



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION III
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LISLE, ILLINOIS 60532-4352

May 10, 2018

EA-18-021

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 05000254/2018001 AND
05000265/2018001 AND EXERCISE OF ENFORCEMENT DISCRETION**

Dear Mr. Hanson:

On March 31, 2018, the U.S. Nuclear Regulatory Commission (NRC) completed an integrated inspection at your Quad Cities Nuclear Power Station, Units 1 and 2. On April 11, 2018, 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.

A violation of the licensee's current site-specific licensing basis for tornado-generated missile protection was identified. This violation was identified during the discretion period covered by Enforcement Guidance Memorandum 15-002, "Enforcement Discretion for Tornado Missile Protection Noncompliance," and the licensee implemented appropriate compensatory measures; therefore, the NRC is exercising enforcement discretion by not issuing an enforcement action for the violation and allowing continued reactor operation.

Based on the results of this inspection, the NRC has identified three issues that were evaluated under the risk significance determination process. Two of those issues were determined to be very low safety significance (green) and one of the issues was evaluated using traditional enforcement. The NRC has also determined that three violations are associated with these issues. Because the licensee initiated condition reports to address these issues, these violations are being treated as non-cited violations (NCVs), consistent with Section 2.3.2 of the Enforcement Policy. These NCVs are described in the subject inspection report.

If you contest the violations or significance 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, Region III; the Director, Office of Enforcement; and the NRC Resident Inspector at the Quad Cities Nuclear Power Station.

If you disagree with a cross-cutting aspect assignment or a finding not associated with a regulatory requirement 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 U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region III; and the NRC resident inspector at the Quad Cities Nuclear Power Station.

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 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Karla Stoedter, Chief
Branch 1
Division of Reactor Projects

Docket Nos. 50-254; 50-265; 72-053
License Nos. DPR-29; DPR-30

Enclosure:
IR 05000254/2018001; 05000265/2018001

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Letter to Bryan C. Hanson from Karla Stoedter dated May 10, 2018

SUBJECT: QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2—NRC
INTEGRATED INSPECTION REPORT 05000254/2018001 AND 05000265/2018001
AND EXERCISE OF ENFORCEMENT DISCRETION

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos: 50-254; 50-265; 72-053

License Nos: DPR-29, DPR-30

Report No: 05000254/2018001; 05000265/2018001

Enterprise Identifier: I-2018-001-0042

Licensee: Exelon Generation Company, LLC

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

Location: Cordova, IL

Dates: January 1 through March 31, 2018

Inspectors: R. Murray, Senior Resident Inspector
K. Carrington, Resident Inspector
S. Bell, Health Physicist
B. Bergeon, Operations Engineer
M. Domke, Reactor Inspector
M. Holmberg, Senior Reactor Inspector
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C. Mathews, IEMA Resident Inspector
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Approved by: K. Stoedter, Chief
Branch 1
Division of Reactor Projects

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring licensee performance by conducting an integrated quarterly 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. NRC and self-revealed findings, violations, and additional items are summarized in the table below.

List of Findings and Violations

Repeat Use of Written Exams During Licensed Operator Requalification Examinations			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Not Applicable	Severity Level IV [NCV] 05000254/2018001-01; 05000265/2018001-01 Closed	Not Applicable	71111.11 – LORP and LOP
The inspectors identified a Severity Level IV Non-Cited Violation of 10 CFR 55.49, “Integrity of Examinations and Tests,” due to the licensee engaging in an activity that compromised the integrity of an examination. Specifically, the Quad Cities 2015 Licensed Operator Requalification (LOR) written examinations were duplicated from the 2013 LOR written examinations, the 2017 LOR written examinations were duplicated from the 2015 LOR examinations, and four individuals were administered the same written examinations from the previous requalification examination cycle.			

Failure to Establish Design Standard for Unit 2 Residual Heat Removal Service Water Pumps			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000265/2018001-02 Closed	None	71111.19 – Post Maintenance Testing
The inspectors identified a finding of very low safety significance (Green) and a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion III, “Design Control,” for the licensee’s failure to ensure that the design bases standard and other requirements necessary to assure adequate quality were included in the design documents for the Unit 2 residual heat removal service water pumps. Consequently, the licensee failed to ensure the Unit 2 pumps were designed and constructed in accordance with the Standards of the Hydraulic Institute as identified in the Updated Final Safety Analysis Report.			

Half Scram Due to Low Voltage on 24/48 Vdc System			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Initiating Events	Green NCV 05000254/2018001-03 Closed	[H.5] – Work Management	71152 – Problem Identification and Resolution
A finding of very low safety significance (Green) and a Non-Cited Violation of Technical Specification 5.4.1, “Procedures,” was self-revealed on January 11, 2018, for the licensee’s failure to perform an equalizing charge on the Unit 1B 24/48 Vdc battery prior to returning the			

24/48 Vdc battery to a normal configuration following a test discharge, which was required by station procedures. The failure to follow procedures led to a low voltage condition and caused a Unit 1B channel half scram in the reactor protection system.

Additional Tracking Items

Type	Issue Number	Title	Report Section	Status
EA	18-021	EDG Non-conformance for Tornado Missiles (EGM 15-002)	IP 71111.15 – Operability Determinations and Functionality Assessments	Open
URI	05000254/2011009-04; 05000265/2011009-04	Tornado Missile Protection of the Emergency Diesel Generator Air Intake and Exhaust	IP 71111.15 – Operability Determinations and Functionality Assessments	Closed
URI	05000254/2017004-01; 05000265/2017004-01	Repeat Use of Written Exams during Licensed Operator Requalification Examinations	IP 71111.11 – LORP and LOP	Closed

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PLANT STATUS

Unit 1

The unit was operated at or near full power for the entire inspection period, with the exception of planned power reductions for turbine testing, control rod pattern adjustments, and other short-term power changes as requested by the transmission system operator.

Unit 2

The unit was operated at or near full power from January 1 to January 14, 2018. On January 14, 2018, operators reduced reactor power to approximately 26 percent following an unexpected trip of the 2B adjustable speed drive (ASD) and its associated reactor recirculation pump. On January 17, 2018, operators increased reactor power to full rated thermal power following repairs to the 2B ASD. The unit remained at or near full power until January 20, 2018, when the unit began coasting down for Refueling Outage Q2R24. On March 19, 2018, the unit was shut down for Q2R24 and remained shut down through the end of the inspection period.

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 (1 Sample)

The inspectors evaluated readiness for seasonal extreme weather conditions prior to the onset of seasonal cold temperatures on January 12, 2018.

Impending Severe Weather (1 Sample)

The inspectors evaluated readiness for impending adverse weather conditions for extreme cold conditions January 2–9, 2018.

71111.04—Equipment Alignment

Partial Walkdown (6 Samples)

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

- (1) Unit 1 reactor core isolation cooling (RCIC) system on January 11, 2018, following planned maintenance;
- (2) Unit 2 emergency diesel generator (EDG) and Unit ½ EDG systems on January 19, 2018, following planned testing of the Unit 2 EDG;
- (3) Unit 1C and 1D residual heat removal service water (RHRSW) pump systems on January 22, 2018, during Unit 1B RHRSW pump system planned maintenance;
- (4) Unit 2 high pressure coolant injection (HPCI) system on February 20, 2018, during Unit 2 RCIC system planned maintenance;
- (5) Unit 2A and 2B core spray subsystems on March 21, 2018, during reduced inventory conditions in the reactor vessel with fuel pool gates installed; and
- (6) Units 1 and 2 fuel pool cooling systems on March 23, 2018, during the alternate decay heat removal period on Unit 2 during refueling outage Q2R24.

71111.05AQ—Fire Protection Annual/Quarterly

Quarterly Inspection (5 Samples)

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

- (1) Fire Zone 8.2.7A, Unit 1 Turbine Building, Elevation 615'–6", Hydrogen Seal Oil Area and Motor Control Centers (MCCs) on January 16, 2018;
- (2) Fire Zone 8.1, Unit ½ Turbine Building, Elevation 595'–0", Clean and Dirty Oil Storage Room on January 16, 2018;
- (3) Fire Zone 8.2.10, Unit 2 Turbine Building, Elevation 626'–6", 'B' Steam Jet-Air Ejector Room on March 20, 2018;
- (4) Fire Zone 9.2, Unit 2 Turbine Building, Elevation 595'–0", Unit 2 EDG Fire Door Impairment FPI 4723 on March 22, 2018; and
- (5) Fire Zones 8.2.6.D and 8.2.6.E, Unit 2 Turbine Building, Elevation 595'–0", Unit 2 Low Pressure and 'D' Heater Bays on March 22, 2018.

Annual Inspection (1 Sample)

The inspectors evaluated fire brigade performance on February 14, 2018.

71111.06—Flood Protection Measures

Internal Flooding (1 Sample)

The inspectors evaluated internal flooding mitigation protection in the Unit 1A core spray corner room during the week of January 15, 2018.

71111.07—Heat Sink Performance

Heat Sink (1 Sample)

The inspectors evaluated the Unit 2B residual heat removal (RHR) system heat exchanger thermal performance test on January 31, 2018.

