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

October 30, 2015

Mr. Bryan C. Hanson
Senior VP, Exelon Generation Company, LLC
President and CNO, Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2 – NRC INTEGRATED INSPECTION REPORT 05000254/2015003; 05000265/2015003

Dear Mr. Hanson:

On September 30, 2015, 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 October 7, 2015, with Mr. S. Darin, and other members of your staff.

Based on the results of this inspection, two NRC-identified findings and one self-revealed finding of very low safety significance were identified. The findings involved a violation of NRC requirements. However, because of their very low safety significance, and because the issues were entered into your corrective action program, the NRC is treating the issues as non-cited violations (NCVs) in accordance with Section 2.3.2 of the NRC Enforcement Policy.

If you contest the subject or severity of these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555–0001, with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region III; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Quad Cities Nuclear Power Station. In addition, if you disagree with the cross-cutting aspect assigned to any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region III, and the NRC Resident Inspector at the Quad Cities Nuclear Power Station.

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

Sincerely,

/RA/

Karla Stoedter, Chief
Branch 1
Division of Reactor Projects

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

Enclosure:
IR 05000254/2015003; 05000265/2015003
w/Attachment: Supplemental Information

cc w/encl: Distribution via LISTSERV®

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos:	50–254; 50–265
License Nos:	DPR–29; DPR–30
Report No:	05000254/2015003; 05000265/2015003
Licensee:	Exelon Generation Company, LLC
Facility:	Quad Cities Nuclear Power Station, Units 1 and 2
Location:	Cordova, IL
Dates:	July 1 through September 30, 2015
Inspectors:	R. Murray, Senior Resident Inspector K. Carrington, Resident Inspector S. Bell, Health Physics Inspector R. Elliott, Reactor Engineer M. Holmberg, Sr. Reactor Inspector C. Mathews, Illinois Emergency Management Agency
Approved by:	K. Stoedter, Chief Branch 1 Division of Reactor Projects

Enclosure

TABLE OF CONTENTS

SUMMARY OF FINDINGS

Inspection Report 05000254/2015003, 05000265/2015003; 07/01/2015–09/30/2015; Quad Cities Nuclear Power Station, Units 1 & 2; Post-Maintenance Testing, Surveillance Testing, and Identification and Resolution of Problems.

This report covers a 3-month period of inspection by resident inspectors and announced baseline inspections by regional inspectors. Two Green findings were identified by the inspectors and one Green finding was self-revealed. The findings were considered non-cited violations (NCVs) of U.S. Nuclear Regulatory Commission (NRC) regulations. The significance of inspection findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" dated April 29, 2015. Cross-cutting aspects are determined using IMC 0310, "Aspects Within the Cross-Cutting Areas" effective date December 4, 2014. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy dated February 4, 2015. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG–1649, "Reactor Oversight Process" Revision 5, dated February 2014.

Cornerstone: Mitigating Systems

Green. A finding of very low safety significance and an associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified by the inspectors for the licensee's failure to document degraded or non-conforming conditions in the corrective action program (CAP) and route or discuss the issue with Operations shift management so that operability of the affected components could be evaluated. Immediate corrective actions included entering the issues into the CAP and evaluating the issues for operability. The licensee captured the issue in the CAP as Issue Reports (IRs) 2537968 and 2537936.

The finding was determined to be more than minor because, if left uncorrected, it could become a more significant safety concern. Specifically, the failure to identify degraded, non-conforming, or unanalyzed conditions in the CAP and bring those conditions to the attention of Operations shift management so that the operability of safety-related systems, structures, and components (SSCs) may be evaluated could lead to those SSCs being in an inoperable condition without the appropriate Technical Specification (TS) actions taken. The inspectors concluded this finding was associated with the Mitigating Systems Cornerstone. The finding was determined to be of very low safety significance because the control room emergency ventilation (CREV) and high pressure coolant injection (HPCI) systems remained operable. This finding had a cross-cutting aspect of identification in the area of problem identification and resolution because the licensee did not identify issues completely, accurately, and in a timely manner in accordance with the program. Specifically, when degraded and non-conforming conditions were identified, licensee personnel failed to promptly capture the issues in the CAP [P.1]. (Section 1R19)

Green. A finding of very low safety significance and an associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was self-revealed for the licensee's failure to establish a preventive maintenance procedure for HFA relays that was appropriate to the circumstances. Immediate corrective actions included burnishing of the associated relay contacts and testing the associated relays.

In addition, the licensee revised their relay inspection procedure and planned future relay replacements during the next refueling outage. The licensee entered the issue into their CAP as IR 2485051.

The finding was determined to be more than minor because the finding was associated with the Mitigating Systems Cornerstone attribute of Procedure Quality and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). Specifically, the failure to perform adequate preventive maintenance on the automatic depressurization system (ADS) logic HFA relay in 2013 resulted in the build-up of oxidation on the relay contacts. This build-up caused the relay to fail its next scheduled test in 2015. A senior reactor analyst performed a detailed risk evaluation and determined the finding was of very low safety significance. This finding had a cross-cutting aspect of operating experience in the area of problem identification and resolution, because the licensee did not systematically collect, evaluate, and implement relevant internal and external operating experience in a timely manner. Specifically, the licensee identified several internal and external operating experience events related to relay contact oxidation and failed to implement changes to their relay inspection procedures to ensure that effective corrective actions were implemented [P.5]. (Section 4OA2.3)

Cornerstone: Barrier Integrity

Green. A finding of very low safety significance and an associated non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified by the inspectors for the licensee's failure to establish a procedure appropriate to the circumstances that precluded unacceptable preconditioning of the standby gas treatment (SBGT) system during surveillance testing. The licensee performed an evaluation and concluded the SBGT system was operable and planned additional testing on the relay timing function. Other corrective actions included revising the applicable procedures such that unacceptable preconditioning would not occur. The licensee captured this issue in their CAP as IR 2524699.

The finding was determined to be more than minor because it was associated with the Barrier Integrity Cornerstone attribute of Procedure Quality and affected the cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. Specifically, the inadequate procedure had the potential to mask the ability of the SBGT system to initiate in time to prevent ex-filtration of radioactive gases during a design basis accident. The finding was determined to be of very low safety significance because it represented a degradation of the radiological barrier function for the SBGT system. This finding had a cross-cutting aspect of questioning attitude in the area of human performance because the licensee did not recognize the possibility of mistakes, latent problems, or inherent risk, even while expecting successful outcomes. Specifically, the licensee failed to recognize that performing the steps in the specified sequence could unacceptably precondition the time-delay relay for the SBGT system and mask the ability of the system to perform its function [H.12]. (Section 1R22)

REPORT DETAILS

Summary of Plant Status

Unit 1

The unit began the inspection period operating at full power (100 percent). On August 14, 2015, the operators conducted a planned power reduction to approximately 82 percent power to replace cables for turbine control valve #1 linear variable transmitters 1 and 3. The unit was returned to full power on the same date, where it remained until September 22, 2015. On September 22, operators conducted an emergency power reduction to approximately 80 percent power in response to a report from the field of a failed bearing on the 1D condensate booster pump. The unit was returned to full power on September 25, 2015, where it remained through the end of the inspection period. Additional power changes throughout the period were for planned power reductions for turbine testing and control rod pattern adjustments.

Unit 2

The unit began the inspection period operating at full power (100 percent). On September 13, 2015, the operators conducted a planned power reduction to approximately 70 percent to repair a steam packing leak on the 2A feedwater regulating valve. The unit was returned to full power on the same date, where it remained until September 28, 2015. On September 28, the unit experienced an automatic reduction in power due to an unexpected trip of the 2B reactor recirculation pump. Operators took manual control of the unit and continued to reduce power to approximately 23 percent. Following repairs to the 2B reactor recirculation pump's adjustable speed drive mechanism (the source of the pump trip), operators began increasing reactor power to 100 percent on September 30, 2015. Additional power changes throughout the period were for planned power reductions for turbine testing and control rod pattern adjustments.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

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 1/2A Standby Gas Treatment (SBGT) system during 1/2B SBGT planned maintenance;
- Unit 1B residual heat removal service water (RHRSW) system during 1A RHRSW system planned maintenance;
- Unit 1 and Unit 2 instrument air compressor systems with 1/2B instrument air compressor out of service;
- Unit 2 control rod drive (CRD) system; and
- Unit 2B residual heat removal (RHR) system during 2A RHR system planned maintenance.

The inspectors selected these systems based on their risk significance relative to the Reactor Safety Cornerstones at the time they were inspected. The inspectors attempted to identify any discrepancies that could impact the function of the system and therefore potentially increase risk. The inspectors reviewed applicable operating procedures, system diagrams, Updated Final Safety Analysis Report (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 Corrective Action Program (CAP) with the appropriate significance characterization. Documents reviewed are listed in the Attachment to this report.

These activities constituted five partial system walkdown samples as defined in Inspection Procedure (IP) 71111.04–05.

b. Findings

No findings were identified.

.2 Semi-Annual Complete System Walkdown

a. Inspection Scope

On August 5–20, the inspectors performed a complete system alignment inspection of the Unit 1 RHR system following planned testing and maintenance to verify the functional capability of the system. This system was selected because it was considered both safety significant and risk significant in the licensee's probabilistic risk assessment. The inspectors walked down the system to review mechanical and electrical equipment lineups; electrical power availability; system pressure and temperature indications, as appropriate; component labeling; component lubrication; component and equipment cooling; hangers and supports; operability of support systems; and to ensure that ancillary equipment or debris did not interfere with equipment operation. A review of a sample of past and outstanding WOs was performed to determine whether any deficiencies significantly affected the system function. In addition, the inspectors reviewed the corrective action program CAP database to ensure that system equipment alignment problems were being identified and appropriately resolved. Documents reviewed are listed in the Attachment to this report.

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

In addition, during the first (January 6–12) and second quarters (May 18–19 and June 19) of 2015, the inspectors performed a complete system alignment inspection of the Unit 2 onsite emergency alternating current system. These activities constituted one complete system walkdown sample as defined in IP 71111.04–05. Although the activities were mentioned, they were not counted as a sample in either Integrated

Inspection Report 05000254/2015001; 05000265/2015001 and 05000254/2015002; 05000265/2015002. Therefore, these activities are counted as one sample in this report.

