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

August 9, 2021

Mr. David Rhoades
Senior VP, Exelon Generation Company, LLC
President and CNO, Exelon Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: QUAD CITIES NUCLEAR POWER STATION – INTEGRATED INSPECTION REPORT 05000254/2021002 AND 05000265/2021002

Dear Mr. Rhoades:

On June 30, 2021, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Quad Cities Nuclear Power Station. On July 13, 2021, the NRC inspectors discussed the results of this inspection with Mr. K. Ohr, Site Vice President, and other members of your staff. The results of this inspection are documented in the enclosed report.

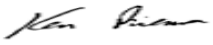
Three findings of very low safety significance (Green) are documented in this report. One of these findings involved a violation of NRC requirements. We are treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2 of the Enforcement Policy.

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.

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 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 Title 10 of the *Code of Federal Regulations* 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,



Signed by Riemer, Kenneth
on 08/09/21

Kenneth R. Riemer, 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 David Rhoades from Kenneth Riemer dated August 09, 2021.

SUBJECT: QUAD CITIES NUCLEAR POWER STATION – INTEGRATED INSPECTION REPORT 05000254/2021002 AND 05000265/2021002

DISTRIBUTION:
Jessie Quichocho
Aaron McCraw
Richard Skokowski
RidsNrrDorlLpl3
RidsNrrPMQuadCities Resource
RidsNrrDroIrib Resource
John Giessner
Mohammed Shuaibi
Jamnes Cameron
Allan Barker
DRPIII
DRSIII
ROPreports.Resource@nrc.gov

ADAMS ACCESSION NUMBER: ML21217A156

☒ SUNSI Review		☒ Non-Sensitive ☐ Sensitive		☒ Publicly Available ☐ Non-Publicly Available	
OFFICE	RIII	RIII			
NAME	MJones:ve	KRiemer			
DATE	08/05/2021	08/09/2021			

OFFICIAL RECORD COPY

U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report

Docket Numbers:	05000254 and 05000265
License Numbers:	DPR-29 and DPR-30
Report Numbers:	05000254/2021002 and 05000265/2021002
Enterprise Identifier:	I-2021-002-0102
Licensee:	Exelon Generation Company, LLC
Facility:	Quad Cities Nuclear Power Station
Location:	Cordova, IL
Inspection Dates:	April 01, 2021 to June 30, 2021
Inspectors:	J. Cassidy, Senior Health Physicist Z. Coffman, Resident Inspector T. Gardner, Physical Scientist C. Hunt, Senior Resident Inspector C. Mathews, Illinois Emergency Management Agency
Approved By:	Kenneth R. Riemer, 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, 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.

List of Findings and Violations

Failure to Meet the Requirements for Heavy Load Handling Over Irradiated Fuel			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Barrier Integrity	Green NCV 05000254/2021002-01 Open/Closed	[H.14] - Conservative Bias	71111.20
The inspectors identified a finding of very low safety significance (Green) and associated non-cited violation (NCV) of Technical Specification 5.4.1.a, "Procedures," when the licensee failed to perform a heavy lift of the reactor vessel strongback carousel in accordance with the licensee's control of heavy loads program during Refueling Outage Q1R26.			

Aging-Related Degradation of the 'B' Contaminated Condensate Storage Tank			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green FIN 05000254,05000265/2021002-02 Open/Closed	[P.5] - Operating Experience	71152
A self-revealed finding of very low safety significance (Green) was identified on March 1, 2021, for the licensee's failure to identify degradation of the weather sealant applied around the 'B' contaminated condensate storage tank (CCST) tank-foundation interface per licensee procedure ER-AA-700-404, "Aging Management Program for Aboveground Metallic Tanks." The degraded weather sealant allowed contaminates to enter beneath the tank and create a corrosive environment that ultimately led to a hole developing in the tank bottom.			

Unplanned Trip of the Reserve Auxiliary Transformer T12 During the Q1R26 Refueling Outage			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Initiating Events	Green FIN 05000254,05000265/2021002-03 Open/Closed	[H.5] - Work Management	71153
A self-revealed finding of very low safety significance (Green) was identified on March 19, 2021, when licensee personnel failed to maintain configuration control of the reserve auxiliary transformer (T12) during maintenance performed during the Q1R26 refueling outage, resulting in the loss of offsite power to the shutdown unit.			

Additional Tracking Items

Type	Issue Number	Title	Report Section	Status
LER	05000254/2021-001-00	LER 2021-001-00 for Quad Cities Nuclear Power Station, Unit 1, Automatic Actuation of Emergency Diesel Generator Due to Transformer Maintenance	71153	Closed

PLANT STATUS

Unit 1

The unit began the inspection period during a power ascension following the Q1R26 refueling outage. The unit reached full-rated thermal power on April 3, 2021. On May 27, 2021, the station performed an unplanned downpower to 70 percent rated thermal power to perform repairs on the 1B feedwater regulating valve. The unit returned to full power on the same day. For all other periods, the unit was at full-rated thermal power 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 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.

Starting on March 20, 2020, in response to the National Emergency declared by the President of the United States on the public health risks of the coronavirus (COVID-19), resident and regional inspectors were directed to begin telework and to remotely access licensee information using available technology. During this time, the resident inspectors performed periodic site visits each week, increasing the amount of time on site as local COVID-19 conditions permitted. As part of their onsite activities, resident inspectors conducted plant status activities as described in IMC 2515, Appendix D; observed risk significant activities; and completed on site portions of IPs. In addition, resident and regional baseline inspections were evaluated to determine if all or a portion of the objectives and requirements stated in the IP could be performed remotely. If the inspections could be performed remotely, they were conducted per the applicable IP. In some cases, portions of an IP were completed remotely and on site. The inspections documented below met the objectives and requirements for completion of the IP.