71111.08—Inservice Inspection Activities (1 Sample)

The inspectors assessed the effectiveness of the licensee's programs for monitoring degradation of the reactor coolant system boundary, risk-significant piping system boundaries, and the containment boundary by reviewing the following activities from March 14, 2018, to March 21, 2018:

- (1) Visual examination (VT-3) of RHR piping variable spring can support 10104B-W-301, located in RHR room B, American Society of Mechanical Engineers (ASME) category F-A;
- (2) Visual examination (VT-3) of core spray (CS) pump B base plate, ASME Class 2 component 1402-W-204, located in the CS room B, category C-C;
- (3) Surface magnetic particle (MT) examination of torus shell collars 1025-49 and 1025-53 for emergency core cooling system, located in the reactor building basement, category C-B;
- (4) Surface magnetic particle (MT) examination of CS pump B base plate, Class 2 component 1402-W-204A, located in the CS room B, category C-C;
- (5) Surface liquid penetrant (PT) examination of RHR system piping snubber lug welds 1012B-W-101A and 1012A-W-104A, located in the drywell level 1, category B-K;
- (6) Volumetric ultrasonic (UT-1) examination of residual heat system welds 1008B-8 and 1008B-1, located in RHR room B, category R-A;
- (7) Volumetric ultrasonic (UT-1) examination of RH system welds 1016B-4 and 1016A-2, located in RHR room A, category R-A;
- (8) Volumetric ultrasonic (UT-1) examination of CS 'A' system, 18" pipe-elbow component 1401-4, located in the reactor building (RB) basement, category R-A;
- (9) Volumetric ultrasonic (UT-1) examination of RHR 'B' system, 24" elbow-pipe component 1015B-9, located in the RB basement, category R-A;
- (10) Volumetric ultrasonic (UT-1) examination of RHR 'B' system, 24" pipe-elbow component 1015B-10, located in the RB basement, category R-A;
- (11) Volumetric ultrasonic (UT-1) examination of RHR 'B' system, 12" pipe-elbow component 1006D-2, located in RHR room B, category R-A;
- (12) Volumetric ultrasonic (UT-1) examination of RHR 'B' system, 12" elbow-pipe component 1006D-3, located in RHR room B, category R-A;
- (13) Volumetric ultrasonic (UT-1) examination of RHR 'B' system, 12" pipe-elbow component 1006D-4, located in RHR room B, category R-A; and
- (14) ASME class 2 weld nos. 1, 2, 3, 4, & 5 from 2A RHR pump motor piping removal and installation per Work Order (WO) 1360248-12.

71111.11—Licensed Operator Requalification Program and Licensed Operator Performance

Operator Requalification (1 Sample)

The inspectors observed operator performance in the simulator on February 26, 2018; they also observed Unit 2 shutdown just-in-time-training for Q2R24 on March 14, 2018.

Operator Performance (1 Sample)

The inspectors observed and evaluated operators in the control room during the Unit 2B ASD restart and unit power ascension on January 16–17, 2018; they also observed operators perform a controlled shutdown on Unit 2 for Q2R24 on March 18–19, 2018.

71111.12—Maintenance Effectiveness

Routine Maintenance Effectiveness (1 Sample)

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

- (1) area radiation monitors.

Quality Control (1 Sample)

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

- (1) Unit 2 alternate 125 Vdc battery charger equalize timer replacement; and Unit 2B fuel pool radiation monitor failure that on occurred January 31, 2018.

71111.13—Maintenance Risk Assessments and Emergent Work Control (5 Samples)

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

- (1) Work Week 18–02–05: Unit 1 online risk change to yellow due to Unit 1 RCIC system planned maintenance and impending cold weather conditions (polar vortex/ sleet/ ice) on January 9, 2018;
- (2) Work Week 18–03–06: Units 1 and 2 assessment of online risk during planned maintenance; Unit 2 emergent down power and unplanned maintenance due to the 2B recirculation pump ASD trip; and transmission-issued cold weather alert, from January 12–17, 2018;
- (3) Work Week 18–04–07: Emergent work the week of January 26, 2018, for a permanent weld repair of the Unit 2B RHRSW pump due to a pinhole-sized leak in the pump casing, and for an emergent temporary repair of a leak in the service water system's standby coolant line to the condenser hotwell;
- (4) Work Week 18–12–02: Q2R24 Week 1 shutdown safety risk and Unit 1 online risk change to yellow due to Unit 2 electrical alignment on March 19, 2018; and
- (5) Work Week 18–13–03: Q2R24 Week 2 shutdown safety risk and Unit 1 online risk; radwaste vault leak and unmonitored onsite release the week of March 26, 2018.

71111.15—Operability Determinations and Functionality Assessments (5 Samples)

The inspectors evaluated the following operability determinations and functionality assessments:

- (1) Issue Reports (IRs) 4077502 and 4081377: Unit 1 Motor Control Center (MCC) 18/19–5 Overvoltage Relay Target Lit, on November 22, 2017, and December 6, 2017, respectively (sample continued from NRC Integrated Inspection Report 05000254/2017004 and 05000265/2017004) on January 2, 2018;
- (2) IR 4108297: EO ID: 1 GPM Leak on Unit ½ DGCWP Supply Line, on February 26, 2018;
- (3) IR 4110003: EDG Non-Conformance for Tornado Missiles [EGM 15–002], on March 1, 2018;
- (4) IR 4110140: Unit ½ EDG Governor Oil Booster Pump, on March 2, 2018; and
- (5) IR 4120290: Unit 2 Liseqa Snubbers with Increased Bleed Rates, on March 29, 2018.

71111.18—Plant Modifications (1 Sample)

The inspectors evaluated the following temporary or permanent modification:

- (1) Engineering Change (EC) 622053: Marathon ULTRA MD Control Blades.

71111.19—Post Maintenance Testing (5 Samples)

The inspectors evaluated the following post maintenance tests (PMTs):

- (1) Unit 2 RHR/RHRSW operability test following weld repair of Unit 2B RHRSW pump upper and lower casings, on January 29, 2018;
- (2) Unit 1 HPCI operability test following planned maintenance, on February 8, 2018;
- (3) Unit ½ EDG cooling water pump supply to Units 1 and 2 emergency core cooling systems' room coolers following ½ EDG cooling water pump piping leak repair, on February 28, 2018;
- (4) safe shutdown makeup pump operability test following flow indicating controller replacement, on March 1, 2018; and
- (5) Unit ½ EDG timed start test following ½ EDG booster pump replacement, on March 16, 2018.

71111.20—Refueling and Other Outage Activities (Partial Sample)

The inspectors evaluated Q2R24 refueling outage activities from March 19–31, 2018, by performing Sections 71111.20–03.01a–d of Inspection Procedure 71111.20. The inspection will be completed during the next inspection period, when refueling outage Q2R24 is expected to complete.

71111.22—Surveillance Testing

The inspectors evaluated the following surveillance tests:

Routine (5 Samples)

- (1) QCOS 6600–41: Unit 1 Emergency Diesel Generator Load Test, on January 8, 2018;
- (2) QCOS 0700–06: Unit 2 APRM [average power range meter] Flow Biased High Flux Calibration Test, on January 18, 2018;
- (3) QCOS 1100–07: Unit 1 SBLC [standby liquid control] Pump Flow Rate Test, on January 22, 2018;
- (4) QCOS 4100–01: Unit ½A and ½B Fire Diesels Surveillance Test, on February 15, 2018; and
- (5) Unit 2 MCC [Motor Control Center] 28/29–5 LPCI Swing Bus Relay Routine, on March 5, 2018.

71114.06—Drill Evaluation

Emergency Planning Drill (1 Sample)

The inspectors evaluated an emergency preparedness drill on February 15, 2018.

RADIATION SAFETY

71124.01—Radiological Hazard Assessment and Exposure Controls

Radiological Hazard Assessment (1 Sample)

The inspectors evaluated radiological hazards assessments and controls on March 19–23, 2018.

Instructions to Workers (1 Sample)

The inspectors evaluated worker instructions on March 19–23, 2018.

Contamination and Radioactive Material Control (1 Sample)

The inspectors evaluated contamination and radioactive material controls on March 19–23, 2018.

Radiological Hazards Control and Work Coverage (1 Sample)

The inspectors evaluated radiological hazards control and work coverage on March 19–23, 2018.

High Radiation Area and Very High Radiation Area Controls (1 Sample)

The inspectors evaluated risk-significant high radiation area and very high radiation area controls on March 19–23, 2018.

Radiation Worker Performance and Radiation Protection Technician Proficiency (1 Sample)

The inspectors evaluated radiation worker performance and radiation protection technician proficiency on March 19–23, 2018.

OTHER ACTIVITIES – BASELINE

71151—Performance Indicator Verification (6 Samples)

The inspectors verified licensee performance indicator submittals listed below for both Units 1 and 2:

- (1) IE01: Unplanned Scrams per 7000 Critical Hours– 2 Samples (01/01/2017–12/31/2017);
- (2) IE03: Unplanned Power Changes per 7000 Critical Hours– 2 Samples (01/01/2017–12/31/2017);
- (3) IE04: Unplanned Scrams with Complications– 2 Samples (01/01/2017–12/31/2017).

71152—Problem Identification and Resolution

Annual Follow-Up of Selected Issues (2 Samples)

The inspectors reviewed the licensee’s implementation of its corrective action program (CAP) related to the following issues:

- (1) IR 4092806: ‘B’ Channel ½ Scram; and
- (2) Equipment Corrective Action Program Evaluation (ECAPE) 4072162: U1 HPCI Did Not Trip.

71153—Follow-Up of Events and Notices of Enforcement Discretion

Events (4 Samples)

- (1) The inspectors evaluated the licensee’s retraction of Emergency Notification System Event No. 53089: LPCI [low pressure coolant injection] Inoperable Due to Overvoltage Relay Actuation on January 11, 2018;
- (2) The inspectors evaluated the 2B ASD and reactor recirculation pump trip and the licensee’s response to the event on January 14, 2018;
- (3) The inspectors evaluated the 2B fuel pool radiation monitor failure and reactor building isolation and the licensee’s response to the event on January 31, 2018; and
- (4) The inspectors evaluated Emergency Notification System Event No. 53299: Unpermitted Tritium Release within Site Boundary, and the licensee’s response to the event on March 28, 2018.

