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

January 29, 2020

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 – INTEGRATED INSPECTION REPORT 05000254/2019004 AND 05000265/2019004

Dear Mr. Hanson:

On December 31, 2019, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Quad Cities Nuclear Power Station, Units 1 and 2. On January 14, 2020, the NRC inspectors discussed the results of this inspection with Mr. H. Dodd, Plant Manager, and other members of your staff. The results of this inspection are documented in the enclosed report.

One finding of very low safety significance (Green) is documented in this report. This finding involved a violation of NRC requirements. We are treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2 of the Enforcement Policy.

A licensee-identified violation which was determined to be of very low safety significance is documented in this report. We are treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2 of the Enforcement Policy.

If you contest the violation or the significance or severity of the violation documented in this inspection report, 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, Region III; the Director, Office of Enforcement; and the NRC Resident Inspector at Quad Cities Nuclear Power Station, Units 1 and 2.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at http://www.nrc.gov/reading-rm/adams.html and at the NRC Public Document Room in accordance with Title 10 of the *Code of Federal Regulations* 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

David E. Hills, Chief
Branch 1
Division of Reactor Projects

Docket Nos. 05000254 and 05000265
License Nos. DPR-29 and DPR-30

Enclosure:
As stated

cc w/ encl: Distribution via LISTSERV®

Letter to Bryan C. Hanson from David E. Hills dated January 29, 2020.

SUBJECT: QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2 – INTEGRATED INSPECTION REPORT 05000254/2019004 AND 05000265/2019004

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U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report

Docket Numbers:	05000254 and 05000265
License Numbers:	DPR-29 and DPR-30
Report Numbers:	05000254/2019004 and 05000265/2019004
Enterprise Identifier:	I-2019-004-0060
Licensee:	Exelon Generation Company, LLC
Facility:	Quad Cities Nuclear Power Station, Units 1 and 2
Location:	Cordova, IL
Inspection Dates:	October 01, 2019 to December 31, 2019
Inspectors:	J. Cassidy, Senior Health Physicist M. Garza, Emergency Preparedness Inspector C. Matthews, Illinois Emergency Management Agency R. Murray, Senior Resident Inspector J. Neurauter, Senior Reactor Inspector D. Tesar, Resident Inspector C. Zoia, Senior Operations Engineer
Approved By:	David E. Hills, Chief Branch 1 Division of Reactor Projects

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting an integrated inspection at Quad Cities Nuclear Power Station, Units 1 and 2, in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC's program for overseeing the safe operation of commercial nuclear power reactors. Refer to https://www.nrc.gov/reactors/operating/oversight.html for more information. A licensee-identified non-cited violation is documented in report section: 71111.15.

List of Findings and Violations

Failure to Inhibit Spurious Start of High Pressure Coolant Injection Within 10 Minutes for an Appendix R Fire			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Initiating Events	Green NCV 05000254,05000265/2019004-01 Open/Closed	None (NPP)	71111.15
The inspectors identified a finding of very-low safety significance and associated non-cited violation (NCV) of Technical Specification 5.4.1 "Procedures," for the licensee's failure to implement and maintain fire protection program safe shutdown procedures, Quad Cities Appendix R procedures (QCARP). Specifically, the licensee failed to maintain procedures QCARP 0030-01, "[Fire Area] TB-III [Turbine Building] [Unit 2] Injection with SSMP [safe shutdown makeup pump] and Bringing the Unit to Cold Shutdown" and QCARP 0030-02, "[Fire Area] TB-I [Turbine Building][Unit 1] Injection with SSMP and Bringing the Unit to Cold Shutdown," by not including steps which would inhibit spurious operation of the high pressure coolant injection (HPCI) system within the required 10-minute timeframe.			

Additional Tracking Items

Type	Issue Number	Title	Report Section	Status
LER	05000254/2019-002-00	LER 2019-002-00 for Quad Cities, Unit 1, Phase to Ground Fault in Isolated Phase Bus Duct Led to Generator Trip and an Automatic SCRAM	71153	Closed
LER	05000254/2018-005-01	LER 2018-005-01 for Quad Cities Nuclear Power Station Unit 1 Regarding Loss of Safety Bus and Automatic Actuation of a Safety System During Undervoltage Relay Surveillance.	71153	Closed

PLANT STATUS

Unit 1
The unit began the inspection period at full-rated thermal power, where it remained for the entire inspection period, with the exception of short-term power reductions for control rod sequence exchanges, testing, and as requested by the transmission system operator.

Unit 2
The unit began the inspection period at full-rated thermal power, where it remained for the entire inspection period, with the exception of short-term power reductions for control rod sequence exchanges, testing, and as requested by the transmission system operator.

INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors performed plant status activities described in IMC 2515, Appendix D, "Plant Status," and conducted routine reviews using IP 71152, "Problem Identification and Resolution." The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

REACTOR SAFETY

71111.01 - Adverse Weather Protection

Seasonal Extreme Weather Sample (IP Section 03.02) (1 Sample)

(1) The inspectors evaluated readiness for seasonal extreme weather conditions prior to the onset of seasonal cold temperatures for the following systems:

- heating steam system issues
- Units 1 and 2 standby liquid control system and room temperatures

71111.04Q - Equipment Alignment

Partial Walkdown Sample (IP Section 03.01) (1 Sample)

The inspectors evaluated system configurations during partial walkdowns of the following systems/trains:

(1) reactor core isolation cooling QCOP 1300-01 for high pressure coolant injection work window on October 29, 2019 [Unit 2]

71111.05A - Fire Protection (Annual)

Annual Inspection (IP Section 03.02) (1 Sample)

(1) The inspectors evaluated fire brigade performance during an unannounced drill in the Unit 2 turbine building 95 motor control center 25-2 cubicle J-1 fire on October 24, 2019 [Unit 1/2].

71111.05Q - Fire Protection

Quarterly Inspection (IP Section 03.01) (4 Samples)

The inspectors evaluated fire protection program implementation in the following selected areas:

(1) Fire Zones 8.2.6E, and 28.1, Unit 2 turbine building, elevation 595'-0" on October 24, 2019
(2) Fire Zone 5.0, Unit 2 turbine building, elevation 595'-0", safe shutdown pump room on October 30, 2019
(3) Fire Zone 11.3.1, Unit 2 reactor building, elevation 544'-0", southwest corner room 2B core spray on October 30, 2019
(4) Unit 1/2 'B' control room emergency ventilation system water intrusion, Issue Report 4291738 on November 5, 2019

71111.08G - Inservice Inspection Activities (BWR)

BWR Inservice Inspection Activities Sample - Nondestructive Examination and Welding Activities (IP Section 03.01) (1 Partial)

(1) (Partial)
The inspectors continued review of the licensee's documents related to URI 05000254/2019001-01 and related discussion with NRC's Office of Nuclear Reactor Regulation staff. The inspection activities remain on-going and will be documented in a subsequent report.