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 (FZ) 11.2.3, Unit 1 reactor building, elevation 554'–0", north west corner room, 1A core spray room;
- FZ 11.2.4, Unit 1 reactor building, elevation 554'–0", north east corner room, 1 'A' RHR Room;
- FZ 6.3, service building, elevation 595'–0", auxiliary electric room;
- FZ 1.1.1.5, Unit 1 reactor building, elevation 666'–6", SBGT 4th floor east; and
- Station blackout building, 2nd floor, elevation 615'–0.

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 licensee'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.

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

b. Findings

No findings were identified.

.2 Annual Fire Protection Drill Observation (71111.05A)

a. Inspection Scope

On July 29, 2015, the inspectors observed a fire brigade activation due to a simulated fire in the hallway of the LTD (laundry, tool, and dry active waste) building at elevation 595'-0". The simulated fire was caused by sparks from a defected light ballast igniting clothing in the laundry bin area. Based on this observation, the inspectors evaluated the readiness of the plant fire brigade to fight fires. The inspectors verified that the licensee staff identified deficiencies, openly discussed them in a self-critical manner at the drill debrief, and took appropriate corrective actions. Specific attributes evaluated were:

- proper wearing of turnout gear and self-contained breathing apparatus;
- proper use and layout of fire hoses;
- employment of appropriate firefighting techniques;
- sufficient firefighting equipment brought to the scene;
- effectiveness of fire brigade leader communications, command, and control;
- search for victims and propagation of the fire into other plant areas;
- smoke removal operations;
- utilization of pre-planned strategies;
- adherence to the pre-planned drill scenario; and
- drill objectives.

Documents reviewed are listed in the Attachment to this report.

These activities constituted one annual fire protection inspection sample 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. The specific documents reviewed are listed in the Attachment to this report. 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 area 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 reactor building basement.

This inspection constituted one internal flooding sample as defined in IP 71111.06–05.

b. Findings

No findings were identified.

.2 Underground Vaults

a. Inspection Scope

The inspectors selected underground bunkers/manholes subject to flooding that contained cables whose failure could disable risk-significant equipment. The inspectors determined that the cables were not submerged, that splices were intact, and that appropriate cable support structures were in place. In those areas where dewatering devices were used, such as a sump pump, the device was operable and level alarm circuits were set appropriately to ensure that the cables would not be submerged. In those areas without dewatering devices, the inspectors verified that drainage of the area was available, or that the cables were qualified for submergence conditions. The inspectors also reviewed the licensee's corrective action documents with respect to past submerged cable issues identified in the corrective action program to verify the adequacy of the corrective actions. The inspectors performed a walkdown of the following underground bunkers/manholes subject to flooding:

- Manholes 1, 2, and 6.

Specific documents reviewed during this inspection are listed in the Attachment to this report. This inspection constituted one underground vaults sample as defined in IP 71111.06–05.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program (71111.11)

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

a. Inspection Scope

On August 31 and September 1, 2015, the inspectors observed a crew of licensed operators in the plant's simulator during licensed operator requalification training. The inspectors verified that operator performance was adequate, evaluators were identifying and documenting crew performance problems, and that 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 71111.11–05.

b. Findings

No findings were identified.

.2 Resident Inspector Quarterly Observation during Periods of Heightened Activity or Risk (71111.11Q)

a. Inspection Scope

On August 14, 2015, the inspectors observed control room operators and non-licensed operators under instruction conduct a planned downpower on Unit 1 to approximately 82 percent to support cable repairs to Unit 1 turbine control valve #1 linear variable differential transmitters 1 and 3.

On September 5, 2015, the inspectors observed control room operators and non-licensed operators under instruction conduct a planned downpower on Unit 2 to approximately 70 percent to perform a routine rod sequence exchange, scram time testing, and turbine testing.

Both activities were activities that required heightened awareness and were related to increased risk. 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. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two quarterly licensed operator heightened activity/risk samples as defined in IP 71111.11–05.

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:

- Unit 1 reactor core isolation cooling system; and
- Unit 1 RHR system.

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 Title 10 of the *Code of Federal Regulations* (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 systems, structures, and components (SSCs)/functions classified as (a)(2), or appropriate and adequate goals and corrective actions for systems classified as (a)(1).

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

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

b. Findings

No findings were identified.

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

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 profile 15–28–04: safe shutdown makeup pump planned maintenance and both units online risk change to yellow during 1/2B SBGT planned maintenance, 2A reactor protection system voltage adjustment;
- Work week profile 15–31–07: 1A 125 Vdc battery charger card replacement, 1A RHRSW work, 1B control room emergency ventilation (CREV) train inoperable; and
- Work week profile 15–38–01: Unit 1 emergency diesel generator (EDG) planned maintenance, 1B core spray planned maintenance, and emergent downpower to repair 2A feedwater regulating valve.

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 three samples as defined in IP 71111.13–05.

b. Findings

No findings were identified.

1R15 Operability Determinations and Functional Assessments (71111.15)

.1 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the following issues:

- Inspection Report (IR) 2514707: 60-day interim Part 21 electromatic relief valve (ERV) cutout switches;
- IR 2533523: Damper ½–5741–329 failed part open;
- IR 2542834: Water on floor bay 14 Unit 1 reactor building basement (leak from diesel generator cooling water piping);

- IR 2545024: 1A RHR pump breaker closing springs not charged with 1D RHR pump failed to start during surveillance testing; and
- IR 2542683: Unit 1 high pressure coolant injection (HPCI) torus suction line failed ultrasonic testing.

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 five samples as defined in IP 71111.15–05.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18)

a. Inspection Scope

The inspectors reviewed the following modification(s):

- Engineering Change (EC) 403025: Reinforcing pad to address localized pitting on 1–3960–4" piping; and
- EC 398044: Extent of condition Unit 1 4kv bus transfer logic modification for open phase concurrent with a loss of coolant accident.

The inspectors reviewed the configuration changes and associated 10 CFR 50.59 safety evaluation screening against the design basis, the UFSAR, and the TS, as applicable, to verify that the modification did not affect the operability or availability of the affected system(s). The inspectors, as applicable, observed ongoing and completed work activities to ensure that the modifications were installed as directed and consistent with the design control documents; the modifications operated as expected; post-modification testing adequately demonstrated continued system operability, availability, and reliability; and that operation of the modifications did not impact the operability of any interfacing systems. As applicable, the inspectors verified that relevant procedure, design, and licensing documents were properly updated. Lastly, the inspectors discussed the plant modification with operations, engineering, and training personnel to ensure that the individuals were aware of how the operation with the plant modification in place could impact overall plant performance. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two permanent/temporary plant modification samples as defined in IP 71111.18–05.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

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:

- QCEMS 0210–02: 1A 125 Vdc battery charger testing following battery charger card replacements;
- WO 1828267: 1B RHRSW pump testing following 1B RHRSW room cooler piping replacement;
- WO 1832527: Unit 2 rod G–5 scram time testing following rod G–5 hydraulic control unit (HCU) accumulator replacement;
- WO 1849049: 'B' CREV air filtration unit (AFU) 'B' booster fan discharge damper testing following troubleshooting and corrective maintenance;
- EC 398197: testing for the FLEX seismic deep well pump following well construction and pump installation;
- QCOS 1000–06: 1C RHR and 'C', 'D' RHRSW pumps testing following 1C RHR pump and 'C' RHRSW pump planned maintenance; and
- QCOS 1600–44: Unit 2 primary containment group 2 isolation 2–0595–128 relay testing following replacement.

These activities were selected based upon the SSC'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 U.S. Nuclear Regulatory Commission (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 seven post-maintenance testing samples as defined in IP 71111.19–05.

b. Findings

(1) Failure to Evaluate Degraded or Non-Conforming Conditions for Operability

Introduction: A finding of very low safety significance and an associated Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified by the inspectors for two examples of the licensee's failure to document degraded or non-conforming conditions in the CAP and route or discuss the issue with Operations shift management so that operability of the affected components could be evaluated.

Description: On August 4, 2015, licensee personnel observing post-maintenance testing for the 'B' CREV AFU booster fan 'B' discharge damper, a safety-related component, identified that the damper exhibited mechanical binding during operation. This mechanical binding represented a non-conforming condition and impacted the operability of the 'B' CREV system.

Additionally on August 4, 2015, the licensee was performing surveillance QCOS 2300–06, "HPCI System High/Medium Risk Power Operated Valve Test," and received an unexpected Unit 2 ground alarm on the Unit 2 250 Vdc system while stroking valve 2–2301–08, HPCI pump discharge valve. This condition was a degraded or non-conforming condition that required an IR be entered in the CAP and an operability evaluation be performed by Operations shift management as required by procedure OP-AA–108–115, "Operability Determinations."

Procedure OP–AA–108–115, steps 4.1, requires that degraded conditions, non-conforming conditions, and the discovery of an unanalyzed condition be entered into the CAP. Furthermore, it requires that Operations shift management be contacted to review any potential operability or reportability issues. These non-conforming and degraded conditions affected operability of quality equipment.

Until prompted by the inspectors on August 5, these conditions were not entered into the CAP, nor was Operations shift management contacted so that operability of the degraded or non-conforming equipment could be evaluated.

Analysis: The inspectors determined that the failure of the licensee to document degraded or non-conforming conditions in the CAP and route or discuss the issues with Operations shift management so that operability of the affected equipment could be evaluated was contrary to procedure OP–AA–108–115,"Operability Determinations," and was a performance deficiency.

The finding was determined to be more than minor because, if left uncorrected, it could become a more significant safety concern. Specifically, the failure to identify degraded, non-conforming, or unanalyzed conditions in the CAP and bring those conditions to the attention of Operations shift management so that the operability of safety-related SSCs may be evaluated could lead to those SSCs being in an inoperable condition without the appropriate TS actions taken. The inspectors concluded this finding was associated with the Mitigating Systems Cornerstone.

The inspectors determined the finding could be evaluated using the significance determination process (SDP) in accordance with Inspection Manual Chapter (IMC) 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions." The inspectors

answered “Yes” to question A.1 of Exhibit 2 (because the SSCs in question maintained their operability) and the finding screened as Green, or very low safety significance.

This finding had a cross-cutting aspect of identification in the area of problem identification and resolution because the licensee did not identify issues completely, accurately, and in a timely manner in accordance with the program. Specifically, when degraded and non-conforming conditions were identified, licensee personnel failed to promptly capture the issues in the CAP [P.1].