INSPECTION RESULTS

71111.11—Licensed Operator Requalification Program and Licensed Operator Performance

Repeat Use of Written Exams during Licensed Operator Requalification Examinations			
Cornerstone	Severity	Cross-Cutting Aspect	Report Section
Not Applicable	Severity Level IV [NCV] 05000254/2018001-01; 05000265/2018001-01 Closed	Not Applicable	71111.11 – LORP and LOP
<p>The inspectors identified a Severity Level IV Non-Cited Violation of 10 CFR 55.49, "Integrity of Examinations and Tests," due to the licensee engaging in an activity that compromised the integrity of an examination. Specifically, the Quad Cities 2015 Licensed Operator Requalification (LOR) written examinations were duplicated from the 2013 LOR written examinations, the 2017 LOR written examinations were duplicated from the 2015 LOR examinations, and four individuals were administered the same written examinations from the previous requalification examination cycle.</p>			
<p><u>Description:</u></p> <p>National Academy for Nuclear Training Procedure Academy Document 07-001, "Guidelines for the Continuing Training of Licensed Personnel," a document that Quad Cities uses in support of the implementation of their training program, contains guidance for Licensed Operator Requalification Examinations. Specifically, Section 5.5, "Duplication of Annual Operating and Comprehensive Written Examination Items," states, "Test items are selected from a mix of bank, revised, and new item development as appropriate to avoid the use of the same small subset of test items from one year's examination to the next or from one comprehensive written examination to the next."</p> <p>The licensee created six examination versions (i.e. A-F) biennially, one for each crew. For the 2017 biennial LOR written examination, the licensee swapped examination versions from 2015 that were given to each crew (i.e. the 2015 "Version A" was given to crew 'B' in 2017 and "Version B" was given to crew 'A', etc.). The inspectors noted that no crew received the same exam version in 2017 as they did in 2015. However, due to crew personnel adjustments/realignments, the inspectors requested the licensee to determine if, and how many, operators were going to receive the same examination in 2017 as in 2015. The licensee identified one reactor operator (RO) had already taken the same examination in 2017 that they were given in 2015. In addition, the licensee also identified two senior reactor operators (SRO) were scheduled to take the same examination they had taken in 2015, but they had not yet been given the examination due to the examination schedule. After discussing the issue with the inspectors, the licensee decided to administer those two SROs different examination versions which they had not been previously exposed to.</p> <p>In addition, the inspectors inquired how long the particular set of written examination versions had been reused and swapped among the crews (i.e. before 2015). The licensee reviewed biennial LOR written examinations in 2013 and 2011 and determined the examination content was different and stated, "there was no predictable pattern in examination versions." After reviewing all of the 2013 written examination versions, the inspectors identified that three versions were a mixture of questions between reused and new questions. For example, 2013 Version 'A' written examination was a mixture of questions of 2015 Versions 'C' and 'D' and</p>			

two unique questions. The 2013 Version 'B' was a mixture of 2015 Version 'C' and 'D' and seven unique questions. The 2013 Version 'F' was a mixture of 2015 'D' and 'F' and five unique questions. The three remaining examination versions from 2013 were replicated in 2015, but given to different crews. The inspectors requested the licensee determine the number of licensed operators that took duplicated written examinations from 2013 to 2015 and the licensee identified three individuals who were given the same exam (two SROs and one RO).

As part of the NRC's review, the inspectors performed a side-by-side comparison of the 2015 and 2017 RO examination that was administered to one individual and the 2015 and 2017 SRO exam that was scheduled to be administered to two individuals. Using the guidance contained in NUREG-1021 and IP 71111.11 to evaluate changes to the questions, only 1 of the 29 questions on the RO exam was significantly modified and 3 of the 30 questions on the SRO exam were significantly modified. On the RO exam, 6 of the questions contained minor editorial changes and 22 of the questions were not modified. On the SRO exam, 10 of the questions contained minor editorial changes and 17 of the questions were not modified.

Corrective Action: Quad Cities initiated IR 4083711 in their CAP to address multiple issues associated with requalification examination overlap, including reviewing and revising current practices, evaluating fleet guidance, communicating lessons learned to the industry, and evaluating the qualification of the licensed operators that were impacted. The inspectors reviewed the licensee's evaluation of the qualification of the licensed operators that were impacted and agreed with the conclusion.

Corrective Action References:

- IR 4083711-02: Quad Cities Station to review exam issuance practices and ensure the volume of unique test items from "one consecutive requalification cycle to the next," is consistent with the criteria for exams within a given cycle per IP 71111.11;
- IR 4083711-03: Review this issue against current Fleet guidance and implement changes to the associated governance (TQ-AA-150, TQ-AA-150-J202);
- IR 4083711-04: Review the industry implications and communicate lessons learned as required; and
- IR 4083711-05: Evaluation of Impacted License Holders Document impact on associated license holders.

Performance Assessment:

Performance Deficiency: Quad Cities' failure to meet National Academy for Nuclear Training Procedure Academy Document 07-001, "Guidelines for the Continuing Training of Licensed Personnel," was determined to be a performance deficiency because the licensee failed to select test items such that the use of the same small subset of test items from one year's examination to the next or from one comprehensive written examination to the next was avoided. Specifically, the licensee administered the same requalification examination to four individuals from one exam cycle to the next exam cycle.

Screening: The inspectors determined the performance deficiency was more than minor because if left uncorrected it could become a more significant safety concern. Specifically, the finding affected the integrity of the biennial written remedial examination, which impacted

the facility's ability to appropriately evaluate the knowledge and capabilities of licensed operators.

Significance: The inspectors assessed the significance of the finding using IMC 0609, Attachment 4, "Initial Characterization of Findings," which directs the use of IMC 0609, Appendix I, "Licensed Operator Requalification Significance Determination Process" to evaluate findings that involve operator licensing requalification program deficiencies. Because the finding was related to requalification examination security, and there was an actual effect on the equitable and consistent administration of an examination required by 10 CFR 55.59, the significance determination process directed the inspectors to evaluate the finding using the traditional enforcement process.

Enforcement:

Violation: Title 10 CFR 55.49, "Integrity of Examinations and Tests" states, in part, that facility licensees shall not engage in any activity that compromises the integrity of any examination required by this part. The integrity of a test or examination is considered compromised if any activity, regardless of intent, affected, or, but for detection, would have affected the equitable and consistent administration of the test or examination. This includes activities related to the preparation and certification of the tests and examinations.

Contrary to the above, on September 29, 2017, the licensee engaged in an activity that compromised the integrity of an examination. Specifically, by giving four licensed operators duplicated LOR exams they were previously administered, the licensee was affecting the equitable and consistent administration of the test or exam.

Severity: This issue is categorized as a Severity Level IV violation consistent with Section 6.5.d of the Enforcement Policy.

Disposition: This violation is being treated as a NCV, consistent with Section 2.3.2 of the Enforcement Policy.

The disposition of this violation closes Unresolved Item (URI) 05000254/2017004-01; 05000265/2017004-01: Repeat Use of Written Exams during Licensed Operator Requalification Examinations.

71111.15—Operability Determinations and Functionality Assessments

Enforcement Discretion	Enforcement Action: EA-18-021: EDG Non-Conformance for Tornado Missiles (EGM 15-002)	IP 71111.15
<p><u>Description:</u></p> <p>On June 10, 2015, the NRC issued Regulatory Issue Summary (RIS) 2015-06, "Tornado Missile Protection" (ML15020A419), focusing on the requirements regarding tornado-generated missile protection and required compliance with the facility-specific licensing basis. The RIS also provided examples of noncompliance that had been identified through different mechanisms and referenced Enforcement Guidance Memorandum (EGM) 15-002, "Enforcement Discretion For Tornado Generated Missile Protection Non-Compliance," which was also issued on June 10, 2015, (ML15111A269) and revised on February 7, 2017 (ML16355A286). The EGM applies specifically to a structure,</p>		

system, and component (SSC) that is determined to be inoperable for tornado-generated missile protection. The EGM stated that a bounding risk analysis performed for this issue concluded that tornado missile scenarios do not represent an immediate safety concern because their risk is within the LIC-504, "Integrated Risk-Informed Decision-Making Process for Emergent Issues," risk acceptance guidelines. In the case of Quad Cities Nuclear Generating Station, the EGM provided for enforcement discretion of up to 3 years from the original date of issuance of the EGM.

The EGM allowed NRC staff to exercise this enforcement discretion only when a licensee implements, prior to the expiration of the time mandated by the limiting conditions for operation (LCO), initial compensatory measures that provided additional protection such that the likelihood of tornado missile effects were lessened. In addition, licensees were expected to follow these initial compensatory measures with more comprehensive compensatory measures within approximately 60 days of issue discovery. The comprehensive measures should remain in place until permanent repairs are completed or until the NRC dispositions the non-compliance in accordance with a method acceptable to the NRC such that discretion is no longer needed.

In 1967, the NRC issued general design criterion to which the Quad Cities Nuclear Generating Station was evaluated against. Quad Cities Updated Final Safety Analysis Report (UFSAR), Section 3.1, "Conformance with NRC General Design Criteria," discusses this criterion and its applicability to the site's design. Specifically, UFSAR Section 3.1.1.2, "Criterion 2—Performance Standards," states, "those systems and components essential to the prevention of accidents or to mitigation of their consequences shall be designed, fabricated, and erected to performance standards that will enable the facility to withstand, without loss of the capability to protect the public, the additional forces that might be imposed by natural phenomena such as earthquakes, tornadoes, flooding conditions, winds, ice, and other local site effects." Section 3.1.1.2 further states that "plant equipment which is important to safety is designed to permit safe plant operation and to accommodate all design basis accidents for all appropriate environmental phenomena at the site without loss of their capability."