REACTOR SAFETY

71111.04 - Equipment Alignment

Partial Walkdown Sample (IP Section 03.01) (3 Samples)

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

(1) Offsite alternating current (AC) power lineup during planned unavailability of Unit 2 emergency diesel generator on May 6, 2021
(2) Unit 2 high pressure coolant injection (HPCI) during residual heat removal (RHR) logic and flow testing on April 21, 2021
(3) Unit 1 HPCI system during planned reactor core isolation cooling (RCIC) work window on June 21, 2021

71111.05 - Fire Protection

Fire Area Walkdown and Inspection Sample (IP Section 03.01) (4 Samples)

The inspectors evaluated the implementation of the fire protection program by conducting a walkdown and performing a review to verify program compliance, equipment functionality, material condition, and operational readiness of the following fire areas:

(1) Fire Zone 9.1, Unit 1 turbine building, elevation 595'-0", diesel generator on April 26, 2021
(2) Fire Zone 3.0, service building, elevation 609'-0", cable spreading room on May 19, 2021
(3) Fire Zone 1.1.2.1, Unit 2 reactor building basement, elevation 544'-0" on June 11, 2021
(4) Fire Zone 11.1.3, Unit 1 reactor building, elevation 554'-0", HPCI and HPCI access tunnel on June 14, 2021

Fire Brigade Drill Performance Sample (IP Section 03.02) (1 Sample)

(1) The inspectors evaluated onsite fire brigade training and performance during an announced fire drill on May 25, 2021.

71111.07A - Heat Sink Performance

Annual Review (IP Section 03.01) (1 Sample)

The inspectors evaluated readiness and performance of:

(1) 2C residual heat removal service water (RHRSW) room cooler on April 26, 2021

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 an out-of-the-box evaluation (OBE) on May 17, 2021.

71111.12 - Maintenance Effectiveness

Maintenance Effectiveness (IP Section 03.01) (2 Samples)

The inspectors evaluated the effectiveness of maintenance to ensure the following structures, systems, and components remain capable of performing their intended function:

(1) Unit 1 RHR low pressure core injection function on April 7, 2021
(2) Unit 2 RCIC on May 3, 2021

71111.13 - Maintenance Risk Assessments and Emergent Work Control

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

The inspectors evaluated the accuracy and completeness of risk assessments for the following planned and emergent work activities to ensure configuration changes and appropriate work controls were addressed:

(1) E-2 Certification meeting and risk management for work week May 10, 2021 on April 28, 2021
(2) E-2 Certification meeting and risk management for work week May 24, 2021 on May 12, 2021
(3) Risk management for work week June 21, 2021 on June 21, 2021

71111.15 - Operability Determinations and Functionality Assessments

Operability Determination or Functionality Assessment (IP Section 03.01) (4 Samples)

The inspectors evaluated the licensee's justifications and actions associated with the following operability determinations and functionality assessments:

(1) Action Request 4420973, "2C TB [turbine building] Exhaust Fan Did Not Trip When Taken to Trip," on May 6, 2021
(2) Action Request 4423688, "1B RHRSW Pump Piping Support," on May 18, 2021
(3) Action Request 4427211, "HPCI Room Cooler Inspection Found 3 Tubes Plugged with Silt," on June 23, 2021
(4) Action Request 4427470, "HPCI Pump Comprehensive Test," on June 7, 2021

71111.19 - Post-Maintenance Testing

Post-Maintenance Test Sample (IP Section 03.01) (3 Samples)

The inspectors evaluated the following post-maintenance test activities to verify system operability and functionality:

(1) 1B RHRSW pump following corrective maintenance on May 14, 2021
(2) QCOS 5750-11, "Control Room Emergency Ventilation Air Conditioning System Test," following maintenance on April 8, 2021
(3) QCOS 1400-01, "1A Core Spray System Flow Rate Test," on June 22, 2021

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

Inservice Testing (IP Section 03.01) (2 Samples)

(1) Unit 1 core spray surveillance on May 18, 2021
(2) Unit 1 HPCI pump comprehensive performance test on June 3, 2021

FLEX Testing (IP Section 03.02) (1 Sample)

(1) FLEX annual surveillance on April 29, 2021

71114.06 - Drill Evaluation

Select Emergency Preparedness Drills and/or Training for Observation (IP Section 03.01) (1 Sample)

(1) Inspectors observed the off-year emergency preparedness drill on June 29, 2021.

RADIATION SAFETY

71124.03 - In-Plant Airborne Radioactivity Control and Mitigation

Permanent Ventilation Systems (IP Section 03.01) (1 Sample)

The inspectors evaluated the configuration of the following permanently installed ventilation systems:

(1) Standby gas treatment system Train A

Use of Respiratory Protection Devices (IP Section 03.03) (1 Sample)

(1) The inspectors evaluated the licensee’s use of respiratory protection devices.

71124.07 - Radiological Environmental Monitoring Program

Environmental Monitoring Equipment and Sampling (IP Section 03.01) (1 Sample)

(1) The inspectors evaluated environmental monitoring equipment and observed collection of environmental samples.

Radiological Environmental Monitoring Program (IP Section 03.02) (1 Sample)

(1) The inspectors evaluated the implementation of the licensee's radiological environmental monitoring program.

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

BI02: RCS Leak Rate Sample (IP Section 02.11) (2 Samples)

(1) Unit 1 (April 1, 2020 through March 31, 2021)
(2) Unit 2 (April 1, 2020 through March 31, 2021)

71152 - Problem Identification and Resolution

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) Multiple instances of missed non-destructive examination required by American Society of Mechanical Engineers Section XI in-service inspection deferrals on May 19, 2021
(2) Aging-related degradation on the 'B' contaminated condensate storage tank on May 6, 2021

71153 - Follow Up of Events and Notices of Enforcement Discretion

Event Report (IP Section 03.02) (1 Sample)

The inspectors evaluated the following licensee event reports (LERs):

(1) LER 2021-001-00 for Quad Cities Nuclear Power Station, Unit 1, Automatic Actuation of Emergency Diesel Generator Due to Transformer Maintenance (ADAMS Accession No. ML21138A819). The inspection conclusions associated with this LER are documented in this report under Inspection Results Section 71153.

Personnel Performance (IP Section 03.03) (1 Sample)

(1) The inspectors evaluated the failure of the 1B feedwater regulating valve, 1-0642-B, in automatic and remote manual control and the licensee's performance in response to the event on May 24, 2021.

INSPECTION RESULTS

Failure to Meet the Requirements for Heavy Load Handling Over Irradiated Fuel			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Barrier Integrity	Green NCV 05000254/2021002-01 Open/Closed	[H.14] - Conservative Bias	71111.20

The inspectors identified a finding of very low safety significance (Green) and associated non-cited violation (NCV) of Technical Specification 5.4.1.a, "Procedures," when the licensee failed to perform a heavy lift of the reactor vessel strongback carousel in accordance with the licensee's control of heavy loads program during Refueling Outage Q1R26.