71111.11A - Licensed Operator Requalification Program and Licensed Operator Performance

Requalification Examination Results (IP Section 03.03) (1 Sample)

(1) The inspectors reviewed and evaluated the licensed operator examination failure rates for the requalification biennial written examinations and annual operating tests administered from October 14 through November 22, 2019.

71111.11B - Licensed Operator Requalification Program and Licensed Operator Performance

Licensed Operator Requalification Program (IP Section 03.04) (1 Sample)

(1) Biennial Requalification Written Examinations

The inspectors evaluated the quality of the licensed operator biennial requalification written examination administered on October 25, 2019.

Annual Requalification Operating Tests

The inspectors evaluated the adequacy of the facility licensee's annual requalification operating test.

Administration of an Annual Requalification Operating Test

The inspectors evaluated the effectiveness of the facility licensee in administering requalification operating tests required by 10 CFR 55.59(a)(2) and that the facility licensee is effectively evaluating their licensed operators for mastery of training objectives.

Requalification Examination Security

The inspectors evaluated the ability of the facility licensee to safeguard examination material, such that the examination is not compromised.

Remedial Training and Re-examinations

The inspectors evaluated the effectiveness of remedial training conducted by the licensee, and reviewed the adequacy of re-examinations for licensed operators who did not pass a required requalification examination.

Operator License Conditions

The inspectors evaluated the licensee's program for ensuring that licensed operators meet the conditions of their licenses.

Control Room Simulator

The inspectors evaluated the adequacy of the facility licensee's control room simulator in modeling the actual plant, and for meeting the requirements contained in 10 CFR 55.46.

Problem Identification and Resolution

The inspectors evaluated the licensee's ability to identify and resolve problems associated with licensed operator performance.

71111.11Q - Licensed Operator Requalification Program and Licensed Operator Performance

Licensed Operator Performance in the Actual Plant/Main Control Room (IP Section 03.01) (1 Sample)

(1) The inspectors observed and evaluated licensed operator performance in the control room during the Unit 2 load drop (control rod pattern adjustment and scram time testing) on November 16, 2019.

Licensed Operator Requalification Training/Examinations (IP Section 03.02) (1 Sample)

(1) The inspectors observed and evaluated licensed operator requalification training on November 5, 2019.

71111.12 - Maintenance Effectiveness

Routine Maintenance Effectiveness Inspection (IP Section 02.01) (3 Samples)

The inspectors evaluated the effectiveness of routine maintenance activities associated with the following equipment and/or safety significant functions:

(1) emergency diesel generators on October 3, 2019
(2) high pressure coolant injection system on October 4, 2019
(3) automatic depressurization system on October 30, 2019

Quality Control (IP Section 02.02) (1 Sample)

The inspectors evaluated maintenance and quality control activities associated with the following equipment performance activities:

(1) residual heat removal system - quality control sample on December 23, 2019

71111.13 - Maintenance Risk Assessments and Emergent Work Control

Risk Assessment and Management Sample (IP Section 03.01) (3 Samples)

The inspectors evaluated the risk assessments for the following planned and emergent work activities:

(1) planned work - Unit 1A core spray work window during week of October 7, 2019
(2) planned work - 'B' control room emergency ventilation system [Unit 1/2] and Unit 1/2A fire diesel generator - emergent work on Unit 1 station blackout combined with planned work on contaminated condensate storage tank during week of October 28, 2019
(3) planned work - Unit 2 online auto blowdown logic test QCOS 0203-07 during week of November 5, 2019

71111.15 - Operability Determinations and Functionality Assessments

Operability Determination or Functionality Assessment (IP Section 02.02) (8 Samples)

The inspectors evaluated the following operability determinations and functionality assessments:

(1) Issue Report 4271861, "[Unit] 1A RHR [residual heat removal] Pump Running with Tripped Alarm B6 on the 901-3 Panel" on October 1, 2019
(2) Issue Report 4278317, "[Unit] 2A RHRSW [residual heat removal service water] Vault Door Found Not Dogged Closed" with Unit 1 EDG [emergency diesel generator] out-of-service for maintenance on October 1, 2019

(3) Issue Report 4254547, "Unit 1 HPCI did not Trip Locally During QCOS 2300-13" on October 1, 2019
(4) Issue Report 4281888, "[Unit 1/2] EDG Vent Fan No Longer Working" on October 7, 2019
(5) Issue Report 4291738, "[Unit 1/2] 'B' Control Room Emergency Ventilation System Water Intrusion" on October 28, 2019
(6) Issue Report 4293501, "Unit 1 SBO S/D [station blackout shut down] Due to Unexpected Generator Excitation Alarm" on November 6, 2019
(7) Issue Report 4295986, "[Unit] 1A 125 Vdc Battery Charger Fluctuations" on November 12, 2019
(8) Issue Report 4298531, "Leak from Unit 1 EDG CWP [cooling water pump] and Extent of Condition" on November 21, 2019

71111.18 - Plant Modifications

Temporary Modifications and/or Permanent Modifications (IP Section 03.01 and/or 03.02) (1 Sample)

The inspectors evaluated the following temporary or permanent modifications:

(1) Engineering Change 624474, "Automate Flow of Service Water to [Unit 1/2] 'A' Train Control Room HVAC [heating, ventilation, and air conditioning]" on December 2, 2019

71111.19 - Post-Maintenance Testing

Post-Maintenance Test Sample (IP Section 03.01) (9 Samples)

The inspectors evaluated the following post-maintenance tests:

(1) Unit 2A core spray flow test following core spray logic test on October 4, 2019
(2) QCOS 1400-01, "[Unit 1] 'A' Core Spray Pump Flow Rate IST [inservice testing] Group B Pump Test" on October 10, 2019
(3) QCOS 1300-5, "[Unit 1] RCIC [reactor core isolation cooling] Pump Flow Rate IST Group B Test" on October 11, 2019
(4) QCOS 1000-6, "[Unit 1] 'B' RHR Pump Flow Rate Group A Test (IST)" on October 23, 2019
(5) QCOS 6620-01, "SBO DG [diesel generator] [Unit]1 Quarterly Load Test" on November 1, 2019
(6) QCOS 1000-27, "[Unit 1] Residual Heat Removal Pump Comprehensive Performance Test," following planned maintenance on November 14, 2019
(7) QCOS 7500-08, "SBGT [standby gas treatment] Post Maintenance Testing Following Timer Relay Replacement" on November 17, 2019
(8) Unit 1 EDG CWP post-maintenance testing following pump casing plug replacement on November 20, 2019
(9) QCOS 0300-23 "[Unit 2] Control Rod Scram Timing for HCU [hydraulic control unit] 38-43 Following SCRAM Valve Replacement" on December 14, 2019

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

Surveillance Tests (other) (IP Section 03.01) (2 Samples)

(1) QCOS 4100-36, "[Unit 1/2] Emergency Portable Pump Surveillance" on October 23, 2019
(2) QCOS 1000-45, "[Unit 1] RHR Valve Testing 1-1001-43B" on October 24, 2019

71114.02 - Alert and Notification System Testing

Inspection Review (IP Section 02.01-02.04) (1 Sample)