On March 1, 2018, during an engineering review of the Quad Cities, Units 1 and 2 facility design, the licensee identified a nonconforming condition with the aforementioned general design criterion. Specifically, the licensee identified that the three EDG systems' intake stacks, exhaust stacks, fuel oil storage tank vent lines, and diesel oil day tank vent lines were inadequately protected against tornado missiles. As a result of the nonconforming condition, the licensee declared the Units 1, 2, and ½ EDG systems inoperable and entered the Technical Specifications' (TS) LCO required action statements.

The condition was reported to the NRC in Event Notice 53235 as an unanalyzed condition and a condition that could have prevented fulfillment of a safety function.

Corrective Actions: The licensee documented the inoperability and functionality of the affected SSCs and the applicable TS LCO action statements in the CAP and in the control room operating log. The shift manager notified the NRC resident inspector of implementation of EGM 15-002 and documented the implementation of the compensatory measures to establish the SSCs as "operable but nonconforming" prior to expiration of the required LCO action statements.

The licensee's initial (and final) compensatory measures included:

- verification that procedures and training for a tornado watch or warning were in place to provide additional instructions for operators to respond in the event of tornados or high winds, and a potential loss of SSCs vulnerable to the tornado missiles;
- confirmation of readiness of equipment and procedures dedicated to the Diverse and Flexible Coping Strategy (FLEX);
- verification that training was up to date for individuals responsible for implementing preparation and emergency response procedures;
- establishment of a heightened level of station awareness and preparedness relative to identifying tornado missile vulnerabilities; and
- revision to procedure QCOA 0010-10, "Tornado Watch-Warning, Severe Thunderstorm Warning, or Severe Winds," to include guidance for unobstructing and/or repairing crimped diesel fuel oil tank vent lines.

Corrective Action References: IR 1281009: Tornado Missile Protection Unresolved Item and IR 4110003: EDG Non-Conformance for Tornado Missiles

Enforcement:

Violation: The enforcement discretion was applied to the required shutdown actions of the following TS LCOs for both units:

- TS 3.0.3: General Shutdown LCO (cascading or by reference from other LCOs); and
- TS 3.8.1: AC Sources—Operating.

Severity/Significance: The subject of this enforcement discretion, associated with tornado missile protection deficiencies, was determined to be less than red (i.e., high safety significance) based on a generic and bounding risk evaluation performed by the NRC in support of the resolution of tornado-generated missile non-compliances. The bounding risk evaluation is discussed in Enforcement Guidance Memorandum 15-002, Revision 1, "Enforcement Discretion for Tornado-Generated Missile Protection Non-Compliance," and can be found in ADAMS Accession No. ML16355A286.

Basis for Discretion: The NRC exercised enforcement discretion in accordance with Section 2.3.9 of the Enforcement Policy and EGM 15-002 because the licensee initiated initial compensatory measures that provided additional protection such that the likelihood of tornado missile effects were lessened. The licensee reviewed their initial compensatory measures to determine if more comprehensive compensatory measures were warranted. Upon their review, the licensee concluded that their initial compensatory measures were sufficient to satisfy both the short-term and long-term actions required by the EGM and therefore no additional actions were necessary for enforcement discretion.

The disposition of this enforcement discretion closes URI 05000254/2011009-04; 05000265/ 2011009-04: Tornado Missile Protection of the Emergency Diesel Generator Air Intake and Exhaust.

71111.19—Post Maintenance Testing

Failure to Establish Design Standard for Unit 2 Residual Heat Removal Service Water Pumps			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000265/2018001–02 Closed	None	71111.19 – Post Maintenance Testing

The inspectors identified a finding of very low safety significance (Green) and a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion III, “Design Control,” for the licensee’s failure to ensure that the design bases standard and other requirements necessary to assure adequate quality were included in the design documents for the Unit 2 residual heat removal service water pumps. Consequently, the licensee failed to ensure the Unit 2 pumps were designed and constructed in accordance with the Standards of the Hydraulic Institute as identified in the Updated Final Safety Analysis Report.

Description:

In 1994, the licensee replaced the existing casing for the 2B RHRSW pump with a carbon steel (ASTM SA–216) casing material under Work Request Q14228. The licensee procured the replacement pump casing in 1991 in accordance with Purchase Order (PO) 764961. The material for the upper and lower replacement pump casing was identified by vendor catalog piece/part numbers. However, the inspectors identified that the licensee had not included the design service requirements for the pump such as operating pressure, temperature, and flow; nor was the applicable pump specification R–2317 (with design system service conditions) identified or referenced in PO 764961. Because the licensee’s vendor was not provided with applicable design information and standards, the inspectors were concerned that the replacement pump casing may not have been fabricated with the necessary quality assurance measures (e.g. hydrostatic testing or radiography) to ensure reliable pump operation for accident mitigation. Through subsequent discussions with the pump vendor, the licensee determined that the justification for the change of casing at the time was because it was believed to be equivalent to the original casing and made of a stronger material (Reference—SESR 4–2377 Request a Material Reconciliation for Replacement Casing to be Used on 2B RHRSW Pump (LP Pump Model 8SF)). Therefore, the licensee determined there was no concern with the replacement pump casing integrity. However, the inspectors did not agree with the licensee’s conclusion for pump casing integrity because of the lack of a design margin as discussed below.

In the ASME Section XI Repair Plan applied to the repair of the 2B RHRSW pump, the licensee identified the Code of construction as the 1967 Edition of the United States of America Standard (USAS) B31.1. Additionally, in EC 357496, the licensee identified that the original Code of Construction for the RHRSW pumps was the 1967 Edition of USAS B31.1. However, in the licensee’s original pump specification R–2317, “Specification for Miscellaneous Pumps,” the USAS B31.1 Code was not identified as the applicable design or construction Code. At the conclusion of this inspection, the licensee could not provide any records to demonstrate that the Unit 2 RHRSW pumps had been designed and constructed to meet the USAS B31.1 Code. Without a design Code or Standard, the inspectors were concerned that adequate structural margins may not exist to account for wall thinning of the pump casing that occurs during service.

On January 25, 2018, the 2B RHRSW pump (2-1001-65B-LP) developed a through-wall leak (IR 4097242) in the lower half of the pump casing and the licensee performed weld repairs under WO 4739487-07 to restore the affected area and additional areas of the pump casing wall reduced below the minimum wall thickness. The licensee attributed the failed areas to galvanic corrosion of weld metal that had been applied to these areas during prior repairs conducted in 2005 to restore the casing material (reference EC 357496 and WO 99129008-1). Based on pump vendor information, the licensee believed that the 2B RHRSW pump casing was fabricated with a nominal wall thickness of about 0.75 inches when manufactured in 1991 and as installed in 1994. Because no requirement existed for the vendor to document the as manufactured pump casing thickness, the licensee elected to measure the thickness of three spare pump casings in the stock supply system and reported the wall thickness varied from casing-to-casing and ranged from about 0.5 inches to 0.75 inches. The licensee also reported that these spare casings were provided under different purchase orders and by a different vendor so it was not clear if this type of wall variation would apply to the 2B RHRSW pump casing.

In WO 4739487-07, the wall thickness of the repaired areas of the 2B RHRSW pump casing were not recorded, so the inspectors requested additional information or records that established the as-repaired wall thickness at the leak location. Following this request, the licensee elected to apply an ultrasonic thickness technique to measure the pump casing wall thickness at the location of the through-wall leak repair. The licensee recorded a wall thickness of slightly less than 0.5 inch thick and the inspectors were concerned that this may not be a sufficient because the licensee had previously determined for the upper casing that just under 0.5 inch measured wall thickness was not acceptable. Specifically, in a 1994 licensee document SESR 4-2367 "Request Evaluation of 2B RHRSW Pump Upper Casing Minimum Wall Thickness," the licensee concluded "The low pressure RHRSW pump upper casing thickness of 0.458 inch is not acceptable based on the system design conditions." Additionally, in a 1996 vendor letter for this model of pump, the vendor stated "Casing Thickness should be 0.75 inch. In no case should the casing be used in which a wall thickness less than 0.5 inch." (Reference—1996 Ingersoll-Dresser Pump Company Letter—Minimum Wall Thickness on 8GT, 8SF and 12SH Pumps). The licensee staff stated that the actual minimum required pump casing wall thickness was 0.44 inch based upon a 1994 pump vendor letter. Additionally, the licensee considered the minimum wall thickness conservative because the vendor determination of minimum wall thickness did not take credit for the increased material strength of the replacement cast steel pump casing (ASTM A216 Gr. WCB). The inspectors did not agree with the licensee's basis for reliance on 0.44 inch thickness for minimum wall thickness. Specifically, the licensee's vendor had determined the 0.44 inch minimum acceptable wall thickness based on "empirical data" and not based upon a design Code or Standard (Reference—1994 Vendor Letter—Ingersoll-Dresser Pump Company Letter; Wall Thickness of IDP Model 8X23SF Pump Residual Heat Removal Service Water Pump). Without application of a design standard, the inspectors were concerned that the minimum acceptable pump casing wall thickness may not include quantifiable margins to protect against pump casing structural failure and without a design standard it was not possible to determine if additional quality assurance measures (e.g. hydrostatic testing or radiography) should have been completed on the original or replacement casing to ensure reliable pump operation for accident mitigation.

The Quad Cities UFSAR Section 9.2.1.1.2 "Design Features," states "The RHR service water system is designed to meet Class I seismic requirements and conform to USAS specifications." And the UFSAR Section 9.2.1.3 "Safety Evaluation" states that "The pumps are designed and constructed in accordance with the Standards of the Hydraulic Institute."