Description:

On March 16, 2021, inspectors observed Refueling Outage Q1R26 activities in support of reactor vessel head removal and defueling. Included in the observed activities was the heavy lift of the reactor vessel head strongback carousel (carousel), with the vessel nut storage rack and de-tensioner tools, from the reactor vessel area to the carousel storage area. During the lift, the carousel crossed over the Unit 1 spent fuel pool and was paused in this location for several minutes before being moved clear of the pool and to the storage area. The inspectors questioned the licensee about the safe load paths, rigging and lifting plan, and load handling procedures that made it acceptable for the carousel to be lifted over the spent fuel pool in such a manner. The licensee referenced procedure MA-QC-756-600, "Reactor Disassembly," Revision 1, step 3.2.15, which states that if secondary containment is established and standby gas treatment is operable, then loads may cross the spent fuel pool corners. The licensee noted that the dimensions of the carousel (22'-10") do not allow movement past the drywell head storage location (19'-3" from spent fuel pool) without either raising the load over the top of the drywell head or crossing the spent fuel pool.

In a generic letter dated December 22, 1980, the NRC requested that licensees of operating plants review their controls for the handling of heavy loads to determine the extent to which the guidelines of NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants - Resolution of Generic Technical Activity A-36," were being satisfied at each facility, and to identify the changes and modifications that would be required in order to fully satisfy those guidelines. The Quad Cities Station response to that generic letter was summarized in a safety evaluation report written by the NRC dated June 27, 1983. Specific site commitments to NUREG-0612 were incorporated into the licensee's Updated Final Safety Analysis Report, Section 9.6, "Control of Heavy Loads." Licensee procedure MA-AA-716-022, "Control of Heavy Loads Program," provides the administrative controls for safely handling heavy loads and is intended to be used in conjunction with approved site procedures to accomplish activities such as reactor vessel disassembly during a refueling outage. MA-AA-716-022, Revision 15, step 4.6.12, states, in part, that handling of heavy loads over the open reactor vessel or spent fuel pool will be done in accordance with site specific commitments per NUREG-0612 and NRC Bulletin 96-02.

The inspectors reviewed the site's commitments to NUREG-0612 and noted several areas where the site was not fulfilling those commitments based on the observation from March 16, 2021. Specifically, NUREG-0612, Section 5.1.1.(1), states:

Safe load paths should be defined for the movement of heavy loads to minimize the potential for heavy loads, if dropped, to impact irradiated fuel in the reactor vessel and in the spent fuel pool, or to impact safe shutdown equipment. The path should follow, to the extent practical, structural floor members, beams, etc., such that if the load is dropped, the structure is more likely to withstand the impact. These load paths should be defined in procedures, shown on equipment layout drawings, and clearly marked on the floor in the area where the load is to be handled. Deviation from the defined load paths should require written alternative procedures approved by the plant safety review committee.

Site specific commitments to NUREG-0612 specify that the safe load path for miscellaneous heavy loads carried by the reactor building overhead crane be the shortest route, without traveling over the spent fuel in the pools or reactor cavity, and at the lowest practical height from the lift point to the laydown area. The heavy lift of the carousel observed by the inspectors was being performed, in part, according to licensee procedure QCMM 5800-05, "Reactor Building Overhead Crane Utilization," Revision 28. Attachments 2 and 3 of QCMM 5800-05 diagram the primary and alternate refuel floor load paths for various heavy loads but did not specifically include a safe load path for the carousel. QCMM 5800-05, step 3.2.1, states that handling or movement of the 9-ton crane and movement of 125-ton load block over restricted areas (Attachment 1), or any object 100 lbs. or greater that could act as a spear if dropped into the spent fuel pool, shall not take place unless a specific procedure has been written and approved prior to the move, and shall use the most direct path to the laydown area. Attachment 1 of QCMM 5800-05 designates the spent fuel pools as restricted areas. The carousel path observed by the inspectors deviated from the approved paths outlined in Attachments 2 and 3 of QCMM 5800-05, traversed over the spent fuel pool without a specific procedure, and was performed without the prior approval of the Plant Operations Review Committee (which fulfills the function as the Plant Safety Review Committee) allowing the deviation; none of which in accordance with site specific commitments.

NUREG-0612, Section 5.1.1.(2), also states:

Procedures should be developed to cover load handling operations for heavy loads that are or could be handled over, or in proximity to, irradiated fuel or safe shutdown equipment. At a minimum, procedures should cover handling of those loads listed in Table 3-1 of NUREG-0612. These procedures should include: identification of required equipment; inspections and acceptance criteria required before movement of load; the steps and proper sequence to be followed in handling the load; defining the safe path; and other special precautions.

In response to inspector questions about the carousel load path traversing over the spent fuel pool, the licensee referred inspectors to site procedure MA-QC-756- 600, step 3.2.15. The inspectors highlighted to the licensee that step 3.2.14 of the same procedure states, "Loads shall **not** be moved over restricted areas, defined as: Fuel Pools, New Fuel Vault when fuel is present, and Open Reactor Pressure Vessel." In addition to this procedural conflict, the inspectors also highlighted that MA-QC-756- 600, step 3.2.15, in and of itself, did not meet the guidelines of NUREG-0612 for what should be included in procedures covering load

handling operations for heavy loads that are or could be handled over irradiated fuel, and was not in accordance with site specific commitments.

Finally, NUREG-0612, Section 5.1.1.(4), states:

Special lifting devices should satisfy the guidelines of ANSI N14.6-1978, "Standard for Special Lifting Devices for Shipping Containers Weighing 10,000 pounds (4500kg) or More for Nuclear Materials." This standard should apply to all special lifting devices which carry heavy loads in areas defined above. For operating plants, certain inspections and load tests may be accepted in lieu of certain material requirements in the standard.

While discussing the acceptability of lifting the carousel over the spent fuel pool with the inspectors, the licensee noted that the risk of a load drop was mitigated by the carousel being designed in accordance with ANSI N14.6 standards. The inspectors noted that ANSI N14.6 requires periodic testing of special lifting devices to demonstrate continued compliance with the standard. The inspectors reviewed licensee procedure QCMPM 5800-31, "Lifting Rig Pin Surveillance and Non-Destructive Examination," Revision 15, which outlines the necessary steps for the performance of visual and non-destructive examination (NDE) of lifting devices at the site, and highlighted to the licensee that QCMPM 5800-31, step 3.2.5 states, "In accordance with MA-AB-756-600, RPV Head Strongback Carousel Lifting Rig is **not** used as a lifting device. No visual or NDE inspection is required on this component." Therefore, inspections were not being performed in accordance with ANSI N14.6 or in accordance with site specific commitments to NUREG-0612.

