



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION III
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LISLE, IL 60532-4352

January 27, 2014

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

SUBJECT: QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2
NRC INTEGRATED INSPECTION REPORT 05000254/2013005;
05000265/2013005

Dear Mr. Pacilio:

On December 31, 2013, 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 7, 2014, 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 findings were identified during this inspection.

As a result of the Safety Culture Common Language Initiative, the terminology and coding of cross-cutting aspects were revised beginning in calendar year (CY) 2014. New cross-cutting aspects identified in CY 2014 will be coded under the latest revision to Inspection Manual Chapter (IMC) 0310. Cross-cutting aspects identified in the last 6 months of 2013 using the previous terminology will be converted to the latest revision in accordance with the cross-reference in IMC 0310. The revised cross-cutting aspects will be evaluated for cross-cutting themes and potential substantive cross-cutting issues in accordance with IMC 0305 starting with the CY 2014 mid-cycle assessment review.

M. Pacilio

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In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and 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 System (PARS) component of NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA by C. Phillips for/

Christine Lipa, Chief
Branch 1
Division of Reactor Projects

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

Enclosure:
IR 05000254/2013005; 05000265/2013005
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.: 05000254/2013005; 05000265/2013005

Licensee: Exelon Generation Company, LLC

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

Location: Cordova, IL

Dates: October 1 through December 31, 2013

Inspectors: R. Murray, Senior Resident Inspector
J. McGhee, Senior Resident Inspector
B. Cushman, Resident Inspector/Acting Senior
Resident Inspector
S. Shah, Acting Resident Inspector
R. Jickling, Senior Emergency Preparedness Inspector
J. Laughlin, Emergency Preparedness Inspector
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Approved by: Christine Lipa, Chief
Branch 1
Division of Reactor Projects

Enclosure

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SUMMARY OF FINDINGS

Inspection Report (IR) 05000254/2013005; 05000265/2013005; 10/01/13 - 12/31/13;
Quad Cities Nuclear Power Station, Units 1 and 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 inspection findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using IMC 0609, "Significance Determination Process" dated June 2, 2011. Cross-cutting aspects are determined using IMC 0310, "Components Within the Cross Cutting Areas" dated October 28, 2011. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy dated January 28, 2013. 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 findings were identified.

B. Licensee-Identified Violations

No findings were identified.

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, 2013, with the exception of planned power reductions for routine surveillances, main condenser flow reversals, planned equipment repair, and control rod maneuvers.

Unit 2

Unit 2 operated at 100 percent thermal power throughout the evaluated period from October 1 through December 31, 2013, with the exception of planned power reductions for routine surveillances, main condenser flow reversals, planned equipment repair, and control rod maneuvers.

1. REACTOR SAFETY

Cornerstone: 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. Documents reviewed 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:

- heating steam; and
- Unit 2 safety related battery room heating, ventilation, and air conditioning.

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 high pressure coolant injection system with 345kV switchyard line 0405 and bus 3 out of service for planned maintenance;
- Unit 2 standby liquid control system;
- Unit 1 residual heat removal 'A' train with the 1B residual heat removal pump inoperable; and
- Unit 1 reactor core isolation cooling system.

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.

These activities constituted four partial system walkdown samples 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 9.3, Unit 1/2 Reactor Building, Elevation 595'-0", 1/2 Diesel Generator;
- Fire Zone 1.1.1.5, Unit 1 Reactor Building, Elevation 666'-6", Standby Gas Treatment Fourth Floor West;
- Fire Zone 11.1.4, Unit 2 Reactor Building, Elevation 554'-0", HPCI Pump Room;
- Fire Zone 1.1.2.5, Unit 2 Reactor Building, Elevation 666'-6", Standby Liquid Control 4th Floor West; and
- Fire Zone 1.1.1.6, Unit 1/2 Reactor Building, Elevation 609'-6", Refuel Floor.

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.

1R06 Flooding (71111.06)

.1 Internal Flooding

a. Inspection Scope

The inspectors reviewed selected risk important plant design features and licensee procedures intended to protect the plant and its safety-related equipment from internal flooding events. The inspectors reviewed flood analyses and design documents, including the UFSAR, engineering calculations, and abnormal operating procedures to identify licensee commitments. In addition, the inspectors reviewed licensee drawings to identify areas and equipment that may be affected by internal flooding caused by the failure or misalignment of nearby sources of water, such as the fire suppression or the circulating water systems. The inspectors also reviewed the licensee's corrective action documents with respect to past flood-related items identified in the corrective action program to verify the adequacy of the corrective actions. The inspectors performed a walkdown of the following plant areas to assess the adequacy of watertight doors and

verify drains and sumps were clear of debris and were operable, and that the licensee complied with its commitments:

- Unit 1 and Unit 2 high pressure coolant injection rooms; and
- Unit 1 'A' core spray/reactor core isolation cooling room and Unit 2 'B' core spray/reactor core isolation cooling room.

This inspection constituted two internal flooding samples as defined in IP 71111.06-05.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program (71111.11)

.1 Annual Testing Results (71111.11A)

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, and the Annual Operating Test, administered by the licensee from September 30 through November 8, 2013, 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. (Section 02.02)

This inspection constituted one annual licensed operator requalification examination results sample as defined in IP 71111.11-05.

b. Findings

No findings were identified.

.2 Biennial Review (71111.11B)

a. Inspection Scope

The following inspection activities were conducted during the week of October 21, 2013, to assess: 1) the effectiveness and adequacy of the facility licensee's implementation and maintenance of its systems approach to training (SAT) based 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.