(1) The inspectors evaluated the following maintenance and testing of the alert and notification system:
    - 2017 Annual Preventive Maintenance
    - 2018 Annual Preventive Maintenance

71114.03 - Emergency Response Organization Staffing and Augmentation System

Inspection Review (IP Section 02.01-02.02) (1 Sample)

(1) The inspectors evaluated the readiness of the Emergency Preparedness Organization

71114.05 - Maintenance of Emergency Preparedness

Inspection Review (IP Section 02.01 - 02.11) (1 Sample)

(1) The inspectors evaluated the maintenance of the emergency preparedness program

71114.06 - Drill Evaluation

Select Emergency Preparedness Drills and/or Training for Observation (IP Section 03.01) (2 Samples)

(1) emergency preparedness drill on October 10, 2019
(2) emergency preparedness drill on October 15, 2019

RADIATION SAFETY

71124.08 - Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation

Radioactive Material Storage (IP Section 02.01) (1 Sample)

The inspectors evaluated radioactive material storage

(1) The inspectors toured the following areas:
    - Laundry and Tool Decontamination Area

- Interim Radioactive Waste Storage Building

The inspectors performed a container check (e.g., swelling, leakage and deformation) on the following containers:

- 4 bags of radioactive waste in the Laundry and Tool Decontamination Area
- 5 filled liners stored in the Interim Radioactive Waste Storage Facility

Radioactive Waste System Walkdown (IP Section 02.02) (1 Sample)

The inspectors evaluated the following radioactive waste processing systems during plant walkdowns:

(1) Liquid or Solid Radioactive Waste Processing Systems

- Floor Drain System
- Waste Collector System
- Chemical Waste System
- Laundry Drain system

Radioactive Waste Resin and/or Sludge Discharges Processes

- Bead Resin
- Condensate Resin

Waste Characterization and Classification (IP Section 02.03) (1 Sample)

The inspectors evaluated the radioactive waste characterization and classification for the following waste streams:

(1) Dry Active Waste
Bead Resin
Condensate Resin

Shipment Preparation (IP Section 02.04) (1 Sample)

The inspectors evaluated the licensee's radioactive material shipment preparation processes

(1) The inspectors evaluated training and qualification records for selected individuals due to limited observation of the radioactive material shipment preparation process.

Shipping Records (IP Section 02.05) (1 Sample)

The inspectors evaluated the following non-excepted package shipment records:

(1) QC-18-111
QC-18-067
QC-18-113

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

EP01: Drill/Exercise Performance (IP Section 02.12) (1 Sample)

(1) 4th quarter 2018 through 3rd quarter 2019

EP02: ERO Drill Participation (IP Section 02.13) (1 Sample)

(1) 4th quarter 2018 through 3rd quarter 2019

EP03: Alert & Notification System Reliability (IP Section 02.14) (1 Sample)

(1) 4th quarter 2018 through 3rd quarter 2019

MS07: High Pressure Injection Systems (IP Section 02.06) (2 Samples)

(1) Unit 1 (10/01/2018-09/30/2019)
(2) Unit 2 (10/01/2018-09/30/2019)

MS08: Heat Removal Systems (IP Section 02.07) (2 Samples)

(1) Unit 1 (10/01/2018-09/30/2019)
(2) Unit 2 (10/01/2018-09/30/2019)

MS09: Residual Heat Removal Systems (IP Section 02.08) (2 Samples)

(1) Unit 1 (10/01/2018-09/30/2019)
(2) Unit 2 (10/01/2018-09/30/2019)

MS10: Cooling Water Support Systems (IP Section 02.09) (2 Samples)

(1) Unit 1 (10/01/2018-09/30/2019)
(2) Unit 2 (10/01/2018-09/30/2019)

BI01: Reactor Coolant System (RCS) Specific Activity Sample (IP Section 02.10) (2 Samples)

(1) Unit 1 (10/01/2018-09/30/2019)
(2) Unit 2 (10/01/2018-09/30/2019)

OR01: Occupational Exposure Control Effectiveness Sample (IP Section 02.15) (1 Sample)

(1) 10/01/2018 - 09/30/2019

71152 - Problem Identification and Resolution

Semiannual Trend Review (IP Section 02.02) (1 Sample)

(1) The inspectors reviewed the licensee's corrective action program for potential adverse trends in Unit 1 125 Vdc battery charger that might be indicative of a more significant safety issue on November 13, 2019.

Annual Follow-up of Selected Issues (IP Section 02.03) (2 Samples)

The inspectors reviewed the licensee's implementation of its corrective action program related to the following issues:

(1) Issue Report 4271861, "[Unit] 1A RHR Pump Running with Tripped Alarm B6 on the 901-3 Panel"
(2) Issue Report 4294771, "Framatome [fuel] Unanalyzed Condition [applicable to both units]"

71153 - Followup of Events and Notices of Enforcement Discretion

Event Report (IP Section 03.02) (2 Samples)

The inspectors evaluated the following LERs:

(1) LER 05000254/2019-002-00, Phase to Ground Fault in Isolated Phase Bus Duct Led to Generator Trip and an Automatic SCRAM (ADAMS Accession: ML 19296B206). The circumstances surrounding this LER are documented in the Results section.
(2) LER 05000254/2018-005-01, Loss of Safety Bus and Automatic Actuation of a Safety System During Undervoltage Relay Surveillance (ADAMS Accession: ML19329D083). The inspectors reviewed the updated LER submittal. The previous LER submittal was reviewed in Integrated Inspection Report 05000254/0500265 2019-001. The circumstances surrounding this LER are documented in Integrated Inspection Report 05000254/2019001; 05000265/2019001, Section 71153.

INSPECTION RESULTS

Failure to Inhibit Spurious Start of High Pressure Coolant Injection Within 10 Minutes for an Appendix R Fire			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Initiating Events	Green NCV 05000254,05000265/2019004-01 Open/Closed	None (NPP)	71111.15
The inspectors identified a finding of very-low safety significance and associated non-cited violation (NCV) of Technical Specification 5.4.1 "Procedures," for the licensee's failure to implement and maintain fire protection program safe shutdown procedures, Quad Cities Appendix R procedures (QCARP). Specifically, the licensee failed to maintain procedures QCARP 0030-01, "[Fire Area] TB-III [Turbine Building] [Unit 2] Injection with SSMP [safe shutdown makeup pump] and Bringing the Unit to Cold Shutdown" and QCARP 0030-02,			

"[Fire Area] TB-I [Turbine Building][Unit 1] Injection with SSMP and Bringing the Unit to Cold Shutdown," by not including steps which would inhibit spurious operation of the high pressure coolant injection (HPCI) system within the required 10-minute timeframe.

Description:

On June 5, 2019, the licensee documented in Issue Report 4254547 that the HPCI pull-to-trip lever did not prevent the HPCI pump from starting despite having been actuated prior to the demand. The issue report recommended a review of the QCARP since they credited the pull-to-trip lever on the HPCI front standard as the method of preventing spurious start of the HPCI system during a fire event.