Corrective Actions: Following discussions with the inspectors, the licensee entered the identified concerns into their corrective action program.

Corrective Action References: Action Request 4411301, "NRC Inspector Questions Related to Carousel," and Action Request 4412717, "ANSI N14.6 Requirements Related to Carousel"

Performance Assessment:

Performance Deficiency: The failure to perform a heavy lift in accordance with licensee procedure MA-AA-716-022, "Control of Heavy Loads Program," was a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Procedure Quality attribute of the Barrier Integrity cornerstone and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, if a heavy load were to be dropped on the spent fuel racks, damage to the fuel assemblies and a release of fission products could have occurred.

Significance: The inspectors assessed the significance of the finding using Appendix A, “The Significance Determination Process (SDP) for Findings At-Power.” Using Exhibit 3, "Barrier Integrity Screening Questions," the inspectors answered "No" to all of the fuel cladding integrity screening questions and therefore determined the finding screened to having a very low safety significance (Green).

Cross-Cutting Aspect: H.14 - Conservative Bias: Individuals use decision making-practices that emphasize prudent choices over those that are simply allowable. A proposed action is determined to be safe in order to proceed, rather than unsafe in order to stop. Specifically,

licensee personnel did not question the basis for allowing the carousel to pass over the spent fuel pool during reactor vessel disassembly or whether moving heavy loads over the spent fuel pool was prudent considering the consequences of an inadvertent load drop. The practice was considered acceptable merely because a procedural step allowed it.

Enforcement:

Violation: Technical Specification 5.4.1.a, "Procedures," states that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, dated February 1978. Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operation)," Appendix A, Section 2.k, states that activities such as preparation for refueling and refueling equipment operation should be covered by written procedures. Licensee procedure MA-AA-716-022, "Control of Heavy Loads Program," contains the requirements for refueling equipment operation related to the lifting of heavy loads over the refueling floor, such as during reactor vessel disassembly, during a refueling outage.

Contrary to the above, the licensee failed to implement the procedural requirements of MA-AA-716-022, Section 4.6.12, which states, in part, that handling of heavy loads over the open reactor vessel or spent fuel pool will be done in accordance with site specific commitments per NUREG-0612 and NRC Bulletin 96-02. Specifically, on March 16, 2021, the licensee performed a heavy lift of the reactor vessel head strongback carousel that deviated from approved load paths without prior approval of the Plant Operations Review Committee, which was not in accordance with site specific commitments to NUREG-0612, Section 5.1.1.(1). The lift was performed without a specific procedure, not in accordance with site specific commitments to NUREG-0612, Section 5.1.1.(2). Finally, the heavy lift was performed without satisfying the requirements of ANSI N14.6, which was not in accordance with site specific commitments to NUREG-0612, Section 5.1.1.(4).

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

Aging-Related Degradation of the 'B' Contaminated Condensate Storage Tank			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green FIN 05000254,05000265/2021002-02 Open/Closed	[P.5] - Operating Experience	71152

A self-revealed finding of very low safety significance (Green) was identified on March 1, 2021, for the licensee's failure to identify degradation of the weather sealant applied around the 'B' contaminated condensate storage tank (CCST) tank-foundation interface per licensee procedure ER-AA-700-404, “Aging Management Program for Aboveground Metallic Tanks.” The degraded weather sealant allowed contaminates to enter beneath the tank and create a corrosive environment that ultimately led to a hole developing in the tank bottom.

Description:

The site has two non-safety related CCSTs with a capacity of 350,000 gallons each. These tanks provide a source of condensate for the main condenser hotwells, control rod drive hydraulic, reactor core isolation cooling, safe shutdown makeup pump, high pressure coolant injection, core spray, and residual heat removal systems for each unit. Per the licensee's license renewal application, the CCSTs were scoped into the license renewal process, and

subject to an aging management review, based on being credited by the site for providing water to support mitigating actions for Appendix R fire, station black out, and anticipated transient without scram scenarios. UFSAR, Appendix A, Section A.1.20, "Aboveground Carbon Steel Tanks," states, in part, that the aboveground carbon steel tanks aging management program manages the corrosion of outdoor aluminum tanks. Aluminum storage tanks within the scope of license renewal are supported by earthen/concrete foundations. The tank-foundation interfaces (including foundation coatings) are periodically inspected for degradation. The licensee performs an internal visual examination of the tank bottom and volumetric examinations at 13 locations on each CCST floor every 5 years. Additionally, the licensee performs an external visual examination of the tank, including the tank-foundation interface, every 5 years.

On March 1, 2021, the licensee performed a quarterly groundwater sample next to the 'B' CCST, and the results indicated elevated tritium levels. The subsequent confirmation sample also showed elevated tritium levels approximately 6 days later. The licensee documented this issue in the corrective action program under Action Request 4408266. On March 20, 2021, the licensee performed an internal visual inspection of the 'B' CCST tank bottom and identified a through-wall indication (hole) on plate 17 of the tank floor measuring approximately 0.25 inches by 0.3125 inches in shape. The licensee repaired the hole under Work Order 5131481 and returned the tank to service on March 24, 2021.

Prior to the discovery of the hole, the licensee had contracted a vendor to perform volumetric inspections of approximately 98 percent of the tank floor plates, and all accessible portions of the tank internals, for both CCSTs in late 2020. The inspection did not identify any significant issues in the tank bottom and was performed in addition to the inspections conducted as a part of the license renewal aging management program. The purpose of the inspection was to comply with Exelon Nuclear Event Report (NER) NC-10-056-Y, which directed Exelon nuclear sites with contaminated water storage tanks susceptible to pitting and wall thinning to have their tank bottoms inspected such that repairs could be coordinated before an unmonitored through-wall leak could occur. The NER directed, in part, a volumetric inspection be performed at sites with aluminum tanks to establish an internal baseline of the tank floor, with a minimum of 90 percent coverage of accessible areas, and a visual external examination of all outdoor aluminum tanks containing licensed radioactive material. The NER was generated, in part, due to an issue at the LaSalle Generating Station in which three small holes developed in the bottom of the Unit 1 condensate storage tank (CST) in June of 2010. The cause of the CST leak was determined to be corrosion of the aluminum tank floor by chloride salt. Contributing causes were determined to be, in part, a failure of the sealant around the CST base to prevent the intrusion of contaminants and moisture underneath the tank and the use of chloride-containing salts for winter de-icing on site roadways.