- Licensee Requalification Examinations (10 CFR 55.59(c); Systems Approach to Training, 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 conducted a detailed review of one biennial requalification written examination to assess content, level of difficulty, and quality of the written examination materials. (Section 02.03)
- The inspectors conducted a detailed review of ten job performance measures, two static exams, and six dynamic simulator scenarios to assess content, level of difficulty, and quality of the operating test materials. (Section 02.04)
- The inspectors observed the administration of the annual operating test to assess the licensee's effectiveness in conducting the examination(s), 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 simulator crews in parallel with the facility evaluators during four dynamic simulator scenarios and evaluated various licensed crew members concurrently with facility evaluators during the administration of several job performance measures. (Section 02.05)
- 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. (Section 02.07)
- Conformance with Examination Security Requirements (10 CFR 55.49): The inspectors conducted an assessment of the licensee's processes related to examination of 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. (Section 02.06)
- 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 ten licensed operators and which control room positions were granted watch-standing credit for maintaining active operator licenses. Additionally, medical records for ten licensed operators were reviewed for compliance with 10 CFR 55.53(l). (Section 02.08)
- Conformance with Simulator Requirements Specified in 10 CFR 55.46: The inspectors assessed the adequacy of the licensee's simulation facility (i.e., 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, scenario based tests, post-event tests, steady state tests, and core model 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 10 CFR 55.59 operator actions, as well as on nuclear and thermal hydraulic operating characteristics. (Section 02.09)

- Problem Identification and Resolution (10 CFR 55.59(c); Systems Approach to Training, Element 5, as Defined in 10 CFR 55.4): The inspectors assessed the licensee's ability to identify, evaluate, and resolve problems associated with licensed operator performance (e.g., a measure of 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 licensed operator performance issues (e.g., recent examination and inspection reports including Cited and Non-Cited Violations; NRC End of Cycle and Mid-Cycle reports; NRC plant issue matrix; licensee event reports; licensee condition/problem identification reports including documentation of plant events and review of industry operating experience). The inspectors also sampled the licensee's quality assurance oversight activities, including licensee training department self-assessment reports. (Section 02.10)

This inspection constituted one biennial Licensed Operator Requalification Program inspection sample as defined in IP 71111.11-05.

b. Findings

No findings were identified.

.3 Resident Inspector Quarterly Review of Licensed Operator Requalification (71111.11Q)

a. Inspection Scope

On October 29, 2013, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator requalification training to verify that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and training was being conducted in accordance with licensee procedures. The inspectors evaluated the following areas:

- licensed operator performance;
- crew's clarity and formality of communications;
- ability to take timely actions in the conservative direction;
- prioritization, interpretation, and verification of annunciator alarms;
- correct use and implementation of abnormal and emergency procedures;
- control board manipulations;
- oversight and direction from supervisors; and
- ability to identify and implement appropriate TS actions and Emergency Plan actions 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 simulator sample as defined in IP 71111.11.

b. Findings

No findings were identified.

.4 Resident Inspector Quarterly Observation of Heightened Activity or Risk (71111.11Q)

a. Inspection Scope

On November 29, 2013, the inspectors observed control room operators during a company holiday when the licensee was responding to a steam packing leak on the feedwater regulating valve, which required taking the valve to manual operation.

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 (if applicable);
- correct use and implementation of procedures;
- control board (or equipment) manipulations;
- oversight and direction from supervisors; and
- ability to identify and implement appropriate TS actions and Emergency Plan actions and notifications (if applicable).

The performance in these areas was compared to pre-established operator action expectations, procedural compliance and task completion requirements.

This inspection constituted one quarterly licensed operator heightened activity/risk sample as defined in IP 71111.11.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Routine Quarterly Evaluations

a. Inspection Scope

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

- Z9701: 13.8 kV Distribution; and
- Z1800: Area Radiation Monitoring.

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.

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 13-45-08 (Unit 1 station blackout diesel generator planned maintenance, Unit 2 high pressure coolant injection pump room cooler maintenance, Unit 2 automatic depressurization system logic test, and emergent repairs to service water leak in cribhouse basement)

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.

Documents reviewed during this inspection are listed in the Attachment to this report. These maintenance risk assessments and emergent work control activities constituted one sample 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) 1563225: Broken Spring Bearings Found On [2C Residual Heat Removal Service Water] Check Valve 2-1001-2C (FME);
- IR 1567577: Pinhole Leak in Weld on [High Pressure Coolant Inspection] Drain Line from LS-2-2365;
- IR 1575716: Unsat Fire Penetration in U-1 Cable Tunnel; and
- IR 1581189: Need Contingency Plan for HPCI Room Cooler.

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:

- Unit 2 high pressure coolant injection inlet drain pot weld repair;
- 2B reactor feed pump outboard seal hose replacement;
- Unit 1/2 emergency diesel generator 2 and 4 year overhaul;
- Unit 2 emergency diesel generator td-5 time delay relay test; and
- standby liquid control pump flow rate test following accumulator replacement.

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 6500-10: Functional Test of the Unit 2 Second Level Undervoltage (Routine);
- QCOS 4100-07: Portable Direct Current Supply – Diesel Driven Generator Surveillance (Routine);
- QCOS 6600-45: Unit 2 Diesel Generator Timed Start Test (In-service Test (IST)); and
- QCOS 1100-05: Air Sparging Standby Liquid Control Tank (Routine).

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

- did preconditioning occur;
- the effects of the testing were adequately addressed by control room personnel or engineers prior to the commencement of the testing;
- acceptance criteria were clearly stated, demonstrated operational readiness, and were consistent with the system design basis;
- plant equipment calibration was correct, accurate, and properly documented;
- as-left setpoints were within required ranges; and the calibration frequency was in accordance with 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;
- where applicable for safety-related instrument control surveillance tests, reference setting data were accurately incorporated in the test procedure;
- where applicable, actual conditions encountering high resistance electrical contacts were such that the intended safety function could still be accomplished;
- prior procedure changes had not provided an opportunity to identify problems encountered during the performance of the surveillance or calibration test;
- equipment was returned to a position or status required to support the performance of its safety functions; and
- all problems identified during the testing were appropriately documented and dispositioned in the CAP.

Documents reviewed are listed in the Attachment to this report.

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

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP2 Alert and Notification System Evaluation (71114.02)

.1 Alert and Notification System Evaluation

a. Inspection Scope

The inspectors held discussions with Emergency Preparedness (EP) staff regarding the operation, maintenance, and periodic testing of the primary and backup Alert and Notification System (ANS) in the plume pathway Emergency Planning Zone. The inspectors reviewed monthly trend reports and siren test failure records from December 2011 through September 2013. Information gathered during document reviews and interviews was used to determine whether the ANS equipment was maintained and tested in accordance with Emergency Plan Commitments and Procedures. The inspectors also observed a weekly test of the ANS system. Documents reviewed are listed in the Attachment to this report.

This ANS evaluation inspection constituted one sample as defined in IP 71114.02-06.

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 station EP staff the Emergency Plan commitments and procedures for Emergency Response Organization (ERO) on-shift and augmentation staffing levels. A sample of approximately 12 ERO training records was reviewed to evaluate ERO key and support positional training. The inspectors reviewed the ERO augmentation system and activation process, the primary and alternate methods of initiating ERO activation, quarterly unannounced off-hour augmentation tests from February 2012 through September 2013, and the provisions for maintaining the plant's ERO roster.