However, the licensee was not able to provide a record that demonstrated the Unit 2 RHRSW pumps were designed and constructed in accordance with the Standards of the Hydraulic Institute or any other standard for pump design necessary to ensure that the pump performance would be adequate to meet system safety functions.

The licensee determined that while the pumps were neither designed to USAS B31.1 nor the Hydraulic Institute Standards, based on stronger replacement casing material, the testing performed originally, and during system operation, reasonable assurance exists that the casing thickness is sufficient to maintain pressure boundary integrity. The inspectors agreed with the licensee's basis for operability of the repaired 2B RHRSW pump upper casing (i.e. operable but nonconforming).

Corrective Action: The licensee entered this issue into the CAP and concluded that this issue did not affect operability of the Unit 2 RHRSW pumps and was developing corrective actions.

Corrective Action Reference: IR 4106559: NRC Concern on RHRSW Pump Design Standards Documentation and IR 4106924: NRC Concern on Documentation in 2B RHRSW Pump Casing Purchase Order.

Performance Assessment:

Performance Deficiency: The inspectors determined that the licensee's failure to ensure the design bases standard and other requirements necessary to assure adequate quality were included in the design documents for the Unit 2 RHRSW pumps was contrary to 10 CFR 50, Appendix B, Criterion III, "Design Control," and a performance deficiency. Consequently, the licensee failed to ensure the Unit 2 pumps were designed and constructed in accordance with the Standards of the Hydraulic Institute as identified in the UFSAR.

Screening: The inspectors determined the performance deficiency was more than minor because it adversely affected the Mitigating Systems Cornerstone Attribute of Equipment Performance with the objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, without application of a design standard, the RHRSW pumps may not include quantifiable margins to protect against pump casing structural failure and additional quality assurance measures (e.g. hydrostatic testing or radiography) necessary to ensure reliable pump operation for accident mitigation.

Significance: The inspectors assessed the significance of the finding using SDP Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," Exhibit 2—Mitigating Systems Screening Questions, dated June 19, 2012. The inspectors answered "yes" to question A.1 which asked, "If the finding is a deficiency affecting the design or qualification of a mitigating SSC, does the SSC maintain its operability or functionality?" In this case, the licensee determined that the Unit 2 RHRSW pumps were operable and therefore this finding is of very low safety significance (Green).

Cross-Cutting Aspect: The associated finding was not reflective of current licensee performance so there was no cross-cutting aspect associated with this finding.

Enforcement:

Violation: Title 10 CFR 50, Appendix B, Criterion III, "Design Control," requires, in part, that "Measures shall be established to assure that applicable regulatory requirements and the

design basis, as defined in 10 CFR 50.2 and as specified in the license application, for those structures, systems, and components to which this appendix applies are correctly translated into specifications, drawings, procedures, and instructions. These measures shall include provisions to assure that appropriate quality standards are specified and included in design documents and that deviations from such standards are controlled. Measures shall also be established for the selection and review for suitability of application of materials, parts, equipment, and processes that are essential to the safety-related functions of the structures, systems and components.”

The UFSAR Section 9.2.1.1.2, “Design Features,” states, in part, “The RHR service water system is designed to meet Class I seismic requirements and conform to USAS specifications.”

The UFSAR Section 9.2.1.3, “Safety Evaluation,” states “The pumps are designed and constructed in accordance with the Standards of the Hydraulic Institute.”

Contrary to the above, between 1967 and February 21, 2018, the licensee failed to ensure that applicable regulatory requirements and the design basis were correctly translated into specifications, drawings, procedures, and instructions, and that appropriate quality standards were specified and included in design documents. Specifically, the licensee failed to ensure an appropriate quality standard conforming to a USAS specification or Standards of the Hydraulic Institute was incorporated into design documents for design and construction of the Unit 2 RHRSW system pumps.

Consequently, the licensee failed to ensure the Unit 2 pump casings were designed and constructed in accordance with a Code or Standard that provided for design margins to account for service induced degradation (e.g. wall thinning).

Disposition: This violation is being treated as a NCV, consistent with Section 2.3.2 of the Enforcement Policy.

71152—Problem Identification and Resolution

Half Scram due to Low Voltage on 24/48 Vdc System			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Initiating Events	Green NCV 05000254/2018001-03; Closed	[H.5] – Work Management	71152 – Problem Identification and Resolution
A finding of very low safety significance (Green) and NCV of TS 5.4.1, “Procedures,” was self-revealed on January 11, 2018, for the licensee’s failure to perform an equalizing charge on the Unit 1B 24/48 Vdc battery prior to returning the 24/48 Vdc battery to a normal configuration following a test discharge, which was required by station procedures. The failure to perform the equalizing charge led to a low voltage condition and caused a Unit 1B channel half scram in the reactor protection system.			

Description:

On January 11, 2018, a Unit 1B reactor protection system channel half scram resulted from a low voltage condition on the 1B 24/48 Vdc battery system. The low voltage on the 24/48 Vdc battery system caused scram signals to be sent from the 'B' and 'D' channels of the scram discharge volume high level instruments to the RPS.

Prior to this event and following the performance of a battery test discharge, a communication error led to operations restoring the battery to a normal configuration prior to performing an equalizing charge even though the completion of an equalizing charge was required by QCEMS 0220-02, "Unit 1(2) 24/48 Battery Performance Test". Due to the sequence of restoration, the 1B 24/48 Vdc battery was momentarily supplying system voltage without a connected battery charger. Due to the recently performed test discharge, the battery was unable to supply the required voltages for the system, resulting in multiple spurious alarms and the half scram condition from the scram discharge volume high level instruments, which functioned as designed.

Corrective Action: The licensee restored the battery charger configuration for the 1B 24/48 Vdc battery, reset the half scram condition, and performed the required equalizing charge on the battery.

Corrective Action Reference: IR 4092806: 'B' Channel ½ Scram Unit 1

Performance Assessment:

Performance Deficiency: The licensee failed to perform an equalizing charge, in accordance with plant procedures, on the Unit 1B 24/48 Vdc battery prior to returning the 24/48 Vdc battery to a normal configuration following a test discharge, which led to a low voltage condition, and caused a Unit 1B channel half scram in the reactor protection system.

Screening: The inspectors determined the performance deficiency was more than minor because it adversely affected the Human Performance attribute of the Initiating Events Cornerstone and its objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during power operations. Specifically, the failure to ensure DC battery systems are properly returned to service could lead to events that upset plant stability.

Significance: The inspectors determined the significance of the finding could be assessed using IMC 0609 Appendix A, "The Significance Determination Process for Findings at Power," Exhibit 1, "Initiating Event Screening Questions." The inspectors answered "no" to the questions in Section B, "Transient Initiators," and determined the finding screened as very low safety significance (Green).

Cross-Cutting Aspect: The finding had a cross-cutting aspect in the Work Management component of the Human Performance cross-cutting area, which states that the licensee will implement a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority. The work process includes the identification and management of risk commensurate to the work and the need for coordination with different groups or job activities. Specifically, improper communication and coordination between maintenance and operations led to the battery being returned to service prior to the performance of an equalizing charge as required (H.5).

Enforcement:

Violation: Technical Specification Section 5.4.1 states, in part, that “written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978.”

NRC Regulatory Guide 1.33, Appendix A, Section 4.w(2)(c) addresses instructions for energizing and changing modes of operation for “Onsite Electrical Power Systems—DC System.”

Procedure QCEMS 0220-02, “Unit 1(2) 24/48 Battery Performance Test,” Steps 4.25 through 4.30.6 require notifying and verifying that Operations recharges the battery by performance of an equalizing charge, followed by restoring the 24/48 volt battery systems to their normal (non-cross tied) configuration.

Contrary to the above, on January 11, 2018, the licensee failed to implement Steps 4.25 through 4.30.6 of QCEMS 0220–02. Specifically, the licensee did not notify, nor verify, that Operations performed an equalizing charge on the Unit 1B 24/48 Vdc battery prior to restoring the battery to its normal configuration.

Disposition: This violation is being treated as a NCV, consistent with Section 2.3.2 of the Enforcement Policy.

Observations—Selected Issue Follow-up for ECAPE 4072162: Unit 1 HPCI Did Not Trip During QCOS 2300–05

IP 71152

As appropriate, the inspectors verified the following attributes during their review of the licensee's corrective actions for the above condition report and other related condition reports:

- complete and accurate identification of the problem in a timely manner commensurate with its safety significance and ease of discovery;
- consideration of the extent of condition, generic implications, common cause, and previous occurrences;
- evaluation and disposition of operability/functionality/reportability issues;
- classification and prioritization of the resolution of the problem commensurate with safety significance;
- identification of corrective actions, which were appropriately focused to correct the problem; and
- completion of corrective actions in a timely manner commensurate with the safety significance of the issue.

The inspectors discussed the corrective actions and associated evaluations with licensee personnel.

EXIT MEETINGS AND DEBRIEFS

The inspectors confirmed that proprietary information was controlled to protect from public disclosure. No proprietary information was documented in this report.

- On March 21, 2018, the inspectors presented the inservice inspection activities results to Mr. K. Ohr, and other members of the licensee staff.
- On March 23, 2018, the inspectors presented the radiation protection program inspection results to Mr. K. Ohr, and other members of the licensee staff.
- On April 11, 2018, the inspectors presented the quarterly integrated inspection results to Mr. H. Dodd, and other members of the licensee staff.