Station personnel evaluated the system response and determined that the system was operating as designed. Based upon this determination, the QCARP procedures were reviewed for adequacy. Station personnel credited closure of remotely operated steam supply valves for preventing the spurious start of the HPCI system, and therefore determined that no additional actions were necessary. Based upon questions from the NRC, it was determined that the closure of the remotely operated valves could not be credited based upon the location of the fire and as indicated in the fire protection reports and the QCARP procedures. On July 24, 2019, Issue Report 4266776 was initiated by the licensee identifying that procedures QCARP 0030-01 and QCARP 0030-02 for fire scenarios in fire areas TB-I (Unit 1) and TB-III (Unit 2) failed to prevent spurious start of the HPCI system within the required 10-minute timeframe.

This finding is being classified as NRC Identified as the licensee did not recognize and correct the condition without prompting by the Quad Cities resident inspectors.

Corrective Actions: The licensee implemented corrective actions including revising QCAPR procedures QCARP 0030-01 and QCARP 0030-02, adding actions to pull the control power fuses for the HPCI logic circuit within 10 minutes, thereby inhibiting spurious operation of the HPCI system.

Corrective Action References:

Issue Report 4254547, "HPCI Did Not Trip Locally During QCOS 2300-13"
Issue Report 4266776, "HPCI Not Disabled for Fire Areas TB-III And TB-I"

Performance Assessment:

Performance Deficiency: The inspectors determined that the licensee's QCARP procedures (QCARP 0030-01 and QCARP 0030-02) failed to prevent spurious operation of the HPCI system within the required 10-minute timeframe, and was a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Protection Against External Factors attribute of the Initiating Events cornerstone and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the failure to include steps to inhibit spurious operation of HPCI could have resulted in a failure to prevent overfill of the reactor pressure vessel resulting in the following potential consequences:

(1) Hydrodynamic effects of water or two-phase fluid being discharged through the safety relief valves. This process could damage the safety relief valves.

(2) Stressing of the vessel, steam line nozzles, steam line snubbers, pipe supports, and hangers as a result of:

(a) the thermal transient caused by colder water flowing into the hot main steam line and reactor vessel;

(b) the weight of water in the main steam lines; and

(c) the dynamic transient loads caused by water flow in the main steam lines.

(3) Potential for main steam isolation valves not to close if the steam lines are filled with water.

(4) Placing the plant in a condition that has not been analyzed in the final safety analysis report.

Significance: The inspectors assessed the significance of the finding using Appendix F, "Fire Protection and Post - Fire Safe Shutdown SDP." The inspectors determined the finding screened as Green because they answered "Yes" to question: "1.4.7-B) Would the impact of the fire finding be limited to equipment which is not required for the credited safe shutdown success path?" In the fire scenarios of concern, the safe shutdown makeup pump (SSMP) is the credited SSC for reaching safe shutdown.

Cross-Cutting Aspect: Not Present Performance. No cross-cutting aspect was assigned to this finding because the inspectors determined the finding did not reflect present licensee performance. Specifically, the procedures discussed in this NCV were developed more than three years ago.

Enforcement:

Violation: Quad Cities Units 1 and 2 Technical Specification 5.4.1, "Procedures," requires the licensee to establish, implement, and maintain written procedures for implementation of the Fire Protection Program.

Quad Cities Units 1 and 2 Safe Shutdown Report, Revision 21 (Fire Protection Report, Volume 2), in part, implements the Fire Protection Program. Section 5.2 requires actions to prevent adversely affecting safe shutdown by ensuring reactor water inventory is maintained and not inadvertently lost due to fire-induced spurious component operation in less than 10 minutes.

Contrary to the above, prior to July 25, 2019, the licensee failed to establish written procedures for implementation of the Fire Protection Program to prevent adversely affecting safe shutdown by ensuring reactor water inventory is maintained and not inadvertently lost due to fire-induced spurious component operation. Specifically, the licensee actions in QCARP 0030-01, "[Fire Area] TB-III [Turbine Building] [Unit 2] Injection With SSMP and Bringing the Unit to Cold Shutdown" and QCARP 0030-02, "[Fire Area] TB-I [Turbine Building][Unit 1] Injection With SSMP and Bringing the Unit to Cold Shutdown," would have failed to prevent spurious operation of the HPCI system within the required 10-minute timeframe.

Enforcement Action: This violation is being treated as an non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

Licensee-Identified Non-Cited Violation	71111.15
This violation of very low safety significance was identified by the licensee and has been entered into the licensee corrective action program and is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.	
Violation: 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 QCAP 0250-06, "Control of In-Plant Flood Barriers and Watertight 'Submarine' Doors," as the implementing procedure for ensuring in-plant flood barriers were maintained, an activity affecting quality. Procedure QCAP 0250-06, Step D.1.a states, "It is the responsibility of the individual using the door to verify it is properly closed and 'dogged' (latched)." Additionally the procedure states, in part, "If the flood protection barrier is breached for any RHR service water vault, then equipment in those rooms will be considered inoperable unless all the following criteria are met for all breached barriers: a dedicated individual is standing by to restore the breached flood protection barrier." Contrary to the above, from 0209 to 0747 on September 11, 2019, the licensee failed to follow Step D.1.a of procedure QCAP 0250-06. Specifically, an individual used the Unit 2A RHRSW vault door at 0209 and failed to verify the door was properly closed and dogged. Additionally, from 0209 to 0747, the licensee failed to ensure a dedicated individual was standing by to restore the breached flood protection barrier; therefore, the Unit 2 EDG CWP and 2A RHRSW pumps were inoperable, which also caused the Unit 2 EDG to be in an unplanned, inoperable condition.	
Significance/Severity: Green. Using Exhibit 2, "Mitigating Systems Screening Questions," the inspectors were directed to Exhibit 4, "External Event Screening Questions," because the finding involved the loss or degradation of a flood barrier specifically designed to mitigate a flooding hazard. The inspectors determined a detailed risk evaluation was required when they answered "yes" to Question 1 in Exhibit 4, because the loss of the flood barrier by itself during a flood event would degrade one or more trains of a system that supports a risk significant system or function. Specifically, the loss of the Unit 2A RHRSW vault flood barrier during a flood event would cause a loss of the Unit 2 EDG, which supports a risk significant system and function. A senior risk analyst performed a qualitative detailed risk evaluation of the finding. A major flood in the area could cause a plant transient, loss of the normal heat removal systems, and impact an RHR service water pump and diesel generator cooling water pump. However, multiple RHR service water pumps, the shared diesel generator, and the station blackout diesel generators were not impacted by the performance deficiency and would remain available. The exposure period was very short (less than 6 hours) and, combined with the remaining mitigation capability and the frequency of the flood event, would result in a change in core damage frequency much less than 1E-6/yr. Corrective Action References: The licensee documented this issue in Issue Report 4278317, "2A RHRSW Vault Door Found Not Dogged Closed," dated September 11, 2019.	