Enforcement: Title 10 of the CFR, Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” requires, in part, that activities affecting quality be prescribed by documented procedures of a type appropriate to the circumstances and be accomplished in accordance with these procedures. The licensee established OP–AA–108–115, “Operability Determinations,” Revision 15, as the implementing procedure for evaluating the operability of SSCs for compliance with TS when degraded, non-conforming, and unanalyzed conditions are identified. Evaluating safety-related component operability is an activity affecting quality.

Procedure OP–AA–108–115, steps 4.1.1–4.1.3 state:

> 4.1.1. Enter degraded conditions, non-conforming conditions, and the discovery of an unanalyzed condition into the CAP.
>
> 4.1.2 If the originator or supervisor identifies any potential operability or reportability issues, then the originator or supervisor shall personally contact Operations shift management of the affected facility/ unit and discuss the issue.
>
> 4.1.3 Route the issue for immediate review by Operations shift management when immediate actions are required by Operations.

Contrary to the above, on August 4, 2015, the licensee failed to follow Steps 4.1.1–4.1.3 of procedure OP–AA–108–115. Specifically, licensee personnel failed to enter degraded and non-conforming conditions associated with the ‘B’ CREV system and Unit 2 HPCI system into the CAP, nor did they inform Operations shift management of the issues so the equipment issues could be evaluated for operability.

Corrective actions included entering the conditions into the CAP. In addition, the licensee declared the ‘B’ CREV booster fan ‘B’ fan inoperable and planned additional repairs to the damper. The licensee also planned a work request for troubleshooting the ground on the HPCI motor-operated valve. This violation is being treated as a non-cited violation (NCV), consistent with Section 2.3.2 of the Enforcement Policy. The violation was entered into the licensee’s CAP as IRs 2537968 and 2537936.
(NCV 05000254/2015003–01; 05000265/2015003–01, Failure to Evaluate Degraded or Non-Conforming Conditions for Operability)

1R22 Surveillance Testing (71111.22)

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 7500–08: Unit 2 SBGT initiation and reactor building ventilation isolation test (Routine);
- QCOS 1000–06: RHR pump/loop operability test (Inservice Test);
- QCIS 0200–39/40: Unit 2 Division I and II reactor water level Lo/Lo-Lo analog trip calibration and functional test (Routine);
- QCOS 1600–07: Reactor coolant system (RCS) leakage in the drywell floor drain and equipment drain sumps available (RCS); and
- Unit 1 core spray pump room cooler 1–5748A thermostat calibration (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 UFSAR, procedures, and applicable commitments;
- measuring and test equipment calibration was current;
- test equipment was used within the required range and accuracy; applicable prerequisites described in the test procedures were satisfied;
- test frequencies met TS requirements to demonstrate operability and reliability; tests were performed in accordance with the test procedures and other applicable procedures; jumpers and lifted leads were controlled and restored where used;
- test data and results were accurate, complete, within limits, and valid;
- test equipment was removed after testing;
- where applicable for in-service 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, one in-service test sample, and one RCS leak detection inspection sample, as defined in IP 71111.22, Sections–02 and–05.

b. Findings

Failure to Establish Adequate Procedure to Preclude Unacceptable Preconditioning of the Standby Gas Treatment System

Introduction: A finding of very low safety significance (Green) and an associated NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified by the inspectors for the licensee's failure to establish an adequate procedure appropriate to the circumstances that precluded unacceptable preconditioning of the SBGT system during surveillance testing.

Description: On July 6, 2015, the inspectors observed the licensee perform surveillance testing on the 'A' train of the SBGT system (a system common to both units) in accordance with licensee procedure QCOS 7500–08, "Unit 2 Standby Gas Treatment Initiation and Reactor Building Ventilation Isolation Test," Revision 23.

The inspectors reviewed the procedure following test completion and questioned the licensee on the sequence in which steps H.19, H.30, and H.75d had been performed. The purpose of performing step H.19 was to verify the SBGT system auto initiated on a reactor building ventilation isolation signal. To accomplish this task, step H.19 directed the removal of fuse 1701–708A (F–13) from its corresponding electrical panel. The fuse was reinstalled in step H.30 and removed a second time in step H.75d. The purpose of step H.75d was to ensure the 'A' train of SBGT was capable of starting from its standby mode of operation within 33 seconds (start time allotted to ensure no ex-filtration of radioactive gases from the reactor building during a design basis accident) upon detection of a degraded or faulted condition of the opposite, running train. The step also directed the licensee to record the time of initiation of the 'A' SBGT system to ensure it started within the allotted time (via time-delay relay 0–7541–30A). Each time the F–13 fuse was removed, the 33 second time-delay relay (0–7541–30A) became energized. The inspectors determined that because the relay had been cycled at least once prior to the licensee recording the time of initiation in step H.75d, the relay had been preconditioned. Unit 1 procedure QCOS 7500–04, "Unit 1 Standby Gas Treatment Initiation and Reactor Building Ventilation Isolation Test," also contained the same instructions. The licensee captured the inspectors' issue in their CAP under IR 2524699 and evaluated the question. The licensee's evaluation concluded that unacceptable preconditioning of the time-delay relay had occurred. However, the licensee concluded the SBGT system was still operable based on their review of test results which indicated

relay times were within the TS allowable band. Additionally, the licensee planned future testing to verify the relay timer would perform acceptably without preconditioning.

Analysis: The inspectors determined that the failure to establish a procedure appropriate to the circumstances that precluded preconditioning of the SBGT system initiation function during testing was contrary to the requirements of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," and was a performance deficiency.

The performance deficiency was determined to be more than minor and a finding because it was associated with the Barrier Integrity Cornerstone attribute of procedure quality and affected the cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding, RCS, and containment) protect the public from radionuclide releases caused by accidents or events. Specifically, the inadequate procedure had the potential to mask the ability of the SBGT system to initiate in time to prevent ex-filtration of radioactive gases during a design basis accident. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," dated April 29, 2015, Appendix A, "The Significance Determination Process for Findings at Power," dated June 19, 2012, Exhibit 3, "Barrier Integrity Screening Questions." The inspectors answered "Yes" to question C.1 of Exhibit 3 and the finding screened as Green, or very low safety significance.

This finding had a cross-cutting aspect of questioning attitude in the area of human performance because the licensee did not recognize the possibility of mistakes, latent problems, or inherent risk, even while expecting successful outcomes. Specifically, the licensee failed to recognize that performing the steps in the specified sequence could unacceptably precondition the time-delay relay for the SBGT system and mask the ability of the system to perform its function [H.12].

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, that activities affecting quality be prescribed by documented procedures of a type appropriate to the circumstances.

The licensee established procedure QCOS 7500–04, "Unit 1 Standby Gas Treatment Initiation and Reactor Building Ventilation Isolation Test," and procedure QCOS–7500–08, "Unit 2 Standby Gas Treatment Initiation and Reactor Building Ventilation Isolation Test," as the implementing procedures for testing the ability of the SBGT system (a system common to both units) to initiate during a design basis accident, an activity affecting quality.

Contrary to the above, prior to and on July 6, 2015, the licensee failed to have a procedure that was appropriate to the circumstances for testing the ability of the SBGT treatment system to initiate during a design basis accident. Specifically, during testing of the 'A' SBGT system, the licensee unacceptably preconditioned the time-delay relay that ensures the system initiates within 33 seconds by cycling the relay prior to recording the initiation time of the SBGT train. In addition, procedure QCOS 7500–04 (Unit 1 procedure) contained the same steps that appeared in procedure QCOS 7500–08 and resulted in preconditioning of the SBGT during the Unit 2 surveillance test.

Corrective actions by the licensee included generating tasks to revise licensee procedures QCOS 7500–04 and QCOS 7500–08, such that unacceptable

preconditioning would not occur. This violation is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy. The violation was entered into the licensee's CAP as IR 2524699. **(NCV 05000254/2015003–02; 05000265/2015003–02, Failure to Establish Adequate Procedure to Preclude Unacceptable Preconditioning of the Standby Gas Treatment System)**

2. RADIATION SAFETY

2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01)

This inspection constituted one complete sample as defined in IP 71124.01–05.

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed all licensee performance indicators (PIs) for the Occupational Exposure Cornerstone for follow-up. The inspectors reviewed the results of radiation protection program audits (e.g., licensee's quality assurance audits or other independent audits). The inspectors reviewed any reports of operational occurrences related to occupational radiation safety since the last inspection. The inspectors reviewed the results of the audit and operational report reviews to gain insights into overall licensee performance.

b. Findings

No findings were identified.

.2 Contamination and Radioactive Material Control (02.04)

a. Inspection Scope

The inspectors observed locations where the licensee monitored potentially contaminated material leaving the radiological control area and inspected the methods used for control, survey, and release from these areas. The inspectors observed the performance of personnel surveying and releasing material for unrestricted use and evaluated whether the work was performed in accordance with plant procedures and whether the procedures were sufficient to control the spread of contamination and prevent unintended release of radioactive materials from the site. The inspectors assessed whether the radiation monitoring instrumentation had appropriate sensitivity for the type(s) of radiation present.

The inspectors reviewed the licensee's criteria for the survey and release of potentially contaminated material. The inspectors evaluated whether there was guidance on how to respond to an alarm that indicated the presence of licensed radioactive material.

The inspectors reviewed the licensee's procedures and records to verify that the radiation detection instrumentation was used at its typical sensitivity level based on appropriate counting parameters. The inspectors assessed whether or not the licensee had established a de facto "release limit" by altering the instrument's typical sensitivity through such methods as raising the energy discriminator level or locating the instrument in a high-radiation background area.

The inspectors selected several sealed sources from the licensee's inventory records and assessed whether the sources were accounted for and verified to be intact.

The inspectors evaluated whether any transactions, since the last inspection, involving nationally tracked sources were reported in accordance with 10 CFR 20.2207.

b. Findings

No findings were identified.

.3 Radiological Hazards Control and Work Coverage (02.05)

a. Inspection Scope

The inspectors examined the licensee's physical and programmatic controls for highly activated or contaminated materials (i.e., nonfuel) stored within spent fuel and other storage pools. The inspectors assessed whether appropriate controls (i.e., administrative and physical controls) were in place to preclude inadvertent removal of these materials from the pool.

The inspectors examined the posting and physical controls for selected high-radiation areas and very-high radiation areas to verify conformance with the occupational PI.

b. Findings

No findings were identified.