The inspectors reviewed a sample of corrective actions related to the facility's ERO Staffing and Augmentation System Program and activities from September 2011 through August 2013 to determine whether corrective actions were completed in accordance with the site's CAP. Documents reviewed are listed in the Attachment to this report.

This ERO staffing and augmentation system inspection constituted one sample as defined in IP 71114.03-06.

b. Findings

No findings were identified.

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

a. Inspection Scope

The Office of Nuclear Security and Incident Response headquarters' staff performed an in-office review of the latest revisions to the Emergency Plan and various Emergency Plan Implementing Procedures (EPIPs) located under ADAMS Accession Numbers ML13162A199 and ML13200A124, as listed in the Attachment to this report.

The licensee transmitted the EPIP revisions to the NRC pursuant to the requirements of 10 CFR Part 50, Appendix E, Section V, "Implementing Procedures." The NRC review was not documented in a safety evaluation report and did not constitute approval of licensee-generated changes; therefore, this revision is subject to future inspection. The specific documents reviewed during this inspection are listed in the Attachment to this report.

This inspection of emergency action level and emergency plan changes constituted one sample as defined in IP 71114.04-06.

b. Findings

No findings were identified.

1EP5 Maintenance of Emergency Preparedness (71114.05)

.1 Maintenance of Emergency Preparedness

a. Inspection Scope

The inspectors reviewed a sample of nuclear oversight staff's audits of the EP Program to determine whether these independent assessments met the requirements of 10 CFR 50.54(t). The inspectors also reviewed critique reports and samples of CAP records associated with the 2012 Biennial Exercise, as well as various EP drills conducted, in order to determine that the licensee fulfilled its drill commitments and to evaluate the licensee's efforts to identify, track, and resolve concerns identified during these activities. The inspectors reviewed a sample of EP items and corrective actions related to the facility's EP Program and activities from December 2011 through September 2013 to determine whether corrective actions were completed in accordance with the site's CAP. Documents reviewed are listed in the Attachment to this report.

This inspection of EP weaknesses and deficiencies constituted one sample as defined in IP 71114.05-06.

b. Findings

No findings were identified.

2. RADIATION SAFETY

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 any reported performance indicators 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 as-low-as-reasonably-achievable concept.

The inspectors reviewed airborne monitoring protocols by selecting installed systems used to monitor and warn of changing airborne concentrations in the plant and evaluated whether the alarms and setpoints were sufficient to prompt licensee/worker action to ensure that doses are maintained within the limits of 10 CFR Part 20 and the as-low-as-reasonably-achievable 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 as-low-as-reasonably-achievable. 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 as-low-as-reasonably-achievable. 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). The inspectors reviewed the respirator vital components maintenance program to ensure that the repairs of vital components were performed by the respirators' manufacturer.

b. Findings

No findings were identified.

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

a. Inspection Scope

Based on the Final Safety Analysis Report, 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., onsite 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 change-out). 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 2 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. The inspectors reviewed the onsite maintenance procedures governing vital component work to determine any inconsistencies with the self-contained breathing apparatus manufacturer's recommended practices. 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 CAP. 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.

2RS4 Occupational Dose Assessment (71124.04)

This inspection constituted one complete sample as defined in IP 71124.04-05.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed the results of radiation protection program audits related to internal and external dosimetry (e.g., licensee's quality assurance audits, self-assessments, or other independent audits) to gain insights into overall licensee performance in the area of dose assessment and focus the inspection activities consistent with the principle of "smart sampling."

The inspectors reviewed the most recent National Voluntary Laboratory Accreditation Program accreditation report on the vendor's most recent results to determine the status of the contractor's accreditation.

A review was conducted of the licensee procedures associated with dosimetry operations, including issuance/use of external dosimetry (routine, multi-badging, extremity, neutron, etc.), assessment of internal dose (operation of whole body counter, assignment of dose based on derived air concentration-hours, urinalysis, etc.), and

evaluation of and dose assessment for radiological incidents (distributed contamination, hot particles, loss of dosimetry, etc.).

The inspectors evaluated whether the licensee had established procedural requirements for determining when external and internal dosimetry is required.

b. Findings

No findings were identified.

.2 External Dosimetry (02.02)

a. Inspection Scope

The inspectors evaluated whether the licensee's dosimetry vendor is National Voluntary Laboratory Accreditation Program accredited and if the approved irradiation test categories for each type of personnel dosimeter used are consistent with the types and energies of the radiation present and the way the dosimeter is being used (e.g., to measure deep dose equivalent, shallow dose equivalent, or lens dose equivalent).

The inspectors evaluated the onsite storage of dosimeters before their issuance, during use, and before processing/reading. The inspectors also reviewed the guidance provided to rad-workers with respect to care and storage of dosimeters.

The inspectors assessed whether non-National Voluntary Laboratory Accreditation Program accredited passive dosimeters (e.g., direct ion storage sight read dosimeters) were used according to licensee procedures that provide for periodic calibration, application of calibration factors, usage, reading (dose assessment) and zeroing.

The inspectors assessed the use of active dosimeters (electronic personal dosimeters) to determine if the licensee uses a "correction factor" to address the response of the electronic personal dosimeter as compared to the passive dosimeter for situations when the electronic personal dosimeter must be used to assign dose. The inspectors also assessed whether the correction factor is based on sound technical principles.

The inspectors reviewed dosimetry occurrence reports or CAP documents for adverse trends related to electronic personal dosimeters, such as interference from electromagnetic frequency, dropping or bumping, failure to hear alarms, etc. The inspectors assessed whether the licensee had identified any trends and implemented appropriate corrective actions.

b. Findings

No findings were identified.

.3 Internal Dosimetry (02.03)

Routine Bioassay (In Vivo)

a. Inspection Scope

The inspectors reviewed procedures used to assess the dose from internally deposited nuclides using whole body counting equipment. The inspectors evaluated whether the

procedures addressed methods for differentiating between internal and external contamination, the release of contaminated individuals, the route of intake and the assignment of dose.

The inspectors reviewed the whole body count process to determine if the frequency of measurements was consistent with the biological half-life of the nuclides available for intake.

The inspectors reviewed the licensee's evaluation for use of its portal radiation monitors as a passive monitoring system to determine if instrument minimum detectable activities were adequate to determine the potential for internally deposited radionuclides sufficient to prompt additional investigation.