Observation: Framatome Fuel Unanalyzed Condition	71152
The inspectors reviewed licensee Issue Report 4294771, "Additional Framatome Analysis Required," which documented potential unanalyzed conditions for Framatome fuel installed in both unit reactors. The licensee identified that Framatome failed to analyze water injection transients (e.g. inadvertent intiation of HPCI) with the potential operational plant condition of	

having feedwater regulating valves in manual. When Framatome originally performed the safety analysis, it was assumed that the feedwater regulating valves would maintain water level while being in automatic operation, for all water injection transients. This assumption error would cause thermal limits to be worse than originally analyzed. Specifically, with one feedwater regulating valve in manual, there is less feedwater adjustment available than normal, and the high-high water level isolation would occur at a higher reactor power level, causing a reduced margin to thermal limits than originally analyzed.

The impact of this condition had very low safety significance. The licensee stated that based on early analysis, "there are some power levels where the current thermal limits would be non-conservative…" Framatome provided Quad Cities with administrative limits - thermal limit penalties - for various thermal limits that can be implemented if one feedwater regulating valve needs to be placed in manual. Furthermore, the licensee implemented instructions to enter a Technical Specification Limiting Condition for Operation if both feedwater regulating valves are in manual at rated conditions or if one feedwater regulating valve is in manual at lower power.

Quad Cities personnel stated, in an evaluation under Issue Report 4294771, that they had never operated in an unanalyzed condition. However, their position was based on retroactive application of their administrative thermal limit penalties. At the time of the inspection, Framatome was performing additional formal analyses for water injection transients with one feedwater regulating valve in manual operation, and Quad Cities personnel performed a technical evaluation looking at past operation with a feedwater regulating valve in manual mode. Quad Cities personnel determined that, assuming the interim administrative limits had been in effect at the time, they never operated outside of those limits. As none of their assessments were complete at the time Quad Cities entered those operating states, the licensee was essentially operating in an unanalyzed condition.

The licensee showed that at all times in their operating history, the unanalyzed condition was effectively bounded by other analyzed conditions. Therefore, the inspectors determined this issue was of very low safety/low risk significance as: (1) Quad Cities did not operate under any potentially unsafe conditions; and (2) the risk of them doing so was low given the infrequent occurrence of the water injection transient in conjunction with the length of time one feedwater regulating valve was in manual operation. Based on this information, the inspectors determined that the unanalyzed condition was not reportable.

Observation: Unit 1 125 Vdc Battery Charger Issues	71152

The inspectors reviewed failures of the Unit 1 125 Vdc battery chargers over the past 12 months as documented in Issue Reports 4204885, 4240708, 4254591, 4262057, 4287804, and 4295986. These failures were associated with oscillating voltage and current on the DC charger output, and in three instances, a trip of the battery charger. Although the licensee has determined that the battery chargers have remained operable, based upon the number of failures over the specified time period, there appears to be an adverse trend in the reliability of the safety-related Unit 1 125 Vdc battery chargers. The licensee has installed monitoring equipment and performed troubleshooting of the Unit 1 125 Vdc chargers; however, actions taken to date have not been effective in resolving the issue. The inspectors did not identify a performance deficiency related to the charger failures.

Observation: Unit 1A RHR Breaker Mechanism Operated Contact Switch Linkage Failure	71152

The inspectors reviewed Issue Report 4271861, "1A RHR Pump Running with Tripped Alarm [B6] on the 901-3 Panel," and reviewed the licensee's evaluation. On August 14, 2019, the licensee started the 1A RHR pump during surveillance QCOS 1000-20, "RHR/ RHRSW Pump Local Breaker Control Test." Operators received indication that the pump was running (i.e. pressure and flow); however, they also received the RHR pump trip alarm. Local light indications for the breaker were not lit, but the pump was running. The licensee began investigating the issue.

The licensee's troubleshooting revealed that the linkage for the 1A RHR pump breaker mechanism operated contact (MOC) switch had become disconnected, which prevented the MOC switch, which controls other component functions (e.g. alarms and minimum flow valve operation), from functioning as expected.

The inspectors reviewed the licensee's Work Group Evaluation for IR 4271861, which identified that the licensee's procedure for periodic inspection of the breaker cubicle lacked specific guidance to ensure the MOC switch linkage assembly hardware was adequately fastened. Specifically, the licensee's procedures for performing maintenance and inspections of 4kV breakers lacked appropriate acceptance criteria, or instructions, that would ensure the linkage arm for the MOC switch would not come loose during repeated breaker cycling. The procedure, QCEPM 0200-11, "Inspection and Maintenance of Horizontal 4kV Cubicles," Section 4.5.9.1, directed the user to "Verify MOC switch linkage hardware is in place and tight." The procedure did not specify a method for ensuring the hardware was tight. The licensee implemented corrective actions to establish appropriate instructions (i.e. mechanically verify tightness, by using a tool, etc.). Additionally, the licensee established a specified torque value to ensure the MOC switch linkage would remain properly secured.

The inspectors noted in the Work Group Evaluation under Issue Report 4271861 that there was a similar issue with this breaker's MOC switch in 2015, documented in Issue Report 2535590. Following that issue, the licensee implemented direction to "verify MOC switch linkage hardware is in place and tight" (procedure QCEPM 0200-11 as referenced above), since it had not previously been a part of the breaker inspection procedure. In 2017, the licensee documented the failure of another MOC switch in the Unit 1C RHRSW breaker from a similar condition (Issue Report 3967424). This issue was captured in Integrated Inspection Report 05000254/2017001; 05000265/2017001 as NCV 2017001-01, "Failure to Ensure Hardware Secure for Breaker MOC Switch Linkage." Corrective actions from Issue Report 3967424 included adding instructions to QCEPM 0200-11 to specify torque values for the MOC switch linkage hardware. Additionally, the licensee had planned a phased approach to implementing extent of condition corrective actions to verify torque values in other similar breakers, based on planned maintenance outages. The MOC switch failure for the 1A RHR pump, which occurred on August 14, 2019, occurred before the planned corrective actions for the breaker. The licensee performed the corrective action on this breaker following this failure.

The inspectors considered whether the MOC switch failure should have been prevented by the licensee. The inspectors determined that the licensee had a reasonable justification for not prioritizing corrective actions (planning to implement sooner than they had) from Issue Report 3967424 to the 1A RHR breaker because they had corrected the failure in 2015. Specifically, in 2015, maintenance workers mechanically tightened the connections on the MOC switch, but not to the newly specified torque value, after its failure.

Additionally, the inspectors considered the consequences of the MOC switch failure. The 1A RHR pump never lost its ability to perform its required function. Although the MOC switch controls the minimum flow valve, the valve is normally open, and the inspectors verified a licensee engineering evaluation showing that the RHR pump can perform its function and provide the required flow with the minimum flow valve open. The consequences of this event were minimal. The inspectors verified the licensee's planned corrective actions were complete for both units prior to the end of the inspection period.