DOCUMENTS REVIEWED

71111.01—Adverse Weather Protection

- Winter Readiness Master Exceptions List 2017–2018 SLT Update
- Attachment A, B, C of QCOP 0010–02, Revision 48; Cold Temperature Area Inspection Checklist; 01/02/2018–01/05/2018
- IR 4093273; U2 SBO Engine 'B' Low Lube Oil Temp Received; 01/13/2018
- IR 4089924; 902–74 093 SBO DG Trouble Alarm; 01/03/2018
- OP-AA–108–111–1001; Severe Weather and Natural Disaster Guidelines; Revision 16
- QCOP 0010–01; Winterizing Checklist; Revision 79
- QCOP 0010–02; Required Cold Weather Routines; Revision 48
- QCOS 3300–02; CCST and CST Heater Testing; Revision 8
- SVP 17–070; Certification of 2017 Winter Readiness; 11/15/2017
- WC-AA–107; Seasonal Readiness; Revision 18
- WO 4631090–01; Winterizing Checklist; 11/14/2017

71111.04—Equipment Alignment

- QCOM 1–1300–02; Unit 1 RCIC Valve Checklist (RCIC Room); Revision 10
- QCOM 1–1300–04; RCIC System Fuse and Breaker Checklist; Revision 5
- QCOP 6600–04; Diesel Generator ½ Preparation for Standby Operation; Revision 34
- QCOP 6600–24; Unit 2 Diesel Generator Preparation for Standby Operation; Revision 3
- QOM 1–1000–05; U1 RHR Service Water Valve Checklist; Revision 23
- QOM 2–2300–01; Unit 2 HPCI Valve Checklist; Revision 18
- QOM 1–1400–09; Unit 1 A Core Spray Checklist; Revision 8
- QOM 1–1400–10; Unit 1 B Core Spray Checklist; Revision 8
- QOM 1–1900–01; Unit 1 Fuel Pool Cooling Valve Checklist; Revision 12
- QOM 2–1900–01; Unit 2 Fuel Pool Cooling Valve Checklist; Revision 8

71111.05AQ—Fire Protection Annual/Quarterly

- Fire Protection Impairment (FPI) 4723 for Unit 2 EDG Fire Door
- Quad Cities Station Pre-Fire Plan; FZ 8.1, Unit ½ TB 595'–0" Elev. Clean and Dirty Oil Room; July 2009
- Quad Cities Station Pre-Fire Plan; FZ 8.2.10, Unit 2 TB 626'–6" Elev. Fan floor/ SJAE Room; October 2013
- Quad Cities Station Pre-Fire Plan; FZ 8.2.6.D, Unit 2 TB 595'–0" Elev. L.P. Heater Bay; October 2013

- Quad Cities Station Pre-Fire Plan; FZ 8.2.6.E; Unit 2 TB 595'-0" Elev. "D" Heater Bay, October 2013
- Quad Cities Station Pre-Fire Plan; FZ 8.2.7.A; Unit 1 TB 615'-6" Elev. Hydrogen Seal Oil Area and MCCs; October 2015
- OP-AA-201-003, Attachment 3; Fire Drill Scenario No: 18 1st qtr #4; TB 595 13 Line Cable Riser 242

71111.06—Flood Protection Measures

- Drawing FL-1; Flood Barriers Basement Floor; Revision D
- QCAP 0250-06; Control of In-Plant Flood Barriers and Watertight "Submarine" Doors; Revision 15
- QCTP 0130-11; Internal Flood Protection Program; Revision 5
- QCTS 0810-10; Reactor Building Internal Flood Barrier Surveillance; Revision 8

71111.07—Heat Sink Performance

- ER-AA-340-1002; Service Water Heat Exchanger Inspection Guide; Revision 6
- QCOS 1000-29; RHR Heat Exchanger Thermal Performance Test; Revision 19
- WO 4655697; 2B RHR HX Thermal Performance Test; 02/12/2018

71111.08—Inservice Inspection Activities

- ER-AA-335-002; Liquid Penetrant (PT) Examination; Revision 10
- ER-AA-335-003; Magnetic Particle (MT) Examination; Revision 8
- ER-AA-335-016; VT-3 Visual Examination of Component Supports, Attachments and Interiors of Reactor Vessels; Revision 10
- ER-AA-335-1008; Code Acceptance & Recording Criteria for Nondestructive (NDE) Surface Examination; Revision 5
- GEH-PDI-UT-1; PDI Generic Procedure for the Ultrasonic Examination of Ferritic Pipe Welds; Revision 12
- GEH-PDI-UT-5; PDI Generic Procedure for Straight Beam Ultrasonic Examination of Bolts and Studs; Revision 11
- IR 04114472; Recordable Indication on ISI Hangar 2305-W-214 (M-1017D-256)
- IR 04115225; 2C/2D RHRSW Pump Suction Line NDE Results; 03/15/2018
- IR 04116692; Issues with Unit 2 RHR Support 10101B-W-301; 03/19/2018
- Q2R24-MT-001; Magnetic Particle Examination Report for Component 1025-49; 03/15/2018
- Q2R24-MT-002; Magnetic Particle Examination Report for Component 1025-53; 03/16/2018
- Q2R24-MT-003; Magnetic Particle Examination Report for Component 2306-W-206A; 03/20/2018
- Q2R24-MT-004; Magnetic Particle Examination Report for Component 1402-W-204A; 03/20/2018
- Q2R24-PT-001; Liquid Penetrant Examination Report for Component 1012B-W-101A; 03/21/2018
- Q2R24-PT-002; Liquid Penetrant Examination Report for Component 1012A-W-104A; 03/21/2018
- Q2R24-UT-007; Ultrasonic Erosion/Corrosion Examination Report for Component 1006D-2; 03/14/2018
- Q2R24-UT-008; Ultrasonic Calibration/Examination Report for Component 1006D-2; 03/14/2018

- Q2R24-UT-009; Ultrasonic Calibration/Examination Report for Component 1006D-4; 03/14/2018
- Q2R24-UT-010; Ultrasonic Calibration/Examination Report for Component 1006D-3; 03/14/2018
- Q2R24-UT-013; Ultrasonic Calibration/Examination Report for Component 1016B-4; 03/15/2018
- Q2R24-UT-014; Ultrasonic Calibration/Examination Report for Component 1008B-8; 03/16/2018
- Q2R24-UT-015; Ultrasonic Calibration/Examination Report for Component 1008B-1; 03/16/2018
- Q2R24-UT-016; Ultrasonic Calibration/Examination Report for Component 1016A-2; 03/15/2018
- Q2R24-UT-019; Ultrasonic Calibration/Examination Report for Component 2A-1003A-2; 03/16/2018
- Q2R24-VT-010; Visual Examination of Pipe Hangar, Support or Restraint (VT-3) for component 10104B-W-301; 03/15/2018
- Q2R24-VT-018; Visual Examination of Pipe Hangar, Support or Restraint (VT-3) for component 1401-G-203; 03/19/2018
- Q2R24-VT-019; Visual Examination of Pipe Hangar, Support or Restraint (VT-3) for component 1401-W-204; 03/19/2018
- WO 01360248-12; Remove and Install Pipe; 05/23/2016

71111.11—Licensed Operator Requalification Program and Licensed Operator Performance

- QCOS 0202-09; Recirculation Single Loop Operation Outage Report (01/14/18-01/17/18); Revision 17
- QCGP 2-1; Normal Unit Shutdown; Revision 90
- QCGP 3-1; Reactor Power Operations; Revision 86
- QCOA 0202-04, Attachment A; Reactor Thermal Limitations Data Sheet; 01/14/2018-01/16/2018
- QCOP 0202-43; Reactor Recirculation System Startup; Revision 21
- QCOP 1000-05; Shutdown Cooling Operation; Revision 53
- Reactor Shutdown/Startup JITT for Q2R24

71111.12—Maintenance Effectiveness

- Maintenance Rule System Basis Document for AR1800: Area Radiation Monitoring
- WO 4631916; EM T/S 2-8303 U2 Alt 1225 VDC Battery Charger Equalize Timer; 05/01/2017

71111.13—Maintenance Risk Assessments and Emergent Work Control

- 2018.01.08.23.28.34; Protected System/Pathway Checklist; 01/08/2018
- QCOP 0010-02; Required Cold Weather Routines; Revision 48
- Unit 2 Core Monitoring CRT; 01/16/2018
- Q2C24-11, Control Rod Move Sheet
- OP-AB-300-1003, Attachment 1; Reactivity Maneuver Approval Plan Q2C24-16 for Unit 2 2B Recirculation Pump Trip Recovery; 01/15/2018-01/22/2018
- WO 4735319-04; IM- Troubleshoot Trip of 2B ASD; 01/17/2018
- IR 4097242; EO ID: Thru Wall Leak at 2B RHRSW Pump Casing; 01/25/2018
- IR 4097792; Service Water Leak Follow-Up: Inspect 2A TBCCW PP Motor; 01/27/2018
- IR 4097794; Service Water Leak Follow-Up: Inspect MO 2-3903-B; 01/27/2018

- IR 4097795; Service Water Leak Follow-Up: Inspect Cable Trays; 01/27/2018
- Q2R24 Shutdown Safety Report

