RP-AA-441; TEDE ALARA Evaluation Screening; Revision 4
- RP-AA-700-1301; Calibration, Source Check, Operation and Set-up of the Eberline Beta Air Monitor, Model AMS-4; Revision 0
- RP-AA-870-1001; Set-up and Operation of Portable Air Filtration Equipment; Revision 2
- RP-QC-831; Maintenance and Inspection of MSA Firehawk; Revision 8
- RP-QC-8700; Operation of the MAKO Air Compressor; Revision 9
- Assignment 1152368; Radiological Hazard Assessment and Exposure Controls, Occupational ALARA Planning and Controls; March 9, 2011

Section 2RS6

- 10 CFR 50.75(g) Documented Contaminated Areas Spreadsheet; July 27, 2011
- 2008 Radioactive Effluent Release Report; April, 28, 2009
- 2009 Radioactive Effluent Release Report; April, 28, 2010
- 2010 Land Use Census, August 28, 2010
- 2010 Radioactive Effluent Release Report; April 27, 2011
- 2011 Land Use Census, August 21, 2011
- AR 00852164; Insignificant Abnormal Radiological Effluent Release; November 20, 2008
- AR 00873525; NRC Effluent Inspection Recommendation; January 29, 2009
- AR 00998214; NOSA-QDC-10-04 Chemistry Audit Report; June 23, 2010
- AR 01302531; NRC Identified Procedural Form Incomplete; December 14, 2011

- CY-AA-130-201; Radiochemistry Quality Control; Revision 1
- CY-AA-170-2000; Annual Radioactive Effluent Release Report; Revision 5
- CY-QC-110-605; Reactor Building Vent Gaseous and Particulate Sampling; Revision 12
- CY-QC-110-606; Main Chimney Gaseous and Particulate Sampling; Revision 16
- CY-QC-110-607; Sampling Residual Heat Removal Heat Exchangers; Revision 1
- CY-QC-120-720; Plant Effluent Dose Calculations; Revision 4
- CY-QC-120-724; Continuous Liquid Effluent Analysis; Revision 2
- CY-QC-120-726; Fe-55, Sr-89, Sr-90 and Gaseous Alpha Release; Revision 3
- CY-QC-120-727; Liquid and Gaseous Alpha Release Calculations; Revision 1
- CY-QC-120-730; Main Chimney Noble Gas Release; Revision 2
- CY-QC-120-731; Reactor Vent Noble Gas Release Calculations; Revision 1

Section 40A1

- NEI 99-02; Regulatory Assessment Performance Indicator Guideline, Revision 6
- Enterprise Maintenance Rule Production Database for the following systems:
 - Z2300; High Pressure Coolant Injection System
 - Z1000; Residual Heat Removal System
 - Z6600; Diesel Generator System
 - Z1300; Reactor Core Isolation Cooling System
 - Z9700; 345 kV Switchyard
- System Engineer Notebook and Accountability Logs for the following systems: Residual Heat Removal, RHR Service Water, Reactor Core Isolation Cooling, HPCI, and Emergency Diesel Generators
- EP-AA-125-1002; ERO Performance - Performance Indicators Guidance; Revision 6
- EP-AA-125-1003; ERO Readiness - Performance Indicators Guidance; Revision 7
- LS-AA-2110; Monthly Data Elements for NRC Emergency Response Organization (ERO) Drill Participation; December 2010 - September 2011
- LS-AA-2120; Monthly Data Elements for NRC Drill/Exercise Performance; October 2010 - September 2011
- LS-AA-2130; Monthly Data Elements for NRC Alert and Notification System (ANS) Reliability; October 2010 - September 2011
- EP-AA-125-1002; DEP Performance Indicator Summaries;
 - October 2011 - September 2011
- EP-AA-125-1003; Key ERO Participation and Stability Monthly Data Reporting Elements;
 - December 2010 - September 2011
- NRC Performance Indicator Monthly Data Summary; October 2010 - September 2011
- AR 0126996; Performance Indicator DEP Wind Speed Notification Close Call;
 - September 29, 2011
- AR 01258308; EP DEP Performance Indicator Opportunity Requires Rescheduling;
 - September 1, 2011
- AR 01244176; NRC Identified Issue Related to ERO Drill Participation Opportunities at Different Sites;
 - July 26, 2011
- AR 01188565; PI- Shift Manager Inappropriately Given Credit for EP Shift Communicator;
 - March 17, 2011

Section 4OA2

- AR 01205773; NOS ID'd Procedure use Issues for CA Products
- AR 01016632; FASA - Procedure Use and Adherence
- AR 00961927; Procedure Use Issue ID'd in CCA for 2009 Department Clock Resets
- AR 01262130; Operations Fundamentals and Procedure Use and Adherence
- AR 01203291; Operations Procedure Adherence Window is Yellow for 1Q2011
- AR 01245599; Operations Procedure Adherence Window is Yellow for 2Q2011
- WC-MW-114; Predefined Cover Sheet; Revision 0
- HU-AA-104-101; Procedure Use and Adherence; Revision 4
- LS-AA-125-1002; Common Cause Analysis Manual; Revision 7
- MA-AA-716-011; Work Execution and Close Out; Revision 16
- IR 1271143; Work Hour Rule Violation 34 Hour Break in 9 Days

Section 4OA3

- IR 1237065; Quad Cities Unit ½ 'B' Control Room Ventilation System Chiller secured due to an increase in vibration amplitude by a broken chiller connecting rod; 7/6/2011
- Root Cause Report for IR 1237065
- LER 254/2011-003-00, Control Room Emergency Ventilation Air Conditioning System Inoperable; 9/1/2011

LIST OF ACRONYMS USED

AC	Alternating Current
ACE	Apparent Cause Evaluation
ADAMS	Agencywide Document Access Management System
ALARA	As-Low-As-Reasonably-As-Is-Reasonably-Achievable
AR	Action Request
CAP	Corrective Action Program
CCA	Common Cause Analysis
CFR	Code of Federal Regulations
CREV	Control Room Emergency Ventilation
DEP	Drill/Exercise Performance
EP	Emergency Preparedness
ERO	Emergency Response Organization
FASA	Focused Area Self-Assessment
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Issue Report
LER	Licensee Event Report
LORT	Licensed Operator Requalification Program
MSPI	Mitigating Systems Performance Index
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
PARS	Publicly Available Records System
PI	Performance Indicator
RCU	Refrigeration Condensing Unit
SDP	Significance Determination Process
SPAC	Standards, Policies, and Administrative Controls
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
WO	Work Order

M. Pacilio

-2-

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's Agencywide Document Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

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

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

Enclosure: Inspection Report 05000254/2011005; 05000265/2011005
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Letter to M. Pacilio from M. Ring dated January 31, 2012

SUBJECT: QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2 -
NRC INTEGRATED INSPECTION REPORT 05000254/2011005;
05000265/2011005

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