Minor Performance Deficiency	71153

Minor Performance Deficiency: On August 25, 2019, Quad Cities Unit 1 experienced an automatic reactor SCRAM from full power. The SCRAM was a result of a generator trip due to a ground detection relay exceeding its threshold and actuating the generator lockout device. The licensee identified water in the 'A' phase of the isophase bus duct, between the unit auxiliary transformer and the wall of the turbine building. The licensee determined that water had entered through a degraded gasket on an access cover for the isophase bus duct. The water resulted in condensation forming within the bus duct and caused current leakage through one or more insulators that support the bus within the duct. The licensee replaced several insulators within the bus, replaced all associated gaskets, and implemented additional preventative maintenance activities for the isophase bus duct system.

The inspectors reviewed the licensee's root cause report for this event as documented in Issue Report 4274286, "U-1 Reactor Scram - Gen Trip From Gen Ground Relay (GIX 104)."

In June of 2000 during the Q1R16 outage, Quad Cities implemented a preventive maintenance item QCEPM 0400-09, "Electrical Inspection of Isophase Buses and Non-Segregated Buses," for inspections of the isophase bus ducts. This preventive maintenance was established based upon industry Operating Experience and EPRI guidance in "Isolated Phase Bus Maintenance Guide." The preventive maintenance was required to be performed every 4 cycles (8 years). The inspection utilizes a robotic camera-ready inspection vehicle capable of being installed into the isophase bus duct. The preventive maintenance was to be performed on accessible portions of the isophase bus duct which, for the unit auxiliary transformer, was defined as the section of ducting from the unit auxiliary transformer to the turbine building wall.

During the Q1R16 and Q1R20 (2009) inspections, QCEPM 0400-09 results indicated no unacceptable conditions existed in the unit auxiliary transformer portion of the isophase bus duct. The preventive maintenance inspection scheduled for Q1R24 (2017) was deferred until Q1R25 (2019) to support other scheduled maintenance. The preventive maintenance performance scheduled for Q1R25 was not fully completed because the robot that the vendor supplied was too large to fit inside the isophase bus duct. The licensee was only able to complete a limited visual inspection of the isophase bus duct from the transformer side and see only a few feet into the bus duct. The inspection was signed off as completed based on inspecting all "accessible portions of the bus duct." The licensee subsequently determined that the preventive maintenance was incorrectly credited as completed because the inspection of the bus duct to the turbine building wall was not completed.

Despite not fully completing the isophase bus duct inspection, the inspectors were able to verify the satisfactory results of the hi pot testing and megger test following the Q1R25 outage (indicating no grounds or paths for current leakage existed). Additionally, the inspectors noted that the licensee verified no moisture accumulation was present in the section of isophase bus duct that was visible, which included the area of the bus duct

containing the gasketed covers, which were degraded and identified as the cause of the SCRAM. This gave the inspectors confidence that the licensee likely would have identified standing water in the bus duct if it was present at the time of the inspection. Therefore, the inspectors concluded that the failure to complete the entire inspection was not a direct cause of the SCRAM.

The inspectors determined that this failure to perform the preventive maintenance within the required periodicity was a performance deficiency.

Screening: The inspectors determined the performance deficiency was minor. The inspectors determined the performance deficiency was minor because it could not be concluded that the performance deficiency was directly linked to the cause of the SCRAM (water intrusion). The inspectors also noted the significant amounts of rainfall which occurred in the months immediately following the Q1R25 outage, which was likely the source of the water intrusion into the bus duct.

EXIT MEETINGS AND DEBRIEFS

The inspectors verified no proprietary information was retained or documented in this report.

- On January 14, 2020, the inspectors presented the integrated inspection results to Mr. H. Dodd, Plant Manager, and other members of the licensee staff.
- On October 25, 2019, the inspectors presented the Quad Cities Station Requalification Inspection Exit Meeting inspection results to Mr. P. Boyle, Plant Manager and other members of the licensee staff.
- On November 8, 2019, the inspectors presented the Exit Meeting for the EP Program Inspection, inspection results to Mr. M. Humphrey, Director of Organization Performance and Regulatory and other members of the licensee staff.
- On December 6, 2019, the inspectors presented the radiation protection inspection results inspection results to Mr. H. Dodd, Plant Manager, and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.01	Corrective Action Documents	IR 4293145	U1 SBLC Tank Low Temp IN (901-5 G6)	10/31/2019
		IR 4295580	U1 SBO Room Low Temp	11/08/2019
71111.04Q	Procedures	QCOP 1300-01	RCIC System Preparation for Standby Operation	45
71111.05A	Fire Plans	FZ 8.2.6.E, FZ 28.1	Unit 2 TB 595'-0" Elev. Hallway, Unit 2 TB 595'-0" Elev. Storage Expansion Building	November 2018
	Procedures	OP-AA-201-003	Fire Drill Scenario No.: 2019 4th Quarter #3	10/23/2019
71111.05Q	Fire Plans	FZ 11.3.1	Unit 2 RB 544'-0" Elev. SW Corner Room - 2B Core Spray	October 2013
		FZ 5.0	Unit 2 TB 595'-0" Elev. Safe Shutdown Pump Room	March 2018
		FZ 8.2.6.E, FZ 28.1	Unit 2 TB 595'-0" Elev. Hallway, Unit 2 TB 595'0" Elev. Storage Expansion Building	November 2018
71111.11B	Corrective Action Documents	IR 4069473	4.0 Critique: Turbine Control Valve #1 Suicided Close	10/30/2017
		IR 4073060	4.0 Critique for U1 HPCI Failure to Trip During QCOS 2300-05	11/07/2017
		IR 4076082	Operations 4.0 Critique for Unit 1 Turbine Control Valve #1	11/16/2017
		IR 4103901	Operations 4.0 Critique of U1 HPCI Surveillance QCOS 2300-05	02/08/2018
		IR 4130470	4.0 Critique HWCS Tripped Indication	04/24/2018
		IR 4143639	Operations 4.0 Critique, Control Rod Drift 5/30/18	05/30/2018
		IR 4149055	4.0 Critique for Unit 2 Emergency Diesel Generator Trip	06/19/2018
		IR 4177900	4.0 Critique for U1 Unplanned Scram on 9/26/18	09/26/2018
		IR 4188658	4.0 Critique for the Loss of Busses 13-1 and 18 on 10/24/18	10/24/2018
		IR 4253670	4.0 Critique - 1A FRV Downpower	05/31/2019
		IR 4275148	4.0 Critique for U-1 Reactor Scram (Ref IR 04274286)	08/25/2019
	Corrective Action Documents Resulting from Inspection	IR 4291169	NRC ID-LORT Annual Exam Grading Inconsistencies	10/25/2019
	Miscellaneous	Operating Exam Number Six	Simulator Training; License Requalification	24
		Operating Exam Number Twenty-	Simulator Training; License Requalification	11