The licensee determined that the CCSTs at Quad Cities are susceptible to this type of aging-related degradation as they are also constructed of an aluminum alloy material with a nominal floor plate thickness of 0.250 inches. In response to the NER, volumetric inspections of the CCSTs at Quad Cities were scheduled during unit outages in 2015 and 2016 but were deferred pending a potential site closure announcement expected around 2017. Following the announcement that the site would remain operating, the new target date for the volumetric inspections was rescheduled for September 2020 for both tanks.

Considering the hole identified in the bottom of the 'B' CCST that was discovered on March 20, 2021, the licensee notified the same vendor who performed the volumetric inspection in 2020, and that vendor performed an independent review of the data obtained in

2020 against the original acceptance criteria for tank floor thickness as documented in Engineering Change (EC) 368147. Of note, for localized pitting and corrosion greater than 3 inches from the tank wall, the threshold thickness for requiring a repair was 0.05 to 0.11 inches. The results of the original inspection indicated that a total of 25 plates were scanned to the maximum extent possible and no plate thickness recorded was less than 0.211 inches. After the reanalysis, the vendor determined that 13 of the 25 plates on the bottom of the 'B' CCST had erroneously been reported. For plate 17, the location of the hole, the independent data review indicated a wall thickness of 0.075 based on the 2020 data. The material thickness of the plate reported by the vendor in 2020 was no less than 0.224 inches. The most significant difference between the original report and the re-analyzed measurement, other than plate 17, was in plate 7 which showed a measured thickness of 0.112 inches upon reanalysis as opposed to the originally reported thickness of 0.211 inches. The reanalysis of the 'A' CCST indicated that all 25 of 25 floor plates originally inspected had lower numbers as compared to the reanalysis. Plate 1 contained the lowest overall material thickness reading 0.100 inches as compared to the original report of 0.224 inches. Plate 5 had the most significant difference between the original report of 0.249 inches and the re-analyzed measurement of 0.124 inches.

The licensee performed a corrective action program evaluation (CAPE) under Action Request 4410615. The cause of the hole in the 'B' CCST was determined to be the partial failure of the weather sealant near plate 17 which allowed chlorides and contaminates to enter beneath the berm and create a corrosive environment.

The inspectors reviewed the timeline of events from 2010 to 2021 leading up to the discovery of the hole in the bottom of the ‘B’ CCST, as well as applicable programmatic documents. The inspectors noted that the fleet operating experience from the 2010 LaSalle Unit 1 CST leak, as documented in NER NC-10-056-Y, highlighted that the Quad Cities CCSTs were susceptible to the same aging-related degradation and that proactive plans to perform a volumetric inspection of the tank bottoms were deferred several years until 2020. During this time, two license renewal internal tank inspections were completed on the 'B' CCST with no significant issues noted. Additionally, three license renewal external inspections on the 'B' CCST were completed with no degradation of the weather sealant noted.

Given the duration of the issue, the most applicable revision of the licensee’s aging management program for the CCSTs is ER-AA-700-404, "Aging Management Program for Aboveground Metallic Tanks," Revision 0. Section 4.2.2 states, in part, that the identification of damaged or missing sealant around the tank bottom, that could allow moisture instruction to the tank surface, be included within the scope of the periodic inspections. In August 2020, the licensee completed the most recent external inspection of the 'B' CCST. Specific guidance for the external inspection was found in Work Order 4888780 and included excerpts from ER-AA-2030, "Conduct of Equipment Reliability Manual," Attachment 7, which states that evidence of degradation of elastomers, such as surface cracking, crazing, scuffing, dimensional change, discoloration, exposure of internal reinforcement, or hardening, as evidence by the loss of suppleness during manipulation where the component and material are appropriate for manipulation, SHALL be addressed. The work order outlined that for aluminum tanks, parameters monitored are loss of material (due to corrosion) on tank surfaces and degradation of sealants/coating at the tank-foundation interfaces. Therefore, inspections will also include the inspection of sealants/coatings at the tank-foundation interface for degradation. The work order referenced the corporate-performance-centered maintenance template for external tank inspections which also stated, in part, that the

inspection should include an inspection of sealant and support rings (where applicable) used around the bottom of the tank and re-apply if necessary to prevent intrusion of contaminates under the tank.

Of note, the CAPE performed by the licensee determined that there are no preventative maintenance tasks to change out the sealant around the tank-foundation interface on a regular basis. Additionally, the age of the sealant currently in place is unknown and it is also not known when the last time the sealant had been replaced, if ever, since the original installation of the tanks. An independent walk down of the 'B' CCST by inspectors performed on April 17, 2021, identified several locations on the weather sealant where there was either inadequate coverage of the sealant around the tank-foundation interface or a complete lack of sealant at certain locations where it appeared the sealant had either been pulled out or had fallen out. The inspectors determined that it is reasonable to conclude that the identified degradation in the weather sealant was present during the most recent external tank inspection in 2020, if not later, and no corrective action documents were generated to affect the repair of the sealant.

The 5-year license renewal CCST internal inspection performed by the site includes an ultrasonic inspection of 13 points along the tank bottom to assess for general corrosion. The Fleet operating experience from 2010 indicated that the periodic ultrasonic inspections of the CCSTs performed for license renewal purposes, because of their limited scope, may not be adequate to detect the localized pitting corrosion that was the subject of NER NC-10-056-Y. ER-AA-700-404, Revision 0, Section 1.3, states, in part, that all stations should use this procedure, along with the corrective action program, to address adverse operating experience associated with the implementation of their license renewal program commitments associated with aboveground metallic tanks. The inspectors determined that the aboveground carbon steel tanks aging management program was not effectively enhanced to incorporate the Fleet operating experience highlighted in NER NC-10-056-Y and therefore had little probably to detect the corrosion of the tank bottom allowed by the degraded weather sealant.