.4 Risk-Significant High-Radiation Area and Very-High Radiation Area Controls (02.06)

a. Inspection Scope

The inspectors discussed with the radiation protection manager the controls and procedures for high-risk, high-radiation areas, and very-high radiation areas. The inspectors discussed methods employed by the licensee to provide stricter control of very-high radiation area access as specified in 10 CFR 20.1602, "Control of Access to Very-High Radiation Areas," and Regulatory Guide 8.38, "Control of Access to High and Very-High Radiation Areas of Nuclear Plants." The inspectors assessed whether any changes to licensee procedures substantially reduce the effectiveness and level of worker protection.

The inspectors discussed the controls in place for special areas that have the potential to become very-high radiation areas during certain plant operations with first-line health physics supervisors (or equivalent positions having backshift health physics oversight authority). The inspectors assessed whether these plant operations require communication beforehand with the health physics group, so as to allow corresponding timely actions to properly post, control, and monitor the radiation hazards including re-access authorization.

The inspectors evaluated licensee controls for very-high radiation areas and areas with the potential to become a very-high radiation areas to ensure that an individual was not able to gain unauthorized access to the very-high radiation areas.

b. Findings

No findings were identified.

.5 Radiation Protection Technician Proficiency (02.08)

a. Inspection Scope

The inspectors reviewed radiological problem reports since the last inspection that found the cause of the event to be radiation protection technician error. The inspectors evaluated whether there was an observable pattern traceable to a similar cause. The inspectors assessed whether this perspective matched the corrective action approach taken by the licensee to resolve the reported problems.

b. Findings

No findings were identified.

.6 Problem Identification and Resolution (02.09)

a. Inspection Scope

The inspectors evaluated whether problems associated with radiation monitoring and exposure control were being identified by the licensee at an appropriate threshold and were properly addressed for resolution in the licensee's CAP. The inspectors assessed the appropriateness of the corrective actions for a selected sample of problems documented by the licensee that involved radiation monitoring and exposure controls. The inspectors assessed the licensee's process for applying operating experience to their plant.

b. Findings

No findings were identified.

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

The inspection activities supplemented those documented in Integrated IR 05000254/2014003; 05000265/2014003 and constituted one complete sample as defined in IP 71124.02–05.

.1 Radiological Work Planning (02.02)

a. Inspection Scope

The inspectors compared the results achieved (dose rate reductions and person-rem used) with the intended dose established in the licensee's as-low-as-reasonably-achievable (ALARA) planning for these work activities. The inspectors compared the person-hour estimates provided by maintenance planning and other groups to the radiation protection group with the actual work activity time requirements and evaluated the accuracy of these time estimates. The inspectors assessed the reasons (e.g., failure to adequately plan the activity and failure to provide sufficient work controls) for any inconsistencies between intended and actual work activity doses.

The inspectors determined whether post-job reviews were conducted and if identified problems were entered into the licensee's CAP.

b. Findings

No findings were identified.

.2 Problem Identification and Resolution (02.06)

a. Inspection Scope

The inspectors evaluated whether problems associated with ALARA planning and controls were being identified by the licensee at an appropriate threshold and were properly addressed for resolution in the licensee's CAP.

b. Findings

No findings were identified.

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

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

.1 Inspection Planning (02.01)

a. Inspection Scope

The inspectors reviewed the plant UFSAR 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 UFSAR, 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 PIs 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 used 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 were 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 was consistent with licensee procedural guidance and ALARA concept.

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

The inspectors assessed whether the licensee had established trigger points (e.g., the Electric Power Research Institute (EPRI)'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

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 were 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 met or exceeded Grade D quality. The inspectors reviewed plant breathing air supply systems to determine whether they met 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 had 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 in the following inspection activities. 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 UFSAR, TS, and emergency operating procedure requirements, the inspectors reviewed the status and surveillance records of self-contained breathing apparatuses staged in-plant for use during emergencies. The inspectors reviewed the licensee's capability for refilling and transporting self-contained breathing apparatus air bottles to and from the control room and operations support center during emergency conditions.

The inspectors selected several individuals on control room shift crews and from designated departments currently assigned emergency duties (e.g., 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 changeout). The inspectors evaluated whether personnel assigned to refill bottles were trained and qualified for that task.

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

The inspectors reviewed the past two years of maintenance records for select self-contained breathing apparatus units used to support operator activities during accident conditions and designated as "ready for service" to assess whether any maintenance or repairs on any self-contained breathing apparatus unit's vital components were performed by an individual, or individuals, certified by the manufacturer of the device to perform the work. The vital components typically were 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 was required.

b. Findings

No findings were identified.

.2 External Dosimetry (02.02)

a. Inspection Scope

The inspectors evaluated whether the licensee's dosimetry vendor was National Voluntary Laboratory Accreditation Program accredited and if the approved irradiation test categories for each type of personnel dosimeter used were consistent with the types and energies of the radiation present and the way the dosimeter was 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 licensee did not use non-National Voluntary Laboratory Accreditation Program accredited passive dosimeters.

The inspectors assessed the use of active dosimeters (electronic personal dosimeters) to determine if the licensee used 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 was 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 inspector's 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 accounted for hard-to-detect nuclides in the dose assessment.

b. Findings

No findings were identified.

Special Bioassay (In Vitro)

a. Inspection Scope

There were no internal dose assessments 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. The licensee had not performed dose assessments using airborne/derived air concentration monitoring since the last inspection.

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 informed 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 was 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.

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 was 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 were being identified by the licensee at an appropriate threshold and were properly addressed for resolution in the licensee's 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.

4. OTHER ACTIVITIES

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

4OA1 Performance Indicator Verification (71151)

.1 Safety System Functional Failures

a. Inspection Scope

The inspectors sampled licensee submittals for the Safety System Functional Failures PI (MS05) for Quad Cities Nuclear Generating Station, Units 1 and 2, for the period from the third quarter of 2014 to the second quarter of 2015. 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 31, 2013, and NUREG–1022, "Event Reporting Guidelines 10 CFR 50.72 and 50.73" definitions and guidance, were used. The inspectors reviewed the licensee's operator narrative logs, operability assessments, maintenance rule records, maintenance WOs, IRs, event reports and NRC integrated inspection reports for the period of March 1, 2014 through June 30, 2015, to validate the accuracy of the submittals. The inspectors also reviewed the licensee's IR 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 safety system functional failure samples as defined in IP 71151–05.

b. Findings

No findings were identified.

.2 Reactor Coolant System Specific Activity

a. Inspection Scope

The inspectors sampled licensee submittals for the RCS Specific Activity (BI01) PI for Quad Cities Nuclear Power Station, Units 1 and 2, for the period from the fourth quarter 2014 through the second quarter 2015. 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 RCS chemistry samples, TS requirements, IRs, event reports and NRC integrated inspection reports to validate the accuracy of the submittals. The inspectors also reviewed the licensee's IR database to determine if any problems had been identified with the PI data collected or transmitted for this indicator. In addition to record reviews, the inspectors observed a chemistry technician obtain and analyze a RCS sample. Documents reviewed are listed in the Attachment to this report.

This inspection constituted two RCS specific activity samples as defined in IP 71151–05.

b. Findings

No findings were identified.

.3 Occupational Exposure Control Effectiveness

a. Inspection Scope

The inspectors sampled licensee submittals for the Occupational Exposure Control Effectiveness (OR01) PI for the period from the fourth quarter 2014 through the second quarter 2015. 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 assessment of the PI for occupational radiation safety to determine if indicator related data was adequately assessed and reported. 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.

.4 Radiological Effluent Technical Specification/Offsite Dose Calculation Manual Radiological Effluent Occurrences

a. Inspection Scope

The inspectors sampled licensee submittals for the radiological effluent TS/offsite dose calculation manual (ODCM) radiological effluent occurrences (PR01) PI for the period from the fourth quarter 2014 through the second quarter 2015. 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 IR database and selected individual reports generated since this indicator was last reviewed to identify any potential occurrences such as unmonitored, uncontrolled, or improperly calculated effluent releases that may have impacted offsite dose. The inspectors reviewed gaseous effluent summary data and the results of associated offsite dose calculations for selected dates to determine if indicator results were accurately reported. The inspectors also reviewed the licensee's methods for quantifying gaseous and liquid effluents and determining effluent dose. Documents reviewed are listed in the Attachment to this report.

This inspection constituted one Radiological Effluent TS/ODCM radiological effluent occurrences sample as defined in IP 71151–05.

b. Findings

No findings were identified.

4OA2 Identification and Resolution of Problems (71152)

.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 Annual Follow-up of Selected Issues: Review of Issues Identified in Apparent Cause Evaluation for the Failure of Unit 1 Automatic Depressurization System Logic Test

a. Inspection Scope

During a review of items entered in the licensee's CAP, the inspectors recognized a corrective action item (IR 2472107) documenting the failure of the Unit 1 automatic depressurization system (ADS) logic relays, which occurred during the refueling outage for Unit 1 on March 21, 2015. The licensee performed an apparent cause evaluation for the issue under IR 2485051–02, dated May 12, 2015, which the inspectors reviewed. The inspectors additionally reviewed the licensee's preventive maintenance strategies for the ADS logic relays, the ADS logic component classification, and the licensee's management of component service life.

This review constituted one in-depth problem identification and resolution sample as defined in IP 71152–05.

b. Findings

(1) Failure to Adequately Inspect Relay Contacts for Oxidation Results in Relay Failure

Introduction: A finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was self-revealed for the licensee's failure to establish a preventive maintenance procedure for HFA relays that was appropriate to the circumstances.

Description: On March 21, 2015, with Unit 1 shut down for refueling outage Q1R23, the licensee was conducting the Unit 1 off-line automatic blowdown logic test when two ERVs, 1–0203–3B and 1–0203–3D, failed to actuate when the 'A' trip logic did not energize for the automatic function of the ADS. A troubleshooting package was initiated that instructed maintenance personnel to burnish (or clean) the contacts associated with the 'A' and 'B' trip logic relay contacts. Once the 'B' trip logic contacts were cleaned, the

licensee lost the as-found condition (because it was not previously tested) and was unable to demonstrate the automatic function of the ADS for ERVs 1–0203–3B and 1-0203-3D. Following the cleaning of both trip logic relay contacts, the licensee was able to satisfactorily complete the automatic blowdown logic test.