The inspectors selected several whole body counts and evaluated whether the counting system used had sufficient counting time/low background to ensure appropriate sensitivity for the potential radionuclides of interest. The inspectors reviewed the radionuclide library used for the count system to determine its appropriateness. The inspectors evaluated whether any anomalous count peaks/nuclides indicated in each output spectra received appropriate disposition. The inspectors reviewed the licensee's 10 CFR Part 61 data analyses to determine whether the nuclide libraries included appropriate gamma-emitting nuclides. The inspectors evaluated how the licensee accounts for hard-to-detect nuclides in the dose assessment.

b. Findings

No findings were identified.

Special Bioassay (In Vitro)

a. Inspection Scope

There was no internal dose assessment obtained using *in vitro* monitoring for the inspectors to review. The inspectors reviewed and assessed the adequacy of the licensee's program for in vitro monitoring (i.e., urinalysis and fecal analysis) of radionuclides (tritium, fission products, and activation products), including collection and storage of samples.

The inspectors reviewed the vendor laboratory quality assurance program and assessed whether the laboratory participated in an industry recognized cross-check program including whether out-of-tolerance results were resolved appropriately.

b. Findings

No findings were identified.

Internal Dose Assessment – Airborne Monitoring

a. Inspection Scope

The inspectors reviewed the licensee's program for airborne radioactivity assessment and dose assessment, as applicable, based on airborne monitoring and calculations of derived air concentration. The inspectors determined whether flow rates and collection times for air sampling equipment were adequate to allow lower limits of detection to be

obtained. The inspectors also reviewed the adequacy of procedural guidance to assess internal dose if respiratory protection was used.

b. Findings

No findings were identified.

Internal Dose Assessment – Whole Body Count Analyses

a. Inspection Scope

The inspectors reviewed several dose assessments performed by the licensee using the results of whole body count analyses. The inspectors determined whether affected personnel were properly monitored with calibrated equipment and that internal exposures were assessed consistent with the licensee's procedures.

b. Findings

No findings were identified.

.4 Special Dosimetric Situations (02.04)

Declared Pregnant Workers

a. Inspection Scope

The inspectors assessed whether the licensee informs workers, as appropriate, of the risks of radiation exposure to the embryo/fetus, the regulatory aspects of declaring a pregnancy, and the specific process to be used for (voluntarily) declaring a pregnancy.

The inspectors selected individuals who had declared pregnancy during the current assessment period and evaluated whether the licensee's radiological monitoring program (internal and external) for declared pregnant workers is technically adequate to assess the dose to the embryo/fetus. The inspectors reviewed exposure results and monitoring controls employed by the licensee and with respect to the requirements of 10 CFR Part 20.

b. Findings

No findings were identified.

Dosimeter Placement and Assessment of Effective Dose Equivalent for External Exposures

a. Inspection Scope

The inspectors reviewed the licensee's methodology for monitoring external dose in non-uniform radiation fields or where large dose gradients exist. The inspectors evaluated the licensee's criteria for determining when alternate monitoring, such as use of multi-badging, was to be implemented.

The inspectors reviewed dose assessments performed using multi-badging to evaluate whether the assessment was performed consistently with licensee procedures and dosimetric standards.

b. Findings

No findings were identified.

Shallow Dose Equivalent

a. Inspection Scope

The inspectors reviewed shallow dose equivalent dose assessments for adequacy. The inspectors evaluated the licensee's method (e.g., VARSKIN or similar code) for calculating shallow dose equivalent from distributed skin contamination or discrete radioactive particles.

b. Findings

No findings were identified.

Neutron Dose Assessment

a. Inspection Scope

The inspectors evaluated the licensee's neutron dosimetry program, including dosimeter types and/or survey instrumentation.

The inspectors reviewed neutron exposure situations (e.g., independent spent fuel storage installation operations or at-power containment entries) and assessed whether: (a) dosimetry and/or instrumentation was appropriate for the expected neutron spectra; (b) there was sufficient sensitivity for low dose and/or dose rate measurement; and (c) neutron dosimetry was properly calibrated. The inspectors also assessed whether interference by gamma radiation had been accounted for in the calibration and whether time and motion evaluations were representative of actual neutron exposure events, as applicable.

b. Findings

No findings were identified.

Assigning Dose of Record

a. Inspection Scope

For the special dosimetric situations reviewed in this section, the inspectors assessed how the licensee assigns dose of record for total effective dose equivalent, shallow dose equivalent, and lens dose equivalent. This included an assessment of external and internal monitoring results, supplementary information on Individual exposures (e.g., radiation incident investigation reports and skin contamination reports), and radiation surveys and/or air monitoring results when dosimetry was based on these techniques.

b. Findings

No findings were identified.

.5 Problem Identification and Resolution (02.05)

a. Inspection Scope

The inspectors assessed whether problems associated with occupational dose assessment are being identified by the licensee at an appropriate threshold and are properly addressed for resolution in the licensee CAP. The inspectors assessed the appropriateness of the corrective actions for a selected sample of problems documented by the licensee involving occupational dose assessment.

b. Findings

No findings were identified.

3. OTHER ACTIVITIES

40A1 Performance Indicator (PI) Verification (71151)

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

.1 Occupational Exposure Control Effectiveness

a. Inspection Scope

The inspectors sampled licensee submittals for the occupational radiological occurrences PI for the period from the second quarter 2012 through the second quarter 2013. The inspectors used PI definitions and guidance contained in the Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 2013, to determine the accuracy of the PI data reported during those periods. The inspectors reviewed the licensee's assessment of the PI for occupational radiation safety to determine if indicator related data was adequately assessed and reported.

The inspectors discussed with the radiation protection staff, the scope, and breadth of its data review and the results of those reviews, to better assess the adequacy of the licensee's PI data collection and analyses to assess the adequacy of the licensee's PI data collection and analyses, the inspectors discussed with radiation protection staff, the scope, and breadth of its data review and the results of those reviews. The inspectors independently reviewed electronic personal dosimetry dose rate and accumulated dose alarms and dose reports, and the dose assignments for any intakes that occurred during the time period reviewed to determine if there were potentially unrecognized occurrences. The inspectors also conducted walkdowns of numerous locked high and very-high radiation area entrances to determine the adequacy of the controls in place for these areas. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one occupational exposure control effectiveness sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.2 Mitigating Systems Performance Index - Emergency AC Power System

a. Inspection Scope

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index (MSPI) - Emergency AC Power System performance indicator for Quad Cities Unit 1 and Unit 2 for the period from the fourth quarter 2012 through the third quarter 2013. 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 7, dated August 2013, 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 2012 through September 2013 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.