The inspectors reviewed the initial vendor inspection report from 2020 as well as the reanalysis performed after the hole in the tank bottom was discovered. The vendor reanalysis of the data from 2020 revealed there were two measurements that, if reported correctly, would have driven the licensee to start planning repairs of the tank bottom per EC 368147. Additionally, along with the two measurements meeting repair criteria, the reduced margin in plate thicknesses reported by the vendor on several other locations during the reanalysis may have resulted in the licensee taking a more expedited approach to addressing the ongoing degradation prior to a hole developing.

Altogether, the inspectors determined that the deferment of the volumetric examination of the 'B' CCST tank bottom per NER NC-10-056-Y until 2020, the failure to detect the degradation of the weather sealant during periodic license renewal external tank inspections, the failure to update the aboveground carbon steel tank aging management program with relevant Fleet operating experience related to internal tank inspections, and the error by the vendor during the analysis of the original volumetric inspection data performed in 2020, resulted in the aging-related degradation of the 'B' CCST tank bottom, due to the degraded weather sealant around the tank-foundation interface, to continue unchecked until March 2021 when the licensee determined that there was a hole in the tank bottom.

Corrective Actions: The licensee repaired the hole under Work Order 5131481 and returned the tank to service on March 24, 2021. The licensee performed a CAPE under Action Request 4410615.

Corrective Action References:
Action Request 4411993, "Inspection Vendor Identifies Error During Previous Analysis"
Action Request 4412083, "Replace 'A' CCST External Weather Sealant"
Action Request 4412086, "Replace 'B' CCST External Weather Sealant"
Action Request 4415976, "'A' CCST Floor Inspection Vendor Reanalysis Report"
Action Request 4410615, "'B' CCST Tank NDE Results"

Performance Assessment:

Performance Deficiency: The inspectors determined that the failure to identify degradation in the weather sealant on the 'B' CCST tank-foundation interface per licensee procedure ER-AA-700-404, "Aging Management Program for Aboveground Metallic Tanks," Revision 0, Section 4.2.2, was a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because if left uncorrected, it would have the potential to lead to a more significant safety concern. Specifically, the licensee's aging management program for aboveground tanks failed to identify the degraded weather sealant around the 'B' CCST such that the corrosion of the tank bottom would have continued unchecked and adversely affected the capability of the safe shutdown makeup pump to respond to Appendix R events.

Significance: The inspectors assessed the significance of the finding using Appendix F, “Fire Protection and Post - Fire Safe Shutdown SDP.” The inspectors screened the finding using Appendix F, Attachment 1, "Fire Protection Significance Determination Process Worksheet," issued May 2, 2018. The inspectors assigned a finding category of Post-Fire Safe Shutdown in step 1.2 since the finding adversely affected the capability of the safe shutdown makeup pump. The inspectors assigned the finding a low degradation value in step 1.3 based on the hole in the 'B' CCST bottom having no impact on the overall structural integrity of the tank and the relatively low rate of water loss experienced during the time period in question. Therefore, the finding screened to very low safety significance (Green).

Cross-Cutting Aspect: P.5 - Operating Experience: The organization systematically and effectively collects, evaluates, and implements relevant internal and external operating experience in a timely manner. Specifically, fleet operating experience noted that the CCSTs were vulnerable to corrosion due to moisture and contaminate intrusion from a degraded weather seal along the tank-foundation interface, but the licensee failed to implement fleet operating experience effectively prior to a hole developing in the bottom of the 'B' CCST.

Enforcement:

Inspectors did not identify a violation of regulatory requirements associated with this finding.

Observation: Multiple Instances of Missed Non-Destructive Examination Required by American Society of Mechanical Engineers Section XI	71152

Multiple instances of missed required non-destructive examinations (NDEs) had been identified by the licensee in 2019 for the repair/replacement activities on American Society of Mechanical Engineers (ASME) Section XI components in Unit 1. Of the five such instances that were reviewed by the inspectors, three were related to missed VT-1 exam of bonnet bolts following valve disassembly and bolt replacement, one was related to missed VT-3 exam of a pipe support structure that was modified, and one was related to missed VT-1 and MT/PT exams of a nut that was replaced on a main steam isolation valve bonnet. In each instance, the licensee generated an issue report and performed corrective actions. The licensee generated an additional issue report to document negative trend related to the three instances of missed VT-1 exam of the valve bonnet bolting. The licensee performed a work group evaluation to identify the cause and generated additional corrective actions.

The corrective actions included performing the required exams, performing an engineering evaluation to justify the non-performance of the exam, and rescheduling the exam to a future refuel outage to ensure the required exam would still occur within the applicable in-service inspection (ISI) interval to comply with the ASME Section XI requirements. Additional corrective actions included establishing hold points for NDEs in work instructions where required, revising valve maintenance procedures to include pressure boundary component inspection sign-off steps, and revising valve requirement checklist for work planners to include the VT exams as required when generating work instructions. Since June 2019 when the last instance of missed NDE was identified, the licensee indicated that there had been no missed NDE instances that were identified.

The inspectors noted that for Unit 1, the current 10-year ISI interval ends in April 2023, and that the Unit 1 refueling outage starting in March 2023 would essentially be the last opportunity to complete the remaining required ISI exams for the current ISI interval for the portions that are inaccessible during normal operation. Furthermore, any repair/replacement activities of Section XI components during the March 2023 refueling outage that would require NDEs would also need to be performed during the outage and could be a strain on licensee resources.

The inspectors reviewed the licensee corrective actions that addressed the missed exams and determined the actions were appropriate. No findings or violations were identified in this sample.

Unplanned Trip of the Reserve Auxiliary Transformer T12 During the Q1R26 Refueling Outage			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Initiating Events	Green FIN 05000254,05000265/2021002-03 Open/Closed	[H.5] - Work Management	71153

A self-revealed finding of very low safety significance (Green) was identified on March 19, 2021, when licensee personnel failed to maintain configuration control of the reserve auxiliary transformer (T12) during maintenance performed during the Q1R26 refueling outage, resulting in the loss of offsite power to the shutdown unit.