The licensee performed an apparent cause evaluation and determined the cause for the event as oxidation buildup on the associated relay contacts. The licensee further determined that the cause for the oxidation buildup was because the preventive maintenance task for inspecting the HFA relays had insufficient instructions for visually inspecting relay contacts for oxidation and burnishing the relay contacts if oxidation is found. In addition, the licensee's performance centered maintenance template (which identified the recommended replacement frequency for components) that was applicable prior to this event suggested a 10-year replacement frequency for the ADS logic relays based on their component classification. The inspectors noted that the ADS logic relays had been installed since the beginning of plant operation. The licensee had not justified deviating from the recommended replacement frequency as specified in licensee procedure ER–AA–200, "Preventive Maintenance Program," Revision 2. Corrective actions included burnishing of the associated relay contacts. The licensee also revised the preventive maintenance instructions for inspecting the HFA relays to include visually inspecting for oxidation and cleaning as required. The licensee generated a task to replace the affected relays during the next Unit 1 refueling outage.

Analysis: The inspectors determined that the licensee's failure to establish a preventive maintenance procedure for HFA relays that was appropriate to the circumstances was contrary to 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," and was a performance deficiency.

The finding was determined to be more than minor because the finding was associated with the Mitigating Systems Cornerstone attribute of procedure quality and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e. core damage). Specifically, the failure to perform adequate preventive maintenance on the ADS logic HFA relay in 2013 resulted in the build-up of oxidation on the relay contacts, which caused the relay to fail its next scheduled test in 2015.

The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, Attachment 0609.04, "Initial Characterization of Findings," dated June 19, 2012. Because the finding impacted the Mitigating Systems Cornerstone at-power, the inspectors evaluated the finding using IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," dated June 19, 2012. The inspectors answered "Yes" to question A.2 in Exhibit 2 for Mitigating System screening questions because the finding represented a loss of the ADS function. As a result, a detailed risk evaluation was required.

The senior reactor analysts performed a detailed risk evaluation using Version 8.21 of the Standardized Plant Analysis Risk (SPAR) model for Quad Cities and Systems Analysis Programs for Hands-on Integrated Reliability Evaluations Version 8.1.2 software to obtain a delta core damage frequency (ΔCDF). The SPAR model was modified by Idaho National Laboratories to incorporate changes for the ERVs that had previously been incorporated into the Dresden SPAR model associated with manual RCS depressurization, RCS overpressurization, and common-cause "alpha factors."

Even though the relief (remote-manual) mode and self-actuation (safety) mode of operation of the ERVs remained functional, and only the ADS mode of operation was affected, it was conservatively assumed that each mode of operation of ERVs 3B and 3D would not automatically function, and that manual action was required to open these ERVs.

The exposure time was assumed to be one year, which is the maximum time allowed by the SDP. If ERV–3B or ERV–3D failed to automatically open, the human error probability (HEP) for the operator failing to diagnose the problem and take action to manually open ERV–3B and ERV–3D was estimated at 2.2E–2, using the SPAR–H Human Reliability Analysis Method, and assuming high stress conditions. This HEP was added to the random failure probability of the ERVs, which was used to represent the likelihood of ERVs 'B' and 'D' failure to open.

Using the above assumptions and data, the estimated change in core damage frequency from internal events was less than 1E–8/yr, which represents a finding of very low safety significance (Green). The dominant sequence was a small break loss of coolant accident initiating event with a failure of the power conversion system, failure of main feedwater, failure of HPCI, and failure of manual RCS depressurization.

This finding had a cross-cutting aspect of operating experience in the area of problem identification and resolution because the licensee did not systematically collect, evaluate, and implement relevant internal and external operating experience in a timely manner. Specifically, the licensee identified several internal and external operating experience events related to relay contact oxidation and failed to implement changes to their relay inspection procedures to ensure that effective corrective actions were implemented [P.5].

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, that activities affecting quality be prescribed by documented procedures of a type appropriate to the circumstances and be accomplished in accordance with these procedures. The licensee established QCEPM 0700–03, Revision 35, "HFA Relay Inspection," as the implementing procedure for performing preventive maintenance inspections on relays 1–0287–106A, 1-0287-106B, 1–0287–107A, and 1–0287–107B (ADS logic relays for ERVs 1–0203–3B and 1–0203–3D), an activity affecting quality.

Contrary to the above, prior to March 21, 2015, the licensee failed to have a procedure appropriate to the circumstances for performing preventive maintenance on the ADS logic HFA relays. Specifically, the licensee's procedure for inspecting HFA relays failed to direct inspecting the relays for evidence of wear and oxidation and to burnish the relay contacts if required.

Immediate corrective actions included burnishing of the associated relay contacts and testing the associated relays. In addition, the licensee revised their relay inspection procedure and planned future relay replacements during the next refuel outage. This violation is being treated as an NCV, consistent with Section 2.3.2 of the Enforcement Policy. The violation was entered into the licensee's CAP as IR 2485051.
(NCV 05000254/2015003–03; 05000265/2015003–03, Failure to Adequately Inspect Relay Contacts for Oxidation Results in Relay Failure)

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

.1 Unit 1D Condensate Booster Pump Outboard Bearing Failure and Emergent Downpower

a. Inspection Scope

The inspectors observed the licensee's response to a failure of the Unit 1D condensate booster pump on September 22, 2015. The control room received a report of an acrid odor in the turbine building and later received another report that the 1D condensate booster pump outboard bearing was emitting smoke. Operators in the control room conducted an emergency downpower to approximately 80 percent reactor power and secured the 1D condensate pump. In addition, the inspectors reviewed corrective actions taken by the licensee and subsequent power increases to full power. Documents reviewed are listed in the Attachment to this report.

This event follow-up review constituted one sample as defined in IP 71153–05.

b. Findings

No findings were identified.

.2 Unit 2B Recirculation Pump Trip Due to a Failed Adjustable Speed Drive Power Cell

a. Inspection Scope

The inspectors observed the licensee's response to a trip of the 2B recirculation pump on September 28, 2015. Following the trip of the 2B recirculation pump and automatic power reduction, operators in the control room further decreased reactor power in accordance with procedures and eventually stabilized reactor power at approximately 25 percent. Investigation by the licensee concluded that power cell C2 in the adjustable speed drive experienced a failure due to a fault within the cell. The licensee conducted troubleshooting and performed corrective actions as recommended by the vendor, including replacing the failed power cell. The licensee restored the adjustable speed drive and 2B recirculation pump to operation on September 30, 2015, and commenced raising reactor power. The inspectors observed and reviewed portions of the licensee's response to the condition, troubleshooting efforts, corrective actions, testing, and subsequent power ascension. Documents reviewed are listed in the Attachment to this report.

This event follow-up review constituted one sample as defined in IP 71153–05.

b. Findings

No findings were identified.

.3 (Closed) Licensee Event Report 05000254/2015–004: Automatic Depressurization System Trip Logic

On March 21, 2015, with Unit 1 shut down for refueling outage Q1R23, the licensee was conducting the Unit 1 off-line automatic blowdown logic test when two ERVs failed to actuate when the 'A' trip logic did not energize for the automatic function of the ADS. A troubleshooting package was initiated that instructed maintenance personnel to burnish (or clean) the contacts associated with the 'A' and 'B' trip logic relay contacts. Once the

'B' trip logic contacts were cleaned, the licensee lost the as-found condition and was unable to demonstrate the automatic function of ADS for ERVs 1–0203–3B and 1–0203–3D. Following the cleaning of both trip logic relay contacts, the licensee was able to satisfactorily complete the automatic blowdown logic test.

The inspectors documented a Green finding and NCV related to this event in Section 4OA2.3. The inspectors reviewed the licensee event report (LER) and no additional issues were identified. This LER is closed.

This event follow-up review constituted one sample as defined in IP 71153–05.

.4 (Closed) Licensee Event Report 05000254/2015–007: Loss of Main Control Room Envelope Boundary Due to Damper Inspection

On May 27, 2015, the licensee made an unplanned entry into TS 3.7.4, Condition C, for an inoperable control room envelope (CRE) boundary during a planned maintenance inspection of a fire damper. During the inspection, licensee personnel were required to open a control room heating, ventilation, and cooling (HVAC) access hatch that caused the control room to receive an unexpected "Control Room HVAC Train 'A' Trouble" alarm. Personnel immediately shut the hatch in order to restore the CRE boundary and TS 3.7.4, Condition C, was exited. TS 3.7.4 allows the CRE boundary to be opened intermittently under administrative controls. The required administrative controls included establishing contingency actions for various conditions and implementing those actions through formal documented instructions. In planning the maintenance, the licensee failed to recognize the HVAC access hatch would breach the CRE and did not implement formal administrative controls. The licensee did establish contingency actions and was able to restore the control room boundary when an unexpected alarm was received. The inspectors determined the failure to implement formal administrative controls was an insignificant procedural error with no safety consequences because an operator was always available to restore the boundary if needed. As a result, the inspectors determined the issue was a minor performance deficiency. The inspectors reviewed the specifics of this event in Integrated IR 05000254/2015002; 05000265/2015002.

The inspectors reviewed the LER. No findings or violations of NRC requirements were identified. This LER is closed.

This event follow-up review constituted one sample as defined in IP 71153–05.

.5 (Closed) Licensee Event Report 05000254/2015–008: Interlock Doors Opened Simultaneously Cause Loss of Secondary Containment

On June 19, 2015, the licensee identified that both doors in the secondary containment interlock between the common unit EDG room and the Unit 1 reactor building were opened simultaneously. This resulted in the licensee making an unplanned entry into TS 3.6.4.1, Condition A, for an inoperable secondary containment. The licensee immediately closed the interlock doors to reestablish secondary containment and administratively controlled personnel entry and egress through the doors thereafter. The inspectors determined this issue was minor because secondary containment pressure remained negative throughout the condition, although the event resulted in an unplanned entry into the licensee's TSs. The cause of the event was a failure of the common unit EDG room mechanical door latch to fully engage into the door strike resulting in the EDG

room door opening while the reactor building door was being opened. Corrective actions taken by the licensee included replacing the common unit EDG interlock door and modifying both interlock doors to prevent simultaneous opening.

The inspectors reviewed the LER. No findings or violations of NRC requirements were identified. This LER is closed.

This event follow-up review constituted one sample as defined in IP 71153–05.