71111.15—Operability Determinations and Functionality Assessments

- EC 622403; MCC 18/19–5 ENS and LER Retraction Evaluation—IR 4077502; Revision 1
- ECAP 4077502; EO ID—MCC 18/19–5 Overvoltage Relay Target Lit; 01/18/2018
- IR 4077502; EO ID—MCC18/19–5 Overvoltage Relay Target Lit; 11/22/2017
- IR 4081377; MCC 18/19–5 Overvoltage Relay Target Lit; 12/06/2017
- IR 4108297; EO ID: 1 GPM Leak on ½ DGCWP Supply Line; 02/26/2018
- IR 4110003; EDG Non-Conformance for Tornado Missiles; 03/01/2018
- EC 401368; Review of Potential Chimney Impact on Quad Cities Flex Response; Revision 0
- OP–AA–102–102; General Area Checks and Operator Field Rounds; Revision 15
- OP–108–111–1001; Severe Weather and Natural Disaster Guidelines; Revision 16
- QCOA 0010–10; Tornado Watch-Warning, Severe Thunderstorm Warning, or Severe Winds; Revision 34
- WC–AA–101–1006; On-Line Risk Management and Assessment; Revision 2
- WC–AA–107; Seasonal Readiness; Revision 19
- IR 4057911; Incorrect Step in QCIPM 6600–03; 10/01/2017
- IR 4058483; ½ EDG Auto Trip During MMD Testing; 10/02/2017
- IR 4058937; Adverse Trend on U–1/2 EDG Timed Start; 10/03/2017
- IR 4110140; U0 EDG Governor Booster Pump; 03/01/2018
- QCOS 6600–46; Unit ½ Diesel Generator Timed Start Test; Revision 23
- QCOS 6600–49; Unit One Division 1 Emergency Core Cooling System Simulated Automatic Actuation and Diesel Generators Auto-Start Surveillance; Revision 34
- WO 1914200; Diesel Generator Periodic Inspection; 08/09/2017
- WO 1914200–02 EM Perform U-1/2 DG 2 YR Inspection Per QCEPM 0400–14; 10/02/2017
- WO 4741920–01; Diesel Generator Timed Start (IST); 01/22/2018
- WR 1384727; U0 EDG Governor Booster Pump; 03/05/2018
- IR 4118478; PSU Q2R24 Snubber: Lisega 3052 S/N 61300/61 Funct Failure; 03/23/2018
- IR 4118481; Q2R24 Snubber: Lisega 3052 S/N 61300/62 Funct Failure; 03/23/2018
- IR 4118679; PSU Q2R24 Snubber: Lisega 3042 S/N 61293/101 Funct Failure; 03/24/2018
- IR 4119355; PSU Q2R24 Snubber: Lisega 3052 S/N 61300/68 Funct Failure; 03/26/2018
- IR 4120290; Refurbished Lisega Snubbers with Increased Bleed Values; 03/27/2018

71111.18—Plant Modifications

- DCP 622053; Marathon ULTRA MD Control Blades; Revision 000

71111.19—Post Maintenance Testing

- IR 4106924; NRC Concern on Documentation in 2B RHRSW Pump Casing PO; 02/22/2018
- IR 4106559; NRC Concern on RHRSW Pump Design Standards Documentation; 02/21/2018
- IR 4104109; T&RM CC–AA–501–1011 Requires Changes; 02/14/2018
- IR 4098435; 2B RHRSW Pump Casing Quality Factor; 1/27/2018
- IR 4097242; Thru Wall Leak at 2B RHRSW Pump Casing; 01/29/2018
- ASME Section XI Repair/Replacement Plan 2–1001–65B-LP RHRSW Pump Casing; 01/26/2018
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- Letter—Vendor Ingersoll-Dresser Pump Company; Wall Thickness of IDP Model 8X23SF Pump Residual Heat Removal Service Water Pump; 09/15/1994.
- Procedure CC-AA-501-1011; Preheat, Interpass Temperature and PWHT of Welds; Revision 4
- Procedure CC-AA-501-1021; Repair of Welds and Base Metal; Revision 4
- Report 2018-UT-007; 2-1001-65B-LP RHRSW Pump Casing; 02/14/2018
- Report 2018-MT-004; 2-1001-65B-LP RHRSW Pump Casing; 01/27/2018
- Report 2018-MT-005; 2-1001-65B-LP RHRSW Pump Casing; 01/27/2018
- Report 2018-MT-006; 2-1001-65B-LP RHRSW Pump Casing; 01/27/2018
- Report 2018-MT-007; 2-1001-65B-LP RHRSW Pump Casing; 01/27/2018
- Report 2018-MT-008; 2-1001-65B-LP RHRSW Pump Casing; 01/27/2018
- Report 2018-MT-009; 2-1001-65B-LP RHRSW Pump Casing; 01/27/2018
- Report 2018-MT-010; 2-1001-65B-LP RHRSW Pump Casing; 01/27/2018
- Report 2018-MT-011; 2-1001-65B-LP RHRSW Pump Casing; 01/29/2018
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- Report 2018-VT2-002; 2-1001-65B-LP RHRSW Pump Casing Weld Repair; 01/27/2018
- SESR 4-2377; Request a Material Reconciliation for Replacement Casing to be Used on 2B RHRSW Pump (LP Pump Model 8SF); 09/16/1994
- SESR 4-2367; Request Evaluation of 2B RHRSW Pump Upper Casing Minimum Wall Thickness; 09/09/1994
- Specification (Sargent and Lundy) R-2317; Specification for Miscellaneous Pumps; 04/13/1967
- Weld Map #1, Work Order 04739487-07; Revision 0
- Weld Map #2, Work Order 04739487-07; Revision 0
- Work Order 04739487-07; Thru Wall Leak at 2B RHRSW Pump Casing; 01/29/2018
- WPS 1-1-GTSM-PWHT; Revision 2
- 18-027, ASME Section XI Repair/Replacement Plan—0-3967-8"—O, ½ EDGCWP Piping;
- ASME Section XI 2007 Edition, 2008 Addenda
- Attachment B, Quad Cities Station Response to Generic Letter 89-13; 01/29/1990
- CY-QC-110-613; Service Water and RHRSW/DGCW Biocide Operation; Revision 7
- EC 369667; Qualify Small-Bore Vent Lines for CC-QC-405; Revision 0
- EC 623362; Min Wall Thickness for DGCW Line 0-3967-8"—O; Revision 0
- EC 623292; Document Installation of Branch Connection in U1 EDGCWP per ER-AA-330-009; Revision 0;
- ER-AA-330-009; ASME Section XI Repair/Replacement Program; Revision 14
- ER-AA-335-004, Attachment 5; Ultrasonic Thickness Calibration Sheet; WO 4750911-04; 02/26/2018
- ER-AA-340; GL 89-13 Program Implementing Procedure; Revision 8
- ER-AA-340-1001; GL 89-13 Program Implementation Instructional Guide; Revision 10
- ER-AA-5400-1001; Raw Water Piping Integrity Management Guide; Revision 11
- IR 0101562; Quad Cities Station License Renewal Commitments; 03/29/2002
- IR 4108297; EO ID: 1 GPM Leak on ½ DGCWP Supply Line; 02/26/2018
- QCOS 6600-04; Diesel Generator Heat Exchanger Flow Reversal; Revision 26
- QCOS 6600-08; ½ Diesel Generator Cooling Water to Unit 1 and Unit 2 ECCS Room Coolers Flow Test; Revision 29
- QOP 5750-17; ECCS Room Coolers; Revision 17

- USA Standards Committee B31 [B31.1] Code for Pressure Piping; 1967
- WO 4734549; ECCS Room and DGCWP Cubicle Clr DP Test; 02/02/2018
- IR 4110140; U0 EDG Governor Booster Pump; 03/01/2018
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- WO 4754408; U0 EDG Governor Booster Pump; 03/16/2018
- WO 4704266; Diesel Generator Timed Start (IST); 03/16/2018
- WO 4754051; Diesel Generator Load Test (IST); 03/16/2018

71111.20—Refueling and Other Outage Activities

- ER-AA-380; Primary Containment Leakrate Testing Program; Revision 11
- IR 4116312; Received ½ Scrams While Ranging IRMS; 03/19/2018
- IR 4116332; 2–0202–B ‘B’ Recirc Pump Seal Leakage; 03/19/2018
- IR 4116731; Failed Support on 2–1428–3/4”–A; 03/19/2018
- IR 4116809; PSU Issues During QCOS 0500–05 on Unit 2; 03/19/2018
- IR 4117201; PSU: Failing Support on 2–1427–3/4”–A; 03/20/2018
- IR 4118747; PSU Follow Up to IR 4116809—Full Scram During QCOS 0500–05; 03/25/2018
- IR 4120717; PSU: NRC ID: Degraded DW Vent Support; 03/29/2018
- Q2R24 OCC Turnover; 03/19/2018-03/31/2018
- Q2R24 Raw Water Management Plan; Revision 1
- Q2R24 Shutdown Safety Contingency Plans; Revision 1
- Q2R24 Shutdown Safety Plan; Revision 1
- QCAP 0260-03; Screening for the Potential to Drain the Vessel; Revision 13
- QCGP 2–1; Normal Unit Shutdown; Revision 90
- QCGP 3–1; Reactor Power Operations; Revision 86
- QCOP 0201–02; Filling the Reactor Vessel / Reactor Cavity Using A Condensate Booster Pump Via the Feedwater System; Revision 38
- QCOP 0201–13; Reactor Level Upper Wide Range Reference Leg Extension Use and Control; Revision 11
- QCOP 0201–14; Reactor Vessel Level Control Using a Local Pressure Gauge; Revision 12
- QCOP 1000–05; Shutdown Cooling Operation; Revision 53
- QCOP 1000–17; Shutdown Cooling Reactor Temperature Trending; Revision 15
- QCOP 1000–24; Draining Reactor Cavity and Vessel to the Torus; Revision 22
- QCOP 1000–44; Alternate Decay Heat Removal; Revision 25
- QDC–0200–N–2257; Decay Heat and Related Calculations