Description:

On March 19, 2021, during Refueling Outage Q1R26, licensee Operations Analysis Department (OAD) personnel briefed and received permission to perform planned maintenance, limited in scope, on the bus 12 and reserve auxiliary transformer (T12) relay circuitry per MA-QC-773-501, "Quad Cities Nuclear Operational Analysis Unit 1 4kV UAT/RAT Feed Relay Routine," Attachment 4. After completing the maintenance as briefed, OAD specialists proceeded to continue with maintenance beyond the scope of work that was approved. At 2030 the technicians inadvertently caused a valid neutral differential overcurrent condition resulting in the unplanned de-energization of T12 and a loss of offsite power on Unit 1. The Unit 1 emergency diesel generator automatically started and loaded bus 14-1, per design. Operators restored power to the remaining 480V and 4kV buses per station procedures. At the time of the event, Unit 1 was in Mode 5 (Refueling) with a shutdown safety risk color of Green per OU-QC-104, "Shutdown Safety Management Program Quad Cities Annex." Shutdown safety risk did not change after the trip of T12 due to the availability of alternate sources of AC power with T12 offline. The reactor cavity was fully flooded with a reactor pressure vessel bulk temperature approximately 110 degrees F. Alternate decay heat removal systems were in service with a time to boil of approximately 24 hours. Time to uncover the fuel was approximately 169 hours. At no time was there a complete loss of cooling; the change in bulk temperature during the event was negligible. Upon the loss of offsite power, Unit 2 entered the applicable action statements as required by site Technical Specifications.

Operators restored T12 to service approximately 2 hours and 40 minutes after the trip. The licensee submitted Event Notification Sheet #55146 under 10 CFR 50.72.(b)(3)(iv)(A) for an automatic action of the Unit 1 emergency diesel generator. Additionally, the licensee performed a root cause evaluation of the event under Action Request 4410299.

Corrective Actions: Action Request 4410299, "Trip of Reserve Aux Transformer T-12 During Q1R26," March 19, 2021

Performance Assessment:

Performance Deficiency: Licensee procedure MA-AA-1000, "Conduct of Maintenance Manual," Revision 22, Section 9.0, Configuration Control, states, in part, that the safe operation of the plant requires that every component be in its correct position during all modes of operation. The Operations Department may grant operational control through approved procedures. Maintenance personnel should perform all manipulations of plant components per approved procedures, work instructions, or with specific approval from the Operations Department. Contrary to MA-AA-1000, on March 19, 2021, OAD technicians

performed maintenance outside the scope of what was approved by the Operations Department which resulted in the unplanned de-energization of T12.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Configuration Control 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.

Significance: The inspectors assessed the significance of the finding using Appendix G, "Shutdown Safety SDP." The inspectors evaluated the finding in accordance with NRC Inspection Manual Chapter (IMC) 0609, Appendix G, Attachment 1, "Shutdown Operations Significance Determination Process Phase 1 Initial Screening and Characterization of Findings," issued January 8, 2020, Exhibit 2, Initiating Events Screening Questions, and determined the finding screened as very low safety significance (Green). Specifically, per IMC 0609, Appendix G, "Shutdown Operations Significance Determination Process," the plant operational state (POS) at the time of the event was POS 3, which represents the shutdown condition when the reactor vessel level is equal or greater than the minimum level required for movement of irradiated fuel assemblies within the reactor pressure vessel as defined by Technical Specifications. This POS occurs during Mode 5 (Refueling). IMC 0308, Attachment 3, Appendix G, "Technical Basis for Shutdown Operations Significance Determination Process (IMC 0609, App G)," dated February 28, 2005, defines the loss of offsite power as an initiating event category that covers losses of offsite power at shutdown which cause a loss of RHR, and operator action is needed to restore RHR. This initiator category is considered for POS 1 and POS 2. This category is not considered applicable in POS 3 since the time to core uncovery is assumed to be greater than 24 hours. As such, the inspectors answered "No" to all of the questions in Exhibit 2 of IMC 0609, Appendix G, Attachment 1.

Cross-Cutting Aspect: H.5 - Work Management: The organization implements 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, OAD technicians performed work outside the scope of what was approved by the Operations Department, resulting in the loss of configuration control of plant electrical systems and the inadvertent de-energization of T12.

Enforcement:

Inspectors did not identify a violation of regulatory requirements associated with this finding.

EXIT MEETINGS AND DEBRIEFS

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

- On July 13, 2021, the inspectors presented the integrated inspection results to Mr. K. Ohr, Site Vice President, and other members of the licensee staff.
- On July 9, 2021, the inspectors presented the radiation protection inspection results to Mr. K. Akre, Sr. Manager Site Radiation Protection, and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.04	Corrective Action Documents	AR 4415474	EO ID'd 1/2 EDG Lube Oil Circ Pump Excessive Noise	04/09/2021
		AR 4429785	NOS ID: U1 HPCI Outer Airlock Door Binding	06/16/2021
	Procedures	QCOS 0005-09	Unit Two Electrical Distribution Breaker and Voltage Verification	47
		QCOS 1400-01	Core Spray System Flow Rate Test	51
		QCOS 6600-12	Unit 2 Diesel Generator Outage Report	23
71111.05	Calculations	QDC-4100-M-0691	Combustible Loading Calculation for the Power Block, SBO Building, and Crib House	8
	Corrective Action Documents Resulting from Inspection	AR 4419418	NRC ID: Missing Insulations on U1 EDG Exhaust Damper	04/27/2021
	Fire Plans	FZ 1.1.2.1	Unit 2 RB 544'-0" Elev. Torus Area & Top of Torus	July 2009
		FZ 1.1.2.1	RB-2N/RB-2S	October 2019
		FZ 11.1.3	Unit 1 RB 554'-0" Elev. HPCI & HPCI Access Tunnel	February 2013
		FZ 11.1.4	Unit 2 RB 544'-0" Elev. HPCI Pump Room	July 2009
		FZ 9.1	Unit 1 TB 595'-0" Elevation Diesel Generator	March 2012
71111.07A	Calculations	VT-16	RHR SW and DG CW Pump Room Cooler Performance Evaluation	03/26/1998
	Work Orders	WO 4904875	2C RHRSW PMP Area CLR CLN/INSP	04/29/2021
71111.12	Corrective Action Documents	AR 4368333	U2 RCIC Pump Trip during Flow Rate Test	09/09/2020
		AR 4408543	U2 RCIC Overspeed during Quarterly Surveillance	03/12/2021
		AR 4411859	1-1001-29B Will Not Close Given a Closed Signal	03/26/2021
		CAPE AT 4368333-02	U2 RCIC Pump Trip During Flow Rate Test	09/09/2020
		CAPE AT 4368333-02	U2 RCIC Pump Trip During Flow Rate Test	09/09/2020
		CAPE AT 4408543-03	U2 RCIC Overspeed During Quarterly Surveillance	03/12/2021
	Procedures	QCOS 1300-05	RCIC Pump Operability Test	58