4OA6 Management Meetings

.1 Exit Meeting Summary

On October 7, 2015, the inspectors presented the inspection results to Mr. S. Darin 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

On July 31, 2015, the inspectors presented the inspection results for the areas of radiological hazard assessment and exposure controls; occupational ALARA planning and controls; in-plant airborne radioactivity control and mitigation; occupational dose assessment; and RCS specific activity, occupational exposure control effectiveness, and Radiological Effluent TS/ODCM radiological effluent occurrences PI verification, to Mr. S. Darin 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.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

S. Darin, Site Vice President
K. Ohr, Plant Manager
C. Alguire, Design Engineering Senior Manager
W. Beck, Regulatory Assurance Manager
K. Boodry, Plant Engineering Senior Manager
D. Collins, Radiation Protection Manager
M. DeVault, Training Director
R. Hight, Maintenance Manager
T. Petersen, Regulatory Assurance Lead
M. Rice, Engineering Manager
B. Wake, Operations Superintendent
T. Wojick, Nuclear Oversight Manager
J. Wooldridge, Chemistry Manager

NRC

K. Stoedter, Chief, Reactor Projects Branch 1
R. Murray, Senior Resident Inspector
K. Carrington, Resident Inspector

Illinois Emergency Management Agency (IEMA)

C. Mathews, IEMA

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000254/2015003–01; 05000265/2015003–01	NCV	Failure to Evaluate Degraded or Non-Conforming Conditions for Operability (Section 1R19)
05000254/2015003–02; 05000265/2015003–02	NCV	Failure to Establish Adequate Procedure to Preclude Unacceptable Preconditioning of the SBGT System (Section 1R22)
05000254/2015003–03; 05000265/2015003–03	NCV	Failure to Adequately Inspect Relay Contacts for Oxidation Results in Relay Failure (Section 4OA2.3)

Closed

05000254/2015003–01; 05000265/2015003–01	NCV	Failure to Evaluate Degraded or Non-Conforming Conditions for Operability (Section 1R19)
05000254/2015003–02; 05000265/2015003–02	NCV	Failure to Establish Adequate Procedure to Preclude Unacceptable Preconditioning of the SBGT System (Section 1R22)
05000254/2015003–03; 05000265/2015003–03	NCV	Failure to Adequately Inspect Relay Contacts for Oxidation Results in Relay Failure (Section 4OA2.3)
05000254/2015-004	LER	Automatic Depressurization System Trip Logic (Section 4OA3.3)
05000254/2015-007	LER	Loss of Main Control Room Envelope Boundary Due to Damper Inspection (Section 4OA3.4)
05000254/2015-008	LER	Interlock Doors Opened Simultaneously Cause Loss of Secondary Containment (Section 4OA3.5)

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 Number	Document Number	Description or Title	Revision or Date
1R04	Drawing M–44	Diagram of SBGT	AP
1R04	IR 2525520	NRC Identified Issues With the 1/2 A SBGT	07/08/2015
1R04	QCOP 7500–01	SBGTS Standby Operation and Start-up	21
1R04	QOM 0–7500–01	Unit 1/2 SBGT Valve Checklist	7
1R04	Drawing M–37	Diagram of RHR Service Water Piping	BH
1R04	QOM 1–1000–05	Unit 1 RHR Service Water Valve Checklist	22
1R04	QOM 1–1000–07	RHR and RHRSW System Fuse and Breaker Checklist (Unit 1)	4
1R04	IR 2541047	NRC ID: Packing Leak on 1–1001–144B	08/12/2015
1R04	IR 2541039	NRC ID: U-Bolt Not Secured for 1D RHR Pmp Seal Clr Line	08/12/2015
1R04	IR 2541048	NRC ID: Hanging Drip on 3-Way Valve for FT 1-0645D	08/12/2015
1R04	IR 2541050	NRC ID: Hanging Drip from 1D RHR Cooling Water Return Line	08/12/2015
1R04	IR 2542279	NRC ID: 2–1098–14A/B Backflush Vlv are Not Capped	08/15/2015
1R04	QOM 2–1000–09	Unit 2 RHR Valve Checklist	4
1R04	QOM 2–1000–07	RHR Fuse Checklist	5
1R04	QOM 2–1000–03	Unit 2 RHR Valve Checklist	6
1R04	Drawing M–24, Sheet 12	Diagram of Instrument Air Piping Reactor Building	I
1R04	IR 2539198	Trip of 1/2B Instrument Air Compressor, Alarm 912–1 D–10	08/08/2015
1R04	QOM 1–4700–01	Unit 1 Instrument Air Valve Checklist (1A Instrument Air)	7
1R04	QOM 1–4700–05	U1 Instrument Air Valve Checklist (Reactor Bldg)	5
1R04	QOM 2–4700–01	Unit 2 Instrument Air Valve Checklist	14
1R04	QCOP 0300–01	CRD System Startup	29
1R04	IR 2532560	2–0305–104 Valve on HCU 06–15 Body—Bonnet Leak	07/24/2015
1R04	IR 2532553	2–0305–104 Valve on HCU 26–47 Body—Bonnet Leak	07/24/2015
1R04	IR 2532550	2–0305–104 Valve on HCU 22–59 Body—Bonnet Leak	07/24/2015
1R04	IR 2532547	2–0305–104 Valve on HCU 22–55 Body—Bonnet Leak	07/24/2015

Section 1R05			
1R05		LMS Nuclear Web Qual Tool—Student Id 045090	07/29/2015
1R05		LMS Nuclear Web Qual Tool—Student Id 009327	07/29/2015
1R05		LMS Nuclear Web Qual Tool—Student Id 003632	07/29/2015
1R05		LMS Nuclear Web Qual Tool—Student Id 020162	07/29/2015
1R05	FBP 04	Emergency Response Training, Fire Brigade Program: Fire Behavior & Essentials	11
1R05	FBP 05	Emergency Response Training Fire Brigade Program: Ventilation	7
1R05	FBP 08	Emergency Response Training Fire Brigade Program: Tactics and Strategy	9
1R05	FBP 11	Emergency Response Training Fire Brigade Program: Rescue	8
1R05	FBP 17	Emergency Response Training Fire Brigade Program: Foam/Multi-Agent Operations	3
1R05	FZ N/A	Quad Cities Generating Station Pre-Fire Plan: Unit ½ LTD 595'0" Elev. Laundry, Tool, Dry Active Waste	October 2013
1R05	OP–AA–201–003, Attachment 1	Fire Drill Performance Attachment 1, Fire Drill Record: Scenario No: 2015 3rd Qtr #1	07/29/2015
1R05	OP–AA–201–003, Attachment 3	Fire Drill Scenario Information: Fire Drill Scenario No: 15 2nd Qtr #2	
1R05	QCAP 1500–01	Administrative Requirements for Fire Protection	33
1R05	TQ–AA–173	Emergency Services Training Programs	3
1R05	FZ 11.2.3	Unit 1 RB 554'0" Elev. NE Corner Room-1A RHR Room	November 2011
1R05	IR 2542091	NRC ID: Fire Door 145 Issue w/Gap; Requires Assist to Close	08/14/2015
1R05	OP–AA–201–012–1001	Operations On-line Fire Risk Management	1
1R05	QCMMS 4100–61	Fire Door Inspection	22
1R05	FZ 6.3	SB 595'–0" Elev. Auxiliary Electric Room	October 2013
1R05	FZ Station Blackout Building	Unit ½ SBO 595'–0" Elev. Station Blackout Building	November 2011
1R05	FZ 1.1.1.5	Unit 1 RB 666'–6" Elev. Stand-by Gas Treatment 4th Floor East	January 2011
1R06	IR 2554728	Standing Water Found in Manhole/Cable Vaults	09/14/2015
Section 1R11			
1R11	QOA 5650–02	Turbine Control Valve Failure	11

1R11	IR 2540203	Noise Observed in U1 CV LVDT 1 and LVDT 3 Signal	08/11/2015
1R11		Quad Unit 2—September Sequence Exchange (Gen Manager #1090129)	09/05/2015
1R11		Quad Unit 1—September 2015 Sequence Exchange (Gen Manager #1090138)	09/19/2015
1R11	NF–AB–720–F–5	Special Maneuver Rod Move Sheet—Sequence ID Q2C230SM–15	1
1R11	QCOA 0202–04	Reactor Recirc Pump Trip-Single Pump	44
1R11	QCOA 0202–06	Recirculation Pump Seal Failure	27
Section 1R12			
1R12	IR 2472416	RCIC MO–1–1301–61 Motor Degraded	3/22/2015
1R12	ER–AA–200	Preventive Maintenance Program	2
1R12	IQ Review	Motor Operated Valves	6
1R12	IQ Review	Horizontal Pumps	3
1R12	IQ Review	Medium Voltage Circuit Breakers	5
1R12	IR 2543462	1C RHRSW Motor Baker Test Results	08/19/2015
1R12	OP–AA–310–1004	Maintenance Rule—Performance Monitoring	13
1R12	QCEMS 0250–21	GE 4KV ECCS Major 10-Year Pump Motor Inspection	1
1R12	System IQ	System Health Report (04/01/2015-06/30/2015)	
1R12	WO 1726677–02	Contingency Replace Motor on MOV 2–1001–16B	
1R12	IR 2472416	Failure of MO 1–1301–61	03/22/2015
1R12	ER–AA–310	Implementation of the Maintenance Rule	9
1R12	ER–AA–310–1004	Maintenance Rule—Performance Monitoring	13
Section 1R13			
1R13		Work Week Profile 15–31–07 072715	07/21/2015
1R13	WC–AA–101	On-line Work Control Process	25
1R13	WC–AA–104	Integrated Risk Management	23
1R13	WC–AA–101–1006	On-line Risk Management and Assessment	1
1R13	IR 2522617	2A RPS Voltage was High Out of Band for Rounds	07/01/2015
1R13	WO 1843315	2A RPS Voltage was High Out of Band for Rounds	07/06/2015
1R13		Work Week Profile 15–28–04	
1R13	IR 2541018	Received Digital Feed Water Alarm 2XX–FP–Suct–PR–B–ERR	08/12/2015
		Work Week Profile 15–38–01	
1R13	IR 2558540	1D Cond Booster Pump Otbd Bearing Failed	09/22/2015
Section 1R15			
1R15		Quad Cities Station–Operator Rounds	
1R15		Narrative Logs (May 21, 2015 through July 28, 2015)	