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		Four		
		TQ-AA-155-F04	Simulator Evaluation Forms - INDIVIDUAL for Crew C	6
		TQ-AA-306-F-20 Exam 23 SBT	2019 LORT Annual Exam Scenario-Based Testing for Exam 23	09/06/2019
		TQ-AA-306-F-20 Exam 24 SBT	2019 LORT Annual Exam Scenario-Based Testing for Exam 24	09/20/2019
		TQ-AA-306-F-20 Exam 26 SBT	2018 LORT Annual Exam Scenario-Based Testing for Exam 26	09/28/2018
		TQ-AA-306-F-20 Exam 37 SBT	2019 LORT Annual Exam Scenario-Based Testing for Exam 37	10/10/2019
		TQ-AA-306-F-20 Exam 40 SBT	2018 LORT Annual Exam Scenario-Based Testing for Exam 40	09/17/2018
		TQ-AA-306-F-20 Exam 6 SBT	2019 LORT Annual Exam Scenario-Based Testing for Exam 6	09/12/2019
	Procedures	QCOP 6600-11	Diesel Generator Local Operation	32
		Simulator Real Time Test R8	Q1C26 Simulator Certification April 2019 Real Time Performance Testing	8
		Steady State Comparison	Q1C26 Simulator Certification April 2019 Steady State Performance Testing	2
		TQ-AA-150-J020	Locally Start 1/2 EDG with a Failure of the 1/2 DGCWP; JPM Number: LP-003-II-A	3
		TQ-AA-150-J020	Transfer CRD System Flow Control Valves; JPM Number: LP-010-I	15
		TQ-AA-155	Conduct of Simulator Training and Evaluation	009
		TQ-AA-155	Conduct of Simulator Training and Evaluation	9
		TR-1	Manual Reactor Trip Simulator Transient Test	11
		TR-5	Trip of a Single Reactor Recirculation Pump Transient Test	11
		TR-6	Main Turbine Trip Simulator Transient Test	11
	Work Orders	SWR 0135170	Simulator Work Request - Clearing Digital Recorders Remotely	05/29/2019
71111.12	Corrective Action Documents	Failure Classification Form	HPCI Failure Classification Form for IR 4217557	03/06/2019
		Failure	HPCI Failure Classification Form for IR 4117639	04/24/2018

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		Classification Form		
		IR 4170073	U1 HPCI FIC 1-2340-1 Erratic When In Standby	09/05/2018
		IR 4244386	U2 HPCI Emergency Oil Pump Fails to Stop in Auto	04/29/2019
		IR 4260050	U2 HPCI Emergency Oil Pump Thermals Tripped	06/27/2019
		IR 4280700	U2 HPCI Emergency Oil Pump Tripped Thermals	09/19/2019
	Corrective Action Documents Resulting from Inspection	IR 4184074	NRC Identified U1 HPCI FIC Potential Degrading Trend	10/16/2018
	Miscellaneous	FN: RX0287-01	Maintenance Rule System Basis Document; Auto Blowdown [ADS]	
	Work Orders	WO 1577588	Replace 1-1001-7D Due to Galling Potential	03/31/2019
		WO 1913714	PSU# MM RHR Vent Valve Threaded Cap is Leaking 2-1099-178	08/30/2018
71111.15	Corrective Action Documents	IR 4191004	Unit 1 SBO DG Voltage Regulator Not Responding	11/02/2018
		IR 4271861	1A RHR Pump Running with Tripped Alarm B6 on the 901-3 Panel	08/14/2019
		IR 4278317	2A RHRSW Vault Door Found not Dogged Closed	09/11/2019
		IR 4281888	EDG Vent Fan No Longer Working	09/24/2019
		IR 4291738	Water Found in Control Room HVAC Air Filtration Unit	10/27/2019
		IR 4292139	'B' CREV Fire Protection Abandonment	10/28/2019
		IR 4293501	U1 SBO S/D Due to Unexpected Generator Excitation Alarm	11/01/2019
		IR 4295986	U-1 MCR Received Alarm 901-8 A-9 125V Battery Charger Trip	11/09/2019
		IR 4298356	Charger Firing Board Acceptance Inspection Reviews	11/19/2019
		IR 4298582	FME Potential in U1 EDG CWP	11/20/2019
		IR 4299084	EOC Report for the Emergency Diesel Generator CWP 0-3903	11/21/2019
		IR 4299089	EOC Report for the Emergency Diesel Generator CWP 2-3903	11/21/2019
		IR 4299097	EOC Report for the Emergency Diesel Generator CWP 1-3903	11/21/2019
		IR 4299209	Create WO to Replace the U1 SBO Min/Max Excitation	11/01/2019

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			Limited	
	Drawings	Drawing 4E-1351B	Schematic Diagram Diesel Generator 1-2 Auxiliaries and Start Relays	Z
		Drawing 4E-1438Q	Schematic Diagram; RHR System SH 15; Pumps 1002A, B, C, D; 4160V BKR Control Div I and II	AA
		Drawing M-813	Diagram of Diesel Generator Room Ventilation	G
	Engineering Changes	EC 351529	Need to Evaluate Effect of Removing Sub Door From 2A RHRSW Vault	
	Miscellaneous	LER 254/2012-002-00	Standby Gas Treatment System Loss of Safety Function Due to Loss of Emergency Power	06/01/2012
		Safe Shutdown Report	Unit 1 & 2 Appendix R Safe Shutdown Required Equipment Lists	23
	Procedures	QCAP 0250-06	Control of In-Plant Flood Barriers and Watertight "Submarine" Doors	15
		QCOP 0250-06	Control of In-Plant Flood Barriers and Watertight "Submarine" Doors	15
		UFSAR 3.4.1.2.1.1	Design Modification of the Condensate Pump Room	5
		UFSAR 3.4.1.2.1.2	Isolation of the RHR Service Water Pumps and the Diesel Generator Cooling Water Pumps from Flood Water	7
	Work Orders	WO 4619620-02	125 Vdc Battery Charger #1A 4 Hr Load Test	12/18/2018
		WO C4619620	125 Vdc Battery Charger #1A 4 HR Load Test	12/18/2018
71111.18	Work Orders	WO 4887981	Automate the Flow of Service Water to the 0-5792-B, EC 624474	11/08/2019
71111.19	Corrective Action Documents	IR 4293361	U2 SBO Engine B Fuel Oil AC Backup Pump C/S Issue	10/31/2019
		IR 4293473	EO ID: 2201-105 G-6 Received and Cleared During QCOS 6620-12	11/01/2019
		IR 4293501	U1 SBO S/D Due to Unexpected Generator Excitation Alarm	11/01/2019
	Miscellaneous	ROD ID: 38-43	Quad Cities U2 Control Rod Scram Timing Single Rod Report	12/14/2019
	Procedures	QCOP 6600-14	Emergency Diesel Generator Cooling Water Pump Manual Operation	18
		QCOS 0300-23	Control Rod Scram Timing in the Hot Condition	25
		QCOS 1000-06	RHR Pump/Loop Operability Test	61