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Work Orders	WO 5107503	RCIC Pump Operability (IST)	03/14/2021
71111.13	Corrective Action Documents	AR 4422552	Through Wall Leak 1B RHRSW LP Pump Discharge Reducer	05/09/2021
		AR 4425369	1B FWRV Positioner Hunting in Auto and Manual at Full Power	05/24/2021
71111.15	Calculations	QDC-5700-M-0806	Emergency Core Cooling System (ECCS) Room Cooler Performance Calculation Under Design Basis and Degraded Conditions.	1
	Corrective Action Documents	AR 4420973	2C TB Exhaust Fan did Not Trip When Taken to Trip	05/03/2021
		AR 4423688	1B RHRSW Pump Piping Support	05/14/2021
		AR 4427211	HPCI Room Cooler Inspection Found 3 Tubes Plugged with Silt	06/02/2021
		AR 4427470	U1 HPCI QCOS 2300-27 Failed Acceptance Criteria (G.6)	06/03/2021
	Corrective Action Documents Resulting from Inspection	AR 4424985	Typo Observed in QCMM 1000-02/03	05/21/2021
	Engineering Changes	EC 353595	On-Line HPCI Room Cooler Maintenance and HPCI System Availability	1
		EC 365683	HPCI Pump Design Basis Performance Criteria	1
		EC 634416	U1 HPCI Failed to Achieve 5000 GPM at Elevated Discharge Pressure (1220 PSIG) During Performance of QCOS 2300-27, Step H.63	0
71111.19	Procedures	QCOS 1000-04	RHR Service Water Pump Operability Test	65
		QCOS 5750-11	Control Room Emergency Ventilation Air Conditioning System Test	46
		QCOS 5750-16	Control Room Ventilation Differential Pressure Test (J.7.a)	10
	Work Orders	WO 5151047-06	EP VT-2 Examination - 1B RHRSW LP Pump Discharge Elbow	05/14/2021
71111.22	Corrective Action Documents	AR 4418244	Enhancement to Goodwin Pump PM and Surveillance	04/22/2021
	Procedures	QCOS 2300-27	HPCI Pump Comprehensive/Performance Test	48
		QCOS 4100-36	Emergency Portable Pump (EPP) Surveillance (J.7.a)	35
		QDC-1400-M-	Determination of Minimum Core Spray Pump Discharge	1

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		0559	Pressure Required for Quarterly Pump Flow Rate Test	
	Work Orders	WO 5127108	Core Spray Pump 'B' Flow Rate (IST)	05/18/2021
71124.03	Corrective Action Documents Resulting from Inspection	AR 4428684	NRC ID: RP-AA-825-101 Clarification Needed	06/10/2021
	Miscellaneous		Air Quality Checklist and Results - Quarterly Service Air and Self-Contained Breathing Apparatus	March 2019 - March 2021
		S/N CBAI352063	Posi3 USB Test Results	11/18/2020
		S/N CBAI355111	Posi3 USB Test Results	11/18/2020
	Procedures	RP-AA-825	Maintenance, Care and Inspection of Respiratory Protective Equipment	8
		RP-AA-825-101	Monthly Inspection and Maintenance of MSA Firehawk Mask Mounted Regulator SCBAs	2
	Work Orders	WO 4772416-01	SGBT Initiation and Rx Building Vent Isolation	03/26/2020
		WO 4860452-01	1/2 A SBGTS Sesquiannual Operability Test	05/19/2020
		WO 4928247-01	1/2 A SGTS In Place Charcoal Adsorber Freon Test	08/20/2019
		WO 4928252-01	SGTS In Place DOP Leak Test of HEPA Filters - Train A	08/20/2019
71124.07	Miscellaneous		2020 Annual Radiological Environmental Operating Report	05/01/2021
			2019 Annual Radiological Environmental Operating Report	05/01/2020
	Procedures	CY-AA-170-1001	Environmental Dosimetry - Performance Specifications, Testing, and Data Analysis	1
		EEIML-SPM-1	Sampling Procedures Manual	15
	Self-Assessments	4392604	Pre-NRC - Radiological Environmental Monitoring Program	04/01/2021
71152	Corrective Action Documents	AR 4234666	OLL 1-0220-62A Bonnet Bolting Missed Surface Exam	03/30/2019
		AR 4235215	PSU Q1R25 VT-1 of Bolting for Valve 1-1301-41 Bypassed	04/01/2019
		AR 4235562	Required Exam for 1-8799-214 Not Performed in Q1R25	04/02/2019
		AR 4239633	Q1R25 Trend IR - Required Bolting Exams Not Performed	04/15/2019
		AR 4245286	VT3 of Support M-994D-22 During Q1R26	05/01/2019
		AR 4256252	Q1R25 MSIV 1-0203-1B Bonnet Nut Installed W/O MT & VT-1 Exam	06/12/2019
		AR 4410615	"B" CCST Tank NDE Results	03/20/2021

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Engineering Changes	EC 628503	Evaluation of the Waiver of R-4411 MV/VT-1 Exam Requirements for a Class I Bonnet Nut on 1-0203-1B MSIV (Q1R25)	0
	Miscellaneous	18-115	ASME Section XI Repair/Replacement Plan	10/17/2018
	Procedures	ER-AA-700-404	Aging Management Program for Aboveground Metallic Tanks	0
		MA-AA-733-449	Crane Bolted Bonnet Swing Check Valve Maintenance	2
		MA-AA-734-460	Electromatic Relief Valve Inspection and Maintenance	2
		QCMM 0203-01	Main Steam Safety Valve Removal and Installation	34
		QCMM 0203-21	Electromatic Relief Valve Removal and Installation	36
		QCMM 0203-31	Target Rock Safety Relief Valve Removal and Installation	37
		QCMM 0203-53	Main Steam Isolation Valve Overhaul	31
		QCMM 1515-02	Inspection of Safety Related Valves During Disassembly, Repair and Reassembly of Valves