.3 Mitigating Systems Performance Index - High Pressure Injection Systems

a. Inspection Scope

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index - High Pressure Injection Systems performance indicator for Quad Cities Unit 1 and Unit 2 for the period from the fourth quarter 2012 through the third quarter 2013. 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 7, dated August 2013, 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 2012 through September 2013 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 of significance were identified.

.4 Mitigating Systems Performance Index - Heat Removal System

a. Inspection Scope

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index - Heat Removal System performance indicator for Quad Cities Unit 1 and Unit 2 for the period from the fourth quarter 2012 through the third quarter 2013. 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 7, dated August 2013, 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 2012 through September 2013 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 of significance were identified.

.5 Mitigating Systems Performance Index - Residual Heat Removal System

a. Inspection Scope

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index - Residual Heat Removal System performance indicator for Quad Cities Unit 1 and Unit 2 for the period from the fourth quarter 2012 through the third quarter 2013. 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 7, dated August 2013, 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 2012 through September 2013 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 of significance were identified.

.6 Mitigating Systems Performance Index - Cooling Water Systems

a. Inspection Scope

The inspectors sampled licensee submittals for the Mitigating Systems Performance Index - Cooling Water Systems performance indicator for Quad Cities Unit 1 and Unit 2 for the period from the fourth quarter 2012 through the third quarter 2013. 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 7, dated August 2013, 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 2012 through September 2013 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 of significance were identified.

.7 Drill/Exercise Performance

a. Inspection Scope

The inspectors sampled licensee submittals for the Drill/Exercise (DEP) Performance Indicator (PI) for the period from the fourth quarter 2012 through the second quarter 2013. The inspectors used PI definitions and guidance contained in the NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 2013, to determine the accuracy of the PI data reported during those periods. The inspectors reviewed the licensee's records and processes, including procedural guidance on assessing opportunities for the PI; assessments of PI opportunities during pre-designated control room simulator training sessions; performance during the 2012 Biennial Exercise; and performance during other drills associated with the PI to validate

the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems were 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 one DEP sample as defined in IP 71151-05.

b. Findings

No findings were identified.

.8 Emergency Response Organization Readiness

a. Inspection Scope

The inspectors sampled licensee submittals for the ERO PI for the period from the fourth quarter 2012 through the second quarter 2013. The inspectors used PI definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 2013, to determine the accuracy of PI data reported during those periods. The inspectors reviewed the licensee's records and processes, including procedural guidance on assessing opportunities for the PI; performance during the 2012 Biennial Exercise and other drills and revisions of the roster of personnel assigned to key ERO positions, to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine if any problems were 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 one ERO readiness sample as defined in IP 71151-05.

a. Findings

No findings were identified.

.9 Alert and Notification System Reliability

a. Inspection Scope

The inspectors sampled licensee submittals for the ANS PI for the period from the fourth quarter 2012 through the second quarter 2013. The inspectors used PI definitions and guidance contained in NEI Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, dated August 2013, to determine the accuracy of the PI data reported during those periods. The inspectors reviewed the licensee's records and processes, including procedural guidance on assessing opportunities for the PI and results of periodic ANS operability tests, to validate the accuracy of the submittals. The inspectors also reviewed the licensee's issue report database to determine whether any problems were 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 one ANS reliability 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 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 follow-up, 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 June 2013 through December 2013, although some examples expanded beyond those dates where the scope of the trend warranted.

The review 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 one semi-annual trend inspection sample as defined in IP 71152-05.

b. Findings

No findings were identified.

4OA5 Other Activities

.1 Licensee Strike Contingency Plans (92709)

a. Inspection Scope

The International Brotherhood of Electrical Workers (IBEW) Local 15 contract affecting the site was scheduled to expire on December 31, 2013. In the absence of a contract agreement an inspection was needed to ensure the continued safe operation of the facility. The inspectors reviewed the licensee's work stoppage plans to determine if the plans adequately addressed the areas of reactor operations, emergency planning, facility security, fire protection, technical specifications, and other regulatory requirements in the event of an employee strike or management lockout. The inspectors reviewed records and conducted interviews with licensee staff to verify that qualified personnel would be available to meet the minimum requirements for safe operation of the plant, if a strike or lockout were to occur. No actual work stoppage occurred during the inspection period.

b. Findings

No findings were identified.

4OA6 Management Meetings

.1 Exit Meeting Summary

On January 7, 2013, the inspectors presented the inspection results to Mr. T. Hanley, 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 inspection results from the Biennial Licensed Operator Requalification Program area assessment were discussed with Mr. T. Hanley, Site Vice President, on October 25, 2013.
- The results of the EP Program inspection were discussed with Mr. S. Darin, Plant Manager, on October 25, 2013.
- The inspection results for the areas of in-plant airborne radioactivity control and mitigation; occupational dose assessment; and occupational exposure control effectiveness performance indicator verification were discussed with Mr. S. Darin, Plant Manager, on October 25, 2013.

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.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

T. Hanley, Site Vice President
S. Darin, Plant Manager
W. Beck, Regulatory Assurance Manager
D. Collins, Radiation Protection Manager
J. Friedrichsen, NOS Lead Assessor
D. Luebbe, Work Control Manager
A. Misak, Deputy Maintenance Director
K. Ohr, Site Engineering Director
T. Petersen, Regulatory Assurance Lead
S. Piepenbrink, Security Manager
S. Specht, Operations Support and Services Manager
B. Wake, Operations Shift Manager
J. Wooldridge, Chemistry Manager

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

None

Closed

None

Discussed

None

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

- Letter to Dan Enright, Senior Vice President of Mid-West Operations from Tim Hanley, Site Vice President Quad Cities Generating Station, Subject: Certification of 2013-2014 Winter Readiness
- QCOP 0010-01: Winterizing Checklist
- WC-AA107: Seasonal Readiness

Section 1R04

- M-46: Diagram of Unit 1 High Pressure Coolant Injection – HPCI Piping
- UFSAR Section 6.3 Emergency Core Cooling System
- QCOP 2300-15: Unit 1 HPCI Preparation for Standby Operation
- QCOP 1100-01: Standby Operation of Standby Liquid Control System; Revision 13
- QCOS 1100-14: Standby Liquid Control System Outage Surveillance; Revision 4
- QCOP 1000-49: Unit 1 RHR System Preparation for Standby Operation; Revision 1
- QCOP 1300-01: RCIC System Preparation for Standby Operation; Revision 42