1R15	CO 00127527, Checklist 001	Assy-Compressor CR HVAC Trn 'B' RCU Reciprocating	
1R15	Drawing 4E–6840A	Schematic Diagram Control Room HVAC Equipment	17
1R15	Drawing 4E–6840B	Schematic Diagram Control Room HVAC Equipment	11
1R15	IR 2533523	'B' CREVS Booster Fan Damper Failed Part Open	07/28/2015
1R15	QCOS 5750–02	Control Room Emergency Filtration System Test	59
1R15	QCOS 5750–09	Control Room Ventilation System	56
1R15		2007 ASME Boiler & Pressure Vessel Code, 2008a Addenda: XI Rules for Inservice Inspection of Nuclear Power Plant Components	07/01/2008
1R15	15–097	Form NIS–2A Repair/Replacement Certification Record	
1R15	15–UT–046	Ultrasonic Thickness Calibration, Attachment 5	08/19/2015
1R15	15–UT–049	Ultrasonic Thickness Calibration Sheet, Attachment 5	08/24/2015
1R15	Drawing M–22	Diagram of Service Water Piping	Z
1R15	EC 402958	Evaluate Boundary N–513–3 Code Case Flaw Sizes for 1–3960–4"–O	0
1R15	EC 403025	Evaluation of Reinforcing Pad to Address Localized Pitting on 1–3960–4"–O Piping	1
1R15	EC 403034	Evaluate Through-wall Flaws in Line 1–3960–4"–O for Maintaining Required Flow	0
1R15	ECR 420149	Establish New Flaw Size and Compliance with ASME Code Case N–513–3 for Flaws Detected on Line 1–3960–4"–0	08/24/2015
1R15	ER–AA–330–009	ASME Section XI Repair/Replacement Program	9
1R15	IR 2542834	Water on Floor Bay 14 U1 Rx Bldg Bsmt	08/17/2015
1R15	IR 2544946	EOC Inspections for DGCW Leak for N–513–3	08/21/2015
1R15	IR 2548792	NRC Recommended DCGW Leak EC/ECR Enhancements	08/31/2015
1R15	NC, Supplement 6	Case N–789: Alternative Requirements for Pad Reinforcement of Class 2 and 3 Moderate-Energy Carbon Steel Piping for Raw Water Service Section XI, Division 1	06/25/2011
1R15	NES–MS–03.1	Piping Minimum Wall Thickness Calculation	5
1R15	NES–MS–03.2	Evaluation of Discrepant Piping and Support Systems	6
1R15	GEH Letter MFN 15–042	Part 21 60-Day Interim Report Notification: Potential Failure of Electromagnetic Relief Valve Cutout Switch	06/12/2015

1R15	IR 2514707	60 Day Interim Part 21 ERV Cutout Switches	06/15/2015
1R15	Drawing M–374	Diagram of HPCI Piping, Dresden Station Unit 3	CV
1R15	Drawing M–46, Sheet 1	Diagram of HPCI Piping, Quad Cities Station, Unit 1	CD
1R15	Drawing M–46, Sheet 2	Diagram of HPCI Piping, Quad Cities Station, Unit 1	S
1R15	Drawing M–51	Diagram of HPCI Piping, Dresden Station Unit 2	CS
1R15	Drawing M–87, Sheet 1	Diagram of HPCI Piping, Quad Cities Unit 2	BN
1R15	Drawing M–87, Sheet 2	Diagram of HPCI Piping	R
1R15	EC 371223	NRC GL 08–01 Venting and Gas Accumulation Evaluation for HPCI	0
1R15	IR 2542683	Unit 1 HPCI Torus Suction Line Failed UT	08/17/2015
1R15	IR 2544974	1D RHR Pump Failed to Start During Surveillance Testing	08/21/2015
1R15	IR 2545024	1A RHR Pump Breaker Closing Springs Not Charged	08/22/2015
1R15	IR 2537899	Procedure Enhancement for HPCI Valve Timing	08/05/2015
1R15	IR 2537936	Intermittent Ground During QCOS 2300-06	08/05/2015
1R15	IR 2537968	Indication of Mechanical Binding on Damper 0–5741–329	08/05/2015
1R15	OP–AA–108–115	Operability Determinations (CM-1)	16
1R15	PI–AA–120	Issue Identification and Screening Process	3
Section 1R18			
1R18	EC 403025	Evaluation of Reinforcing Pad to Address Localized Pitting on 1–3960–4”–0 Piping	1
1R18	IR 2548792	NRC Recommended DGCW Leak EC/ ECR Enhancements	08/31/2015
1R18	IR 2548993	Need WO to Replace N–789 Repaired Area	08/31/2015
1R18	IR 2554836	NRC Identified EC Revision for DGCWP Piping Leak	09/14/2015
1R18	WO 1854438–07	MM Repair Leak With a Patch Plate 1–3960–4”–0	08/26/2015
1R18	EC 398044	EOC U1 4kv Bus Transfer Logic Mod for Open Phase Concurrent with LOCA	0
1R18	EC 398044	EOC U1 4kv Bus Transfer Logic Mod for Open Phase Concurrent with LOCA	1
1R18	WO 1744523–14	Unit 1 4kV Bus Transfer Logic Per EC 398044	03/06/2015
Section 1R19			
1R19	QCOP 6900–40	Unit 1 125 Vdc Electrical System	1
1R19	QCEMS 0210–02	Battery Charger Testing for Safety Related 125 Vdc Batteries	13

1R19	IR 2534727	U-1 1A 125VDC Charger Abnormal Indications During Testing	07/29/2015
1R19	IR 2535726	Procedure Enhancements to QCEMS 0210–02 are Required	07/30/2015
1R19	WO 01828267	RHR Service Water Pump B Flow (IST)	07/31/2015
1R19	IR 2551802	Scram Timing G–5 Reperformance Required During Downpower	09/06/2015
1R19	IR 2551996	RPIS Indications Missing for Unit 2 L–6 Control Rod	09/07/2015
1R19	QCOS 0300–23	Control Rod Scram Timing in the Hot Condition	15
1R19	WO 01832527	CRD Scram Timing Hot Condition (IST)	09/08/2015
1R19	EACE 2533523	Damper 0–5741–329 Failed Part Open	09/02/2015
1R19	IR 2533523	Damper 0–5741–329 Failed Part Open	07/27/2015
1R19	WO 1849049	Damper ½-5741-329 Failed Part Open	08/04/2015
1R19	Drawing 4E–2503A, Sheet 1	Schematic Diagram PCI System Panel 902–15 Trip Logic and Condenser	AK
1R19	Drawing 4E–2503A, Sheet 2	Schematic Diagram PCI System Panel 902–15 Trip Logic and Condenser	AL
1R19	Drawing 4E–2511, Sheet 1	Schematic Diagram PCI System Radwaste System (Critical Control Room Drawing)	Q
1R19	Drawing 4E–2511, Sheet 2	Schematic Diagram PCI System Radwaste System (Critical Control Room Drawing)	Q
1R19	Drawing M–81, Sheet 1	Diagram of RHR Piping	BX
1R19	Drawing M–81, Sheet 2	Diagram of RHR Piping	BL
1R19	QCOS 1600–44	Unit 2 PCI Group 2 Partial Isolation Test at Power	24b
1R19	Temp Change 3321	Unit 2 PCI Group 2 Partial Isolation Test at Power	09/16/2015
1R19	QCOS 1000–06	RHR Pump/Loop Operability Test	55
1R19	IR 2544974	1D RHR Pump Failed to Start During Surveillance Testing	08/21/2015
1R19	EC 398197	Fukushima FLEX Install Deep Well	
Section 1R22			
1R22	IR 2524699	NRC ID'd: Preconditioning Concern in QCOS 7500–08	07/07/2015
1R22	QCOS 7500–08	Unit 2 SBGT Initiation and Reactor Building Ventilation Isolation Test	23
1R22	WO 1690290	Core Spray Pump Room Cooler 1–5748A Thermostat Replace/Cal	04/14/2015
1R22	QCIS 0200–39	Unit 2 Division I and Low Low Reactor Water Level Analog Trip System Calibration and Functional Test	13
1R22	QCIS 0200–40	Unit 2 Division II Low and Low Low Reactor Water Level Analog Trip System Calibration and Functional Test	10
1R22	QCOS 1000–06	RHR Pump/Loop Operability Test	55

1R22		Adverse Condition Monitoring and Contingency Plan—Unit 2 Drywell Identified Leakage Increase	0
1R22	IR 2547447	Increased U2 DW Sump Leakage	08/27/2015
1R22	IR 2547550	Received U2 DWEDS High Temp Alarm After Pumping Sumps	08/28/2015
1R22	IR 2547902	2A Recirc Pump Outboard Seal Pressure Perturbations	08/28/2015
1R22	IR 2550873	Unit 2 Drywell Sump Inleakage Rate Increase	09/03/2015
1R22	IR 2552980	U2 Drywell Floor Drain Sump Inleakage Sample Analysis Result	09/09/2015
1R22	QCOS 1600–07	RCS Leakage in the Drywell (DWFDS and DWEDS Available)	34
Section 2RS1			
2RS1	RP–AA–503	Unconditional Release Survey Method	9
2RS1		Gamma Spectroscopy Environmental LLD Determinations	March 2014
2RS1		SAM 11 Calibration; Serial Number 7	07/24/2015
2RS1		SAM 11 Calibration; Serial Number 8	07/24/2015
2RS1		SAM 11 Calibration; Serial Number 9	07/24/2015
2RS1		2015 Annual Inventory Reconciliation	01/14/2015
2RS1		Radioactive Source Inventory	04/06/2015
2RS1		Radioactive Source Leak Test Report	03/20/2015
2RS1		Beta Smear LLD Determination	03/17/1998
2RS1	RP–AA–460	Controls for High and Locked High Radiation Areas	26
2RS1	RP–AA–800	Control, Inventory, and Leak Testing of Radioactive Sources	7
2RS1	RP–AA–460–003	Access to HRAS/LHRAS/VHRAS and Contaminated Areas in Response to a Potential or Actual Emergency	7
2RS1		LHRA Barricade Checklist	07/02/2015
2RS1	QDC–01–001	Unconditional Release Detection Thresholds and Dose Consequences	0
2RS1		Audit NOSA–QDC–15–06 (AR 2421180)	07/06–17/2015
2RS1	IR 2421519	ED Dose Rate Alarm	12/05/2014
2RS1	IR 2439914	Potential Site Wide Trend in Rad Protection	01/20/2015
2RS1	IR 2526532	NOS ID: Outdoor RAM Containers Not Internally Inspected	07/10/2015
2RS1	IR 2527423	NOS ID: The Semi-Annual Source Leak Test Report Missing Req'd Information	07/13/2015
2RS1	IR 2529479	NOS ID: ANSI Form Not Filled Out as Required	07/17/2015
Section 2RS2			
2RS2		Q2R22 RWP Dose Report Summary	
2RS2		Q1R23 RWP Dose Report Summary	