71111.22—Surveillance Testing

- QCOS 6600–41; Unit 1 Emergency Diesel Generator Load Test; Revision 53
- IR 4093638; QCOS 0700–06 Step H4 Not Met for ‘B’ Channel APRMs; 01/15/2018
- QCOS 0700–06; APRM Flow Biased High Flux Calibration Test
- QCIPM 0200–27; U2 Division II APRM and Rod Block Monitor Reactor Recirculation Drive Flow Gain Adjustment; Revision 3
- QCOS 1100–07; SBLC Pump Flow Rate Test; Revision 38
- QCOS 4100–01; Monthly Diesel Fire Pump Test; Revision 33
- Drawing M-27, Sheet 1; Diagram of Fire Protection Piping; Revision QN
- MA–QC–773–602; Quad Cities Nuclear Operational Analysis 480 Volt MCC 28/29–5 Relay Routine; Revision 3

- MA–MW–772–702; Calibration of Voltage Protective Relays; Revision 2
- MA–MW–772–703; Calibration of Frequency Protective Relays; Revision 2
- MA–MW–772–799; Acceptance Criteria for Protective Relays; Revision 6

71124.01—Radiological Hazard Assessment and Exposure Controls

- Self Assessment; NRC RP Baseline Inspection; February 5, 2018
- RWP QC-02-18-00901; Reactor Disassembly Reassembly Activities, Revision 0
- RWP QC-02-18-00513; DW Control Rod Drive Exchange; Revision 0
- RWP QC-02-18-00509; DW Main Steam Isolation Valve (MSIV) Activities; Revision 0
- RWP QC-02-18-00510; Exelon DW Main Steam Safety Relief Activities; Revision 1
- Personnel Exposure Investigation Reports; Various Records
- NISP-RP-004; Radiological Posting and Labeling; Revision 0
- Electronic Dosimeter Dose and Dose Rate Alarm Logs; 2017-2018
- Radiological Surveys; MSIV Room; March 2018
- Radiological Surveys; Refuel Floor; March 2018
- Radiological Surveys; Drywell; March 2018
- Radiological Air Sample Surveys; Various Records
- Station ALARA Committee Handouts; March 22, 2018
- AR 03988671; Poor Radworker Practice; March 23, 2017
- AR 03994364; Q1R24 OLL: Drywell Bullpen Set Up; April 5, 2017
- AR 03994959; Accumulated Dose Alarm Received in Unit 1 MSIV Room; April 6, 2017
- AR 03996125; CB&I Accumulated Dose Alarm; April 9, 2017
- AR 04000458; Shepherd Calibrator Movement not Documented; April 19, 2017
- AR 04010051; Accumulated Dose Alarms During Q1R24; May 12, 2017
- AR 04023830; Portal Monitor in Use Outside Procedural Requirements; June 20, 2017
- AR 04086596; RB Floor Drain Line Plugged; December 21, 2017
- AR 04086817; Unplanned Spread of Contamination; December 22, 2017
- AR 04117925; Near Miss HRA Issue; March 22, 2018
- Unconditional Release Detection Thresholds and Dose Consequences; January 8, 2018
- Gamma Spectroscopy System LLD Records; Various Records
- National Source Tracking System Reconciliation; January 11, 2018
- Radioactive Source Inventory and Leak Test Records; January 2018

71151—Performance Indicator Verification

- Performance Indicator Raw Data for Scrams and Power Changes January 2017–December 2017
- IR 4036135; U2 MPT Oil Leak; 07/27/2017
- Adverse Condition Monitoring Plan: Quad Cities Unit 2 Main Power Transformer Oil Leak (Revision 0); 07/28/2017
- IR 4039611; Unit Two Main Power Transformer H0 Bushing Failed Resulting in Forced Outage; 08/07/2017

71152—Problem Identification and Resolution

- IR 4087690; Breaker Thermals Tripped for 28–1A Cub. A2, 12/27/2017
- IR 4088020; 'A' CCST and 'B' CCST Fill Lines from MUT Frozen, 12/28/2017
- IR 4096230; Issues, 1/23/2018
- IR 4099281; Received Unexpected U2 Fuel Pool Radiation Alarm; 01/31/2018
- IR 4102506; Followup for the ½ EDG Vent Fan U2 Feed Trip (IR 4087690); 02/09/2018

- IR 4102638; Received 901-5 H-8 1B FW Actuator Trouble Alarm; 02/09/2018
- IR 4089161; 1B Feed Reg Valve Lock Up; 01/02/2018
- IR 4091460; Extent of Condition IR 4072162; 01/08/2018
- ECAPE 4072162; Unit 1 HPCI Did Not Trip During QCOS 2300-05; 11/07/2017
- IR 4092802; U-2 250 Vdc Ground Alarm When Stroking 1-1301-48; 01/11/2018
- IR 4092806; 'B' Channel ½ Scram Unit 1; 01/11/2018
- IR 4093430; NRC ID: RB Basement Deficiencies; 01/14/2018
- IR 4011130; During HPCI S/D MO 2-2301-14 Did Not Auto Open; 05/15/2017
- IR 4097336; Through Wall Service Water Leak Downstream 2-3999-572; 01/26/2018
- IR 4080564; Methodology Question in EDG Voltage and Frequency Tolerance Calculation; 12/04/2017
- IR 4099281; Received Unexpected U2 Fuel Pool Radiation Alarm; 01/31/2018
- IR 4087930; 2017 Intake Bay Shad Intrusion Summary; 12/28/2017
- IR 4088020; 'A' CCST and 'B' CCST Fill Lines from MUT Frozen; 12/28/2017
- IR 4087690; Breaker Thermals Tripped for 28-1A Cubicle A2; 12/27/2017
- IR 1359608; Quad Cities Opex Evaluation of IER L3 12-41 Loss of EDG Excitation; 04/27/2014
- IR 4075595; Potential Adverse Trend with HU Behaviors in Operations; 11/16/2017
- IR 4104747; EO ID: Unit 2 TB Roof Has Multiple Leaks in 2B ASD Area; 02/16/2018
- IR 4108297; EO ID: 1 GPM Leak on ½ DGCWP Supply Line; 02/26/2018
- IR 4107742; DEHC Alarms R,S,T - S1_P313, P315, and _P317 Slot 8; 02/24/2018
- IR 4106518; SW Leak OGFB Return Header to King Hole; 02/21/2018
- IR 4097336; Through Wall Service Water Leak Downstream 2-3999-572; 01/25/2018
- IR 4109288; Potential Trend in Raw Water Piping Leakage; 02/28/2018
- IR 4106518; SW Leak in TB; 02/21/2018
- IR 4102264; OOT, FIS 1-2354, Trend Code B4; 02/08/2018
- IR 4116642; U2 1C Inboard MSIV Slow to Close During QCOS 0250-04; 03/19/2018
- IR 4116647; U2 1A Inboard MSIV Slow to Close During QCOS 0250-04; 03/19/2018
- IR 4116831; NRC Walkdown Observations; 03/20/2018
- IR 4116652; 'D' "Outboard MSIV Closed to Fast During QCOS 0250-054; 03/19/2018
- IR 4116750; PSU-Inbd MSIV 2-0203-1A Exceeded LLRT TS Limit; 03/19/2018
- IR 4116754; PSU-Inbd MSIV 2-0203-1B Exceeded TS Limit; 03/19/2018
- IR 4116755; PSU-Outbd MSIV 2-0203-2C Exceeded TS Limit; 03/19/2018
- IR 4116758; PSU-Outbd MSIV 2-0203-2D Exceeded TS Limit; 03/19/2018
- IR 4116760; PSU Q2R24 2-0203-1A MSIV Airpack Manifold Needs Replacing; 03/19/2018
- IR 4116762; PSU Q2R24 2-0203-1C MSIV Airpack Manifold Needs Replacing; 03/19/2018
- IR 4116764; PSU Q2R24 2-0203-1D MSIV Airpack Manifold Needs Replacing; 03/19/2018
- IR 4117639; PSU U2 HPCI Logic Test Discrepancy; 03/21/2018
- IR 4117635; PSU U2 HPCI Emergency Oil Pump Fails to Stop in Auto; 03/21/2018
- IR 4118864; 2-1201-2 Autopsy of Stem and Upper Wedge Assembly; 03/25/2018
- IR 4118867; 2-1201-5 Autopsy of Stem and Upper Wedge Assembly; 03/25/2018
- IR 4118807; PSU Q2R24 VAC BKR 2-0220-105E Opening Force High at 5.0 LBF; 03/25/2018
- IR 4092806; 'B' Channel ½ Scram Unit 1; 01/11/2018
- QCEMS 0220-02; Unit 1(2) 24/48 Battery Performance Test; Revision 4
- WO 1916184-01; 1B 24/48 Vdc Battery Performance Test; 01/11/2018
- OP-AA-108-112-1001; Response to Identified Component Mispositionings; Revision 4
- OP-AA-108-112; Plant Status and Configuration; Revision 10
- Schematic Diagram 4E-2467; Reactor Protection System Scram Valve Solenoids Miscellaneous Auxiliary Relays; Revision AA

71153—Follow-Up of Events and Notices of Enforcement Discretion

- IR 4081377; MCC 18/19–5 Overvoltage Relay Target Lit; 12/06/2017
- EC 622403; MCC 18/19–5 ENS and LER Retraction Evaluation—IR 4077502; Revision 1
- IR 4077502; EO ID—MCC 18/19–5 Overvoltage Relay Target Lit; 11/22/2017
- IR 4093760; 2B ASD Failed Precharge Test Performed for Troubleshooting; 01/20/2018
- QCOS 0202–09; Recirculation Single Loop Operation Outage Report; Revision 17
- IR 4119738; EO ID: Possible SFDF Head Gasket Leak; 03/27/2018
- IR 4120126; EO ID: Water Found in RW Piping Vault; 03/28/2018
- Prompt Investigation for IR 4120126: Water Found in RW Piping Vault; 03/31/2018
- QCOS 0202–04; Reactor Recirc Pump Trip—Single Pump; Revision 46