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		QCOS 1000-27	RHR Pump Comprehensive/Performance Test	21
		QCOS 1300-05	RCIC Pump Operability Test	57
		QCOS 1400-04	Core Spray Pump Operability Test	19
		QCOS 6620-01	SBO DG 1(2) Quarterly Load Test	54
		QCOS 7500-08	Unit 2 Standby Gas Treatment Initiation and Reactor Building Ventilation Isolation Test	27
	Work Orders	WO 4936786	QCOS 1300-5 RCIC Pump Flow Rate GP 'B' Test	10/10/2019
		WO 4940882	QCOS 1400-1 'A' Core Spray Pump Flow Rate GP 'B' PMP Test	10/08/2019
		WO 4946609	SBO DG Load Test	11/01/2019
		WO 4946998	RHR 'B' Pump Flow Rate (IST); OP QCOS 1000-6 'B' RHR Pump Flow Rate Group A Test (IST)	10/23/2019
		WO 4975383	Leakage Detected HCU (K-11) 38-43	12/14/2019
71111.22	Procedures	QCOS 1000-45	RHR Valve Testing (PMT)	5
		QCOS 4100-36	Emergency Portable Pump (EPP) Surveillance (J.7.a.)	33
	Work Orders	WO 4828798	Emergency Portable Pump 'C' Surveillance	03/17/2019
		WO 4916521	OP Petroguard Pump Functional Test	08/14/2019
71114.02	Corrective Action Documents	AR03984480	EP-Siren Failure (QC32)	03/13/2017
		AR04023240	EP-Siren Failure QC-32	06/19/2017
		AR04052138	EP-Whiteside County Siren Command Panel Failure	09/14/2017
		AR04085298	EP-Whiteside County Siren Countrol Panel Failure	12/18/2017
	Miscellaneous		2018 PNS System Maintenance Report	12/2018
			2017 PNS System Maintenance Report	12/2017
			Offsite Emergency Plan Prompt Alert and Notification System Addendum for the Quad Cities Nuclear Station	2
71114.03	Corrective Action Documents	IR04295652	NRC ID: Potential Enhancement to ERO Augmentation Process	11/08/2019
	Miscellaneous		Quarterly Call In Drill Reports	3rd Quarter 2018 - 3rd Quarter 2019
71114.05	Corrective Action Documents	AR04034755	EP-Whiteside County Sheriff NARS Issue	07/24/2017
		AR04128766	NOS ID: Emergency Preparedness Record Issues	04/19/2018

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		AR04128767	NOS ID: Material Condition Identified for Field Team Equipment	04/17/2018
		AR04128770	NOS ID: TSC Equipment and Material Condition Issues Identified	04/19/2018
		AR04222739	EP-NARS Inoperable for Multiple Offsite Agencies	02/22/2019
		AR04225261	EP-Rock Island County EOC NARS Phone Inop	03/01/2019
		AR04241135	NOS ID: TSC HVAC Mod was not Assessed by EP	04/18/2019
		AR04253144	EP ID: Quad Cities 2019 EP Off Year Exercise - Sim DC Failure	05/21/2019
	Corrective Action Documents Resulting from Inspection	IR04295662	NRC ID: Potential Enhancement to EP Equipment Issue Trending	11/08/2019
	Self-Assessments	NOSA-QDC-18-03	Quad Cities Emergency Preparedness Audit Report	04/25/2018
		NOSA-QDC-19-03	Emergency Preparedness Quad Cities Station Audit Report	04/24/2019
71124.08	Miscellaneous	N-AN-RP-RSHIP-CGP61	10CFR61 Waste Stream Analysis	09/24/2019
		N-AN-RP-RSHIP-CGVPI	Radioactive Vehicle and Package Shipment Inspection	09/24/2019
		SRRS2B.128	Quad Cities 10 CFR 61 Program Waste Stream Characterization and Scaling Factor Review	2018
	Procedures	RP-AA-600	Radioactive Material/Waste Shipments	17
		RP-AA-600-1002	Highway Route Controlled Quantity and Advance Notification for Radioactive/Waste Shipments	6
		RP-AA-600-1009	Shipment of Category 2 Quantities of Radioactive Material or Waste (Category 2 RAMQC)	3
		RP-AA-601	Surveying Radioactive Material Shipments	21
	Self-Assessments	AR 4207574	NRC: RAd Protection - Solid Waste Processing, Handling, Storage and Transportation (IP 71124.08)	10/22/2019
	Shipping Records	QC-18-067	UN3321, Radioactive Material, Low Specific Activity (LSA-II), Condensate Resin	08/27/2018
		QC-18-111	UN3321, Radioactive Material, Low Specific Activity (LSA-II),	08/02/2018

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			Dry Active Waste	
		QC-18-113	UN3321, Radioactive Material, Low Specific Activity (LSA-II), Dry Active Waste	10/12/2018
71151	Miscellaneous		NRC Performance Indicator Data; Emergency Preparedness – Drill/Exercise Performance; 4th Quarter 2018 - 3rd Quarter 2019	
			NRC Performance Indicator Data; Emergency Preparedness – ERO Drill Participation; 4th Quarter 2018 - 3rd Quarter 2019	
			NRC Performance Indicator Data; Emergency Preparedness – Alert and Notification System Reliability; 4th Quarter 2018 - 3rd Quarter 2019	
		LS–AA–2090	Monthly Data Elements for NRC Reactor Coolant System Specific Activity and Supporting Data	Various Dates
		SP–AA–3000 Attachment A	Site Performance Indicator Validation Sheet and Supporting Data	Various Dates
71152	Corrective Action Documents	IR 4204885	1A 125v DC Battery Charger Failure	12/20/2018
		IR 4240708	Received Alarm 901-8 A9 125v DC Battery Charger Trip	04/17/2019
		IR 4254591	Received 901-8 Ap U1 125v DC Battery Charger Trip Alarm	06/05/2019
		IR 4262057	Received Alarm 901-5 G-1 Bat Charger 1A/1B AC/DC Ckt Failure	07/05/2019
		IR 4271861	1A RHR Pump Running with Tripped Alarm B6 on the 901-3 Panel	08/14/2019
		IR 4287804	EO ID 1A 125v DC Charger Oscillating Voltage and Current	10/14/2019
		IR 4291233	Potential Part 21 - Engine Systems	10/25/2019
		IR 4291744	Received 250 Vdc Ground Alarm	10/27/2019
		IR 4294771	Additional Framatome Analysis Required	11/05/2019
		IR 4295986	U-1 MCR Received Alarm 901-8 A-9 125v Battery Charger Trip	11/09/2019
		IR 4296527	Missed EQ Gearbox Lubrication Inspection 1-1001-185A L05	11/12/2019
		IR 4297936	Sample CRD Population Discrepancy Between Tech Spec and Proc	11/17/2019
		IR 4298531	U1 EDG CWP Casing Leak	11/19/2019
		IR 4300127	Quad LAR: MSIV Leakage Conceptual Errors	11/26/2019

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		IR 4302088	Regulator at Unit 1 North Bank HCUs Can't Get to Pressure	12/06/2019
		IR 4302709	1/2 Diesel Cooling Water Pump Flow Degradation	12/10/2019
71153	Corrective Action Documents	IR 4274286	U-1 Reactor Scram - Gen Trip From Gen Ground Relay (GIX104)	08/25/2019
	Procedures	QCEPM 0400-09	Electrical Inspection of Isophase Buses and Non-Segregated Buses	30