2RS2	RWP 10016390	DW 1/B MISV Overhaul	0
2RS2		Q1R23 RWP Post Job Evaluations; Various Documents	
2RS2	IR 1599033	Emergent Dose: U1 'B' Core Spray RM Pump Co	12/19/2013
2RS2	IR 1602323	ALARA Not Notified When Dose Goal Exceeded	12/31/2013
2RS2	IR 1616830	Potential Trend in Dose Control	02/04/2014
2RS2	IR 1649699	RWP 10015108 Exceeded Original Dose Estimate by 25%	04/20/2014
2RS2	IR 1678014	CAPR Out of Process Based on Management Model	07/02/2014
2RS2	IR 2399976	ALARA Post Job Review for 10015774	10/23/2014
Section 2RS3			
2RS3	RP–QC–831	Maintenance and Inspection of MSA Firehawk	12
2RS3		Grade D Air Quality Testing Analysis	January 2014–June 2015
2RS3		MSA SCBA Inspection Checklist	June 2015
2RS3		MSA SCBA Flow Test Records	December 2014
2RS3	IR 1598917	HEPA Storage Area for Q2R22	
2RS3	IR 1636849	End of Life SCBA Bottle Found in Inventory	03/21/2014
2RS3	IR 1643006	TW–1 SCBA Pass Device Continuous Alarm	04/04/2014
2RS3	IR 1696821	SCBA Audi-Larm Assembly O-Ring Defective	08/27/2014
2RS3	IR 2398051	Bauer Air Compressor OOS Due to Low Oil Pressure	10/20/2014
2RS3	IR 2439291	Temporary HEPA/Vacuum Storage Area for Q1R23	01/19/2015
2RS3	IR 2463154	HEPA Malfunction	03/04/2015
2RS3	IR 2502745	Bauer Air Compressor Out of Service	05/19/2015
2RS3	IR 2512622	SCBA Monthly Surveillance Missing Record	06/10/2015
2RS3	IR 2526036	NOS ID: Add Precaution/Reference to Procedures	07/09/2015
2RS3	IR 2529228	NOS ID: Incomplete RP Records	07/16/2015
2RS3		Self-Assessment: In-Plant Airborne Radioactivity Control, Mitigation	10/04/2013
Section 2RS4			
2RS4	RP–AA–210	Dosimetry Issue, Usage, and Control	25
2RS4	RP–AA–220	Bioassay Program	10
2RS4	RP–AA–270	Prenatal Radiation Exposure	7
2RS4		Declared Pregnant Worker Dose Records; Various Records	
2RS4		10 CFR 61 Dry Active Waste Analysis	04/29/2014

2RS4		Prospective Evaluation of the Need for Internal Monitoring at Quad Cities Nuclear Power Station (2014)	
2RS4	RWP 10016590	Dose Restriction	
2RS4	IR 2445157	Positive Whole Body Count During Housekeeping	01/30/2015
2RS4	IR 2483153	Worker Dose Above Exelon Admin Limit Recorded in PADS	04/10/2015
2RS4	IR 2503595	PCE 2015–5/Investigational Whole Body County	05/20/2015
2RS4	IR 2526042	NOS ID: IR Not Generated When WBC QCC Tests Failed	07/09/2015
2RS4		Landauer NVLAP Accreditation	2014–2015
2RS4		Self-Assessment; NRC Baseline Airborne Radioactivity Control and Mitigation, Occupational Dose	05/27/2015
Section 4OA1			
4OA1	EACE 2433389–02	Power Supply Breakers to Unit 0 Fuel Oil Transfer Pump Found Tripped	02/05/2015
4OA1	EC 393738	Secondary Containment Functional Assessment of Open RB Interlock Doors	
4OA1	EC 397569	Review of Loss of Secondary Containment DP Noted in IR 01629224	
4OA1		Radiological Effluent Release Summary Data	October 2014–June 2015
4OA1		Reactor Coolant Chemistry Dose Equivalent Iodine Data	October 2014–June 2015
4OA1	CY–QC–110–608	Reactor/Turbine Building Sample Panel Sample Collection	32
4OA1	CY–QC–120–503	Reactor Water Iodine Analysis	2
4OA1		Reactor Water Radionuclide Analysis	07/22/2015
4OA1		Electronic Dosimeter Alarm Logs	October 2014–June 2015
4OA1	IR 2412012	Unplanned ED Dose Rate Alarm	11/14/2014
4OA1	IR 2452367	Unplanned ED Dose Rate Alarm	02/13/2015
4OA1	IR 2462570	Unplanned ED Dose Rate Alarm	03/03/2015
Section 4OA2			
4OA2	Drawing 4E–1465	Schematic Diagram Reactor Protection System Channel A Scram and Auxiliary Trip Relays	AS
4OA2	IR 1617892	Through Wall Leak Line 2–10116B–2”–D.2B RHRSW Cubicle Cooler	02/06/2014
4OA2	IR 2513060–03	RHR Minimum Flow Valves Discovered Out of Position	07/10/2015
4OA2	IR 2518572	Lead Evaluator’s Flawed Direction Left Unchecked by Training	06/23/2015

4OA2	IR 2526320	CFAM Operational Focus and Fundamental Assessment Elevation	07/10/2015
4OA2	IR 2527236	2B ASD Speed Hold After Grid Bump	07/13/2015
4OA2	IR 2528167	NRC Identified Oily Substance on U2 HCUs	07/14/2015
4OA2	IR 2529504	1A Core Spray PP Auto Trip (Surveillance)	07/17/2015
4OA2	IR 2529830	U–1 Battery Room HVAC, 1–5741–601, Not Cooling Adequately	07/17/2015
4OA2	IR 2529943	1D MSIV Inboard Open Indication Sparked During Bulb Change	07/18/2015
4OA2	IR 2531120	Received Unexpected 912–2 D4 Stability Trip Armed	07/22/2015
4OA2	IR 2532957	U1 EDG Trouble Alarm Received	07/26/2015
4OA2	IR 2535590	The Breaker for the 1A RHR Pump Indicates Dual Position	07/31/2015
4OA2	IR 2541532	NRC ID: Opport. For Alignment with Computer vs Hard Copy Maps	08/13/2015
4OA2	IR 2550673	Operability Benchmark Results Measurement Review	09/03/2015
4OA2	IR 2553103	Leak Identified on 2A RHRSW Piping	09/10/2015
4OA2	EPRI Report 3002000541	Relay Series – Specific Guidance: Generic Service Life Analyses (GSLA) and Preventive Maintenance (PM) Templates	July 2013
4OA2	EACE 2485051-02	EACE Requested of Failure of Unit 1 ADS Logic for IR 2472107	05/12/2015
4OA2	RCR 2506106–04	Unexpected Control Room Alarm	07/06/2015
Section 4OA3			
4OA3	IR 2558540	1D Condensate Booster Pump Outboard Bearing Failed	
4OA3	IR 2561804	Unexpected 2B ASD Trip	09/28/2015
4OA3	IR 2561806	2B ASD Tripped	09/28/2015
4OA3	IR 2562781	WO1864796-01 Found Broken Wires for 2B ASD Motor Monitoring	09/30/2015
4OA3	IR 2562984	Loss of Turbine Vibe/Temp Indication	09/29/2015
4OA3	WO 1864796	Unit 2 ASD 2B Failure	09/30/2015

LIST OF ACRONYMS USED

10 CFR	Title 10 of the *Code of Federal Regulations*
ADAMS	Agencywide Document Access and Management System
ADS	Automatic Depressurization System
AFU	Air Filtration Unit
ALARA	As-Low-As-Is-Reasonably-Achievable
CAP	Corrective Action Program
CRD	Control Rod Drive
CRE	Control Room Envelope
CREV	Control Room Emergency Ventilation
EC	Engineering Change
EDG	Emergency Diesel Generator
EPRI	Electric Power Research Institute
ERV	Electromatic Relief Valve
FZ	Fire Zone
HCU	Hydraulic Control Unit
HEP	Human Error Probability
HPCI	High Pressure Coolant Injection
HVAC	Heating, Ventilation, and Cooling
IMC	Inspection Manual Chapter
IP	Inspection Procedure
IR	Issue Report
LER	Licensee Event Report
LTD	Laundry, Tool, and Dry Active Waste
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
PARS	Publicly Available Records System
PI	Performance Indicator
RCS	Reactor Coolant System
RHR	Residual Heat Removal
RHRSW	Residual Heat Removal Service Water
SBGT	Standby Gas Treatment
SDP	Significance Determination Process
SPAR	Standardized Plant Analysis Risk
SSC	System, Structure, and Component
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
WO	Work Order

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

Sincerely,

/RA/

Karla Stoedter, Chief
Branch 1
Division of Reactor Projects

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

Enclosure:
IR 05000254/2015003; 05000265/2015003
w/Attachment: Supplemental Information

cc w/encl: Distribution via LISTSERV®

DISTRIBUTION:
Janelle Jessie
RidsNrrDorlLpl3-2 Resource
RidsNrrPMQuadCities Resource
RidsNrrDirsIrib Resource
Cynthia Pederson
Darrell Roberts
Richard Skokowski
ROPreports.Resource@nrc.gov

Allan Barker
Carole Ariano
Linda Linn
DRPIII
DRSIII
Jim Clay
Carmen Olteanu

ADAMS Accession Number ML15306A059
☒ Publicly Available ☐ Non-Publicly Available ☐ Sensitive ☒ Non-Sensitive
To receive a copy of this document, indicate in the concurrence box "C" = Copy without attach/encl "E" = Copy with attach/encl "N" = No copy

OFFICE	RIII		RIII		RIII		RIII	
NAME	KStoedter:mp							
DATE	10/30/15							

OFFICIAL RECORD COPY