Section 1R05

- Pre-fire Plan FZ 9.3: Unit 1/2 Reactor Bldg. El. 595'-0" 1/2 Diesel Generator
- Fire Hazard Analysis for Fire Zone 9.3 (Fire Area: RB 1/2)
- Pre-fire Plan FZ 1.1.1.5: Unit 1 Reactor Bldg. El. 666'-6" Stand-by Gas Treatment 4th Floor West
- Fire Hazard Analysis for Fire Zone 1.1.1.5 (Fire Area: RB 1)
- Pre-fire Plan FZ 1.1.1.6: Unit 1/2 Reactor Bldg. El. 609'-6" Refuel Floor
- Fire Hazard Analysis for Fire Zone 1.1.1.6 (Fire Area: RB 1/2)
- Pre-fire Plan FZ 1.1.2.5: Unit 2 Reactor Bldg. El. 666'-6" Stand-by Gas Treatment 4th Floor West
- Fire Hazard Analysis for Fire Zone 1.1.2.5 (Fire Area: RB 2)
- Pre-fire Plan FZ 11.1.4: Unit 2 Reactor Bldg. El. 554'-0" HPCI Pump Room
- Fire Hazard Analysis for Fire Zone 11.1.4 (Fire Area: RB 2)

Section 1R06

- UFSAR 3.4.1.2 Internal Flood Protection Measures
- IR 1567561: NRC Questioned Placement Max Safe Water Level QGA Placard
- IR 1567537: NRC Identified Unit 2 HPCI Trolley Hoist Chain Not Secured
- Drawing M-6: General Arrangement Basement Floor Plan

Section 1R11

- LS-AA-126-1002, Revision 7: QCNPS Pre-NRC IP-711111.11B Self-Assessment Report (FASA); August 30, 2013

- TQ-AA-155: Conduct of Simulator Training and Evaluation; Revision 2
- TQ-AA-150: Operator Training Programs; Revision 9
- TQ-AA-1002 : Training Committees; Revision 12
- TQ-AA-201: Examination Security and Administration; Revision 15
- TQ-AA-306: Simulator Management; Revision 5
- OP-AA-105-102: NRC Active License Maintenance; Revision 9
- OP-AA-105-101: Administrative Process for NRC License and Medical Requirements; Revision 14
- OP-AA-101-113: Operator Fundamentals; Revision 7
- LS-AA-120: Issue Identification and Screening Process; Revision 15
- OP-AA-101-113-1006: 4.0 Crew Critique Guidelines; Revision 3
- LS-AA-125: Corrective Action Program (CAP) Procedure ; Revision 17
- HU-AA-101: Human Performance Tools and Verification Practices; Revision 8
- OP-AA-101-111-1001: Operations Standards and Expectations; Revision 13
- HU-AA-102: Technical Human Performance Practices; Revision 7
- TQ-AA-205: Training Records; Revision 5
- HU-AA-1211: Pre-Job Briefings; Revision 9
- OP-QC-102-106: Operator Response Time Program at Quad Cities; Revision 2
- SY-AA-102-206: Reporting Use of Medication; Revision 7
- AR 01361481 Assign 23: U-2 EDG Voltage Regulator Response; January 31, 2013
- AR 01431240 Assign 03: Training Request 1361481-23 Initiated for U-2 EDG Voltage Regulator Response; November 21, 2012
- AR 01431746 Assign 54: TRNG - U-2 EDG Regulator Response IR 1431240; April 16, 2013
- AR 01431746 Assign 55: TRNG - U-2 EDG Regulator Response IR 1431240; June 28, 2013
- AR 01576237: NRC ID – TQ-AA-306 Documentation for Simulator Core Model Testing; October 24, 2013
- AR 01345302: 345 KV Disconnect Closed into Ground; March 24, 2012
- AR 01467539: Unplanned Isolation of U-2 HPCI; January 27, 2013
- AR 01394385: Procedure Enhancements for QCOA 6100-03 and 04; July 29, 2012
- AR 01393806 Assign 99: TRNG – Team Building 2013; March 8, 2013
- Q1C23 Core Model Test: Revision 0
- Curriculum Review Committee LORT Minutes; January 5, 2012
- Curriculum Review Committee LORT Minutes; April 26, 2012
- Curriculum Review Committee LORT Minutes; May 18, 2012
- Curriculum Review Committee LORT Minutes; July 12, 2012
- Curriculum Review Committee LORT Minutes; January 31, 2013
- Curriculum Review Committee LORT Minutes; April 10, 2013
- Curriculum Review Committee LORT Minutes; July 18, 2013
- Simulator Review Board Minutes; Various for 2012 and 2013
- Simulator Review Board 13-6 Minutes to Review Q1C23 Core Model Test – Test Exceptions; October 24, 2013
- LORT Presentation: Maintaining Your License Requirements; Revision 0
- Operating Exam Number Twenty; Revision 16
- Operating Exam Number Ten; Revision 17
- Operating Exam Number Eight; Revision 15
- Operating Exam Number Five; Revision 21
- Operating Exam Number Six; Revision 13
- 2013 Crew 'D' Written Exam – SRO
- 2013 Crew 'D' Written Exam – RO
- 2013 Crew 'D' Static Exam – SRO
- 2013 Crew 'D' Static Exam – RO

- 2013 Annual Operating Test JPMs; various
- OP-AA-105-102, Attachment 2: Reactivation of License Logs; August 14 to September 20, 2013
- Simulator Work Request Report; January 1, 2012 to October 22, 2013
- OP-AA-105-102, Attachment 1: Active License Tracking Logs; various
- Training Load QC1304.00 Summary; July 26, 2013
- Scenario Based Tests; various
- Simulator Work Request 14046: Loss of 125Vdc Bus 1A Doesn't Isolate U-2 RB Vents; June 15, 2012
- Simulator Work Request 14078: DFWLC Reactor Pressure Instruments Displaying as Unknown on OWS; July 1, 2012
- Simulator Work Request 14413: Unexpected Safe Shutdown System Trouble Alarm (912-8 A-8); November 28, 2012
- Simulator Work Request 14513: Overcurrent Trip Didn't Work When Powered From Unit 2; March 5, 2013
- Simulator Work Request 14627: Found Ability to Insert a Control Rod When Giving a Rod Withdraw Signal; March 25, 2013
- Simulator Work Request 14752: Install EC 371545 U-1 High Pressure Scram Setpoint Increase; May 20, 2013
- TQ-AA-223-F070: Document Based Instruction Guide – Performing Transmission Switching Orders; Revision 1
- TQ-AA-224-F100, Revision 3: Remedial Training Notification and Action on Failure, LORT Cycle 12-06; November 6, 2012
- TQ-AA-224-F900, Revision 5: Performance Review Committee Data Sheet, PRC Due to Failure of an Annual Operating Test; November 9, 2012
- TQ-AA-155-F05, Revision 1: Simulator Evaluation Form – Crew F-1; November 6, 2012
- TQ-AA-155-F05, Revision 1: Simulator Evaluation Form – Crew F-1 (Re-evaluation); November 13, 2012

Section 1R12

- Enterprise Maintenance Rule Production Database for the following systems:
Z9401: 13.8 kV Distribution
Z1800: Area Radiation Monitoring
- UFSAR Chapter 8.3, Onsite Power Systems
- IR 1523287: MRFF For 13.8KV Function For Loss of Power to SBO Building
- IR 1521898: Unexpected Loss of Transformer 22
- IR 1393215: 13.8 Yard De-energized on Overcurrent
- IR 1480464: Unit 2 RCIC Area ARM #12 Failed
- IR 1496023: Spurious Alarms From Unit 2 ARM 11 (HPCI Room)
- IR 1504720: ARM 11 (Unit 2 HPCI Room) Failed High
- IR 1509082: ARM Sensor Converter Multiple Failures
- IN 2013-01: Emergency Action Level Thresholds Outside the Range of Radiation Monitors

Section 1R13

- Work Week Safety Profile 13-45-08

Section 1R15

- IR 1563225: Broken Spring Bearings Found On Check Valve 2-1001-2C (FME)
- WO 1531522: Replace Check Valve

- M-79: Diagram of RHR Service Water Piping
- VETIP Binder C0226: Dual Plate Check Valves, Mission & Manin; 12" Duo-Check Style B Yield-Neck Flange Assembly
- IR 1567577: Pinhole Leak in Weld on Drain Line from LS 2-2365; 10/03/2013
- IR 1575716: Unsat Fire Penetration in U-1 Cable Tunnel; 10/23/2013
- IR 1576083: Unsat Fire Penetrations in U-2 Cable Tunnel; 10/24/2013
- IR 1581189: Need Contingency Plan for HPCI Room Cooler; 11/5/2013
- ECR 412141: Request Authorization to use Stabilizers on the Unit 2 HPCI Room Cooler Tube Sheet ASME Application
- QDC-5700-M-0806: Emergency Core Cooling System (ECCS) Room Cooler Performance Calculation under Design Basis and Degraded Conditions.

Section 1R19

- NDE Report 13-PT-041
- QCMMS 6600-03: Emergency Diesel Generator Periodic Preventive Maintenance Inspection TIC-3165; Revision 29A
- QCOP 6600-05: Share Unit Diesel Generator Startup; Revision 35
- QCOS 1400-17: Unit 2 Division I Core Spray Logic Functional Test; Revision 2
- WO #483242: ASR Relay Replacement
- WO #644268: (LR) Diesel Generator Periodic Inspection
- QOP 3200-03: Startup of the Second and Third Reactor Feed Pumps; Revision 39
- QCOS 6600-54: Emergency Diesel Generator TD-5 Time Delay Relay Testing; Revision 4
- WO #1587107: Emergency DG TD-5 Time Delay Relay Test
- QCOS 1100-07: SBLC Pump Flow Rate Test
- WO #1661786: 'A' SBLC Pump Flow Rate Test (IST)

Section 1R22

- QCOS 6500-10: Functional Test of Unit 2 Second Level Undervoltage; Revision 29
- QCOS 4100-07: Portable DC Supply – Diesel Driven Generator Surveillance; Revision 8
- QCOS 6600-45: Unit 2 Diesel Generator Timed Start Test; Revision 19
- WO #1659296: Diesel Generator Timed Start (IST)
- QCOS 1100-05: Air Sparging SBLC Tank

Section 1EP2

- EP-AA-1000: Exelon Nuclear Standardized Radiological Emergency Plan-Section E, Notification Methods; Revision 24
- Offsite Emergency Plan Alert and Notification System Addendum for Quad Cities Nuclear Power Station; May 2013
- U.S. Department of Homeland Security, FEMA Letter; Backup Alert and Notification System; December 10, 2012
- Quad Cities Plant Warning System Annual Maintenance and Operational Reports; November 2011 and November 2012
- Semi-Annual Quad Cities Siren Reports; July 2011 – June 2013
- Quad Cities Monthly Siren Availability Reports; January 2012 – September 2013
- AR 01368971: Single Siren Failure; May 21, 2012

Section 1EP3

- Exelon Nuclear Standardized Radiological Emergency Plan; Section B-Exelon Nuclear Emergency Response Organization; Revision 24
- EP-AA-1006: Exelon Nuclear Radiological Emergency Plan Annex for Quad Cities Nuclear Power Station, Section 2; Revision 35
- Off-Hours Unannounced Quarterly Call-In ERO Augmentation Drill Reports; February 28, 2012 – September 11, 2013
- Quad Cities Station EP Drill and Exercise Reports; March 16, 2012 – October 17, 2013
- AR 01552255: Failure to Respond to Call-In Drill; August 29, 2013
- AR 01424899: ERO Call-In Response Lower Than Expected; October 10, 2012
- AR 01379857: Inadvertent ERO Activation Notification for Off-Site Personnel; June 20, 2012

Section 1EP4

- EP-AA-1006; Radiological Emergency Plan Annex for Quad Cities Nuclear Power Station; Revision 35
- EP-AA-110-200; Dose Assessment; Revision 5
- EP-AA-110-201; On Shift Dose Assessment; Revision 1

Section 1EP5

- EP-AA-121: Emergency Response Facilities and Equipment Readiness; Revision 12
- EP-AA-1006: Exelon Nuclear Radiological Emergency Plan Annex for Quad Cities Station; Revision 35
- FASA 01447351: Focused Self-Assessment of Emergency Preparedness for 2011 NRC Baseline Inspection; August 20, 2013
- NOSA-QDC-13-03: Emergency Preparedness 10 CFR 50.54(t) April 17, 2013, Audit Report
- NOSA-QDC-12-03: Emergency Preparedness 10 CFR 50.54(t) April 25, 2010, Audit Report
- AR 01488734: Inaudible Public Address Speakers Identified; March 17, 2013
- AR 01451388: Exercise-NRC 2012 Exercise OSC Issues; December 12, 2012
- AR 01432028: NOS Identified-EP Yellow Assessment Rating; October 26, 2012
- AR 01381794: Loss of NARS Capability at Quad Cities; June 26, 2012
- AR 01389766: NOS Identified-ERO Medical Drill Contamination Control Deficiencies; July 17, 2012
- AR 01379351: NRC ENS Phone Line Inoperable; June 19, 2012
- AR 01362109: Minor Water Seepage is Coming Into TSC; May 3, 2012
- AR 01350121: EP Support Impacted by Retirement; April 04, 2012
- AR 01350657: Non-Functioning Turbine Floor PA Speakers; April 5, 2012

Section 2RS3

- AR 1178848: Bauer Air Compressor No. 2 Fill Valve Not Operating Properly; February 23, 2011
- AR 1178934: Bauer Air Compressor Carbon Monoxide Monitor Out of Service; August 11, 2013
- AR 1458721: Bauer Compressor "Power On" Light Out; January 4, 2013
- AR 1509362: Electric Heaters Not Working In Bauer Compressor Building; May 2, 2013
- AR 1509361: Deficient Lighting In Bauer Compressor Building; May 2, 2013
- AR 1531316: Bauer Air Compressor Bottles Losing Pressure; July 1, 2013
- AR 1534961: Bauer Compressor Deficiencies; July 12, 2013

- AR 1571933: Nuclear Oversight Identified Self-Contained Breathing Apparatus Bottle with Low Pressure; October 14, 2013
- Quad Cities Update Final Safety Analysis Report, Section 9; Revision 10

Section 2RS4

- AR 1492159: Two Electronic Dosimeter Accumulated Dose Alarms; March 25, 2013
- RP-AA-224: CEDE Dose Tracking Using Lapel Air Samplers; Revision 0
- RP-AA-230: Operation of the Canberra Fast-scan Whole Body Counter; Revision 1
- RP-AA-250: External Dose Assessments from Contamination; Revision 5
- RP-AA-270: Prenatal Radiation Exposure; Revision 7
- RP-AA-301: Radiological Air Sampling Program; Revision 7
- RP-AA-350: Personnel Contamination Data; Revision 10
- RP-AA-441: Evaluation and Selection Process for Radiological Respirator Use; Revision 4
- RP-AA-442: Selection of Respiratory Protection for Non-Radiological Use; Revision 4
- RP-AA-700-1301: Calibration, Source Check, Operation and Set-up of the Eberline Beta Air Monitor, Model AMS-4
- RP-AA-302: Determination of Alpha Levels and Monitoring; Revision 7
- RP-AA-835: Issue and Control of Respirators; Revision 1
- RP-AA-870: Set-up and Operation of Portable Air Filtration Equipment; Revision 3
- RP-QC-831: Maintenance and Inspection of the Mine Safety Appliance Firehawk; Revision 10
- RP-QC-834: Inspection of the Mine Safety Appliance Hip-Air Breathing Apparatus; Revision 3
- RP-QC-877: Installation, Inspection, and Use of Contamination Control Devices; Revision 1
- RP-QC-8700: Operation of the Mako Air Compressor; Revision 10
- NAVLAP Certificate of Accreditation to ISO/IEC 17025:2005, Landauer, Inc.; January 1, 2013

Section 4OA1

- NEI 99-02: Regulatory Assessment Performance Indicator Guideline, Revision 7
- Maintenance Rule 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
- LS-AA-2110: Monthly Data Elements for NRC Emergency Response Organization (ERO) Drill Participation: December 2012 – June 2013
- LS-AA-2120: Monthly Data Elements for NRC Drill/Exercise Performance; October 2012 - June 2013
- LS-AA-2130: Monthly Data Elements for NRC Alert and Notification System (ANS) Reliability; October 2012 – June 2013
- AR 0157102: Common Cause Analysis Negative Trend in EP Simulator Failures and Issues; January 22, 2013
- AR 01568961: Failed DEP Opportunity During 3Q13 PI Drill; August 29, 2013
- AR 01547719: DEP Approved LORT Scenario Allows Multiple Outcome; August 16, 2013
- AR 01540786: Apparent Cause Evaluation EP Performance Issues with Some Operators; October 2, 2013
- AR 01484769: Single Siren Failure; March 7, 2013

- AR 01446368: Common Cause Analysis Emergency Preparedness Performance; January 4, 2013
- AR 01365397: Scheduled DEP Opportunity Not Completed During LORT; May 11, 2012
- LS-AA-2140: Monthly Data Elements for NRC Occupational Exposure Control Effectiveness; Revision 45

Section 4OA2

- IR 1587513: Excessive Unit 2 Primary Containment Make-Up Rate; November 19, 2013
- IR 1567635: FR 2-8740-8 Upscale for Abnormal Period; October 4, 2013
- WO 1037227: Integrated Primary Containment Leak Rate Test; March 20, 2008

LIST OF ACRONYMS USED

AC	Alternating Current
ADAMS	Agencywide Document Access Management System
ANS	Alert and Notification System
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CY	Calendar Year
DRP	Division of Reactor Projects
EP	Emergency Preparedness
EPIP	Emergency Plan Implementing Procedure
ERO	Emergency Response Organization
FSAR	Final Safety Analysis Report
HPCI	High Pressure Coolant Injection
IMC	Inspection Manual Chapter
IBEW	International Brotherhood of Electrical Workers
IP	Inspection Procedure
IR	Inspection Report
IR	Issue Report
IST	In-service Test
LORT	Licensed Operator Requalification Training
MSPI	Mitigating Systems Performance Index
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
PARS	Publicly Available Records System
PI	Performance Indicator
SAT	Systems Approach to Training
SDP	Significance Determination Process
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
WO	Work Order

M. Pacilio

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Sincerely,

/RA by C. Phillips for/

Christine Lipa, Chief
Branch 1
Division of Reactor Projects

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

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Letter to Michael Pacilio from Christine Lipa dated January 27, 2014

SUBJECT: QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2
NRC INTEGRATED INSPECTION REPORT 05000254/2013005;
05000265/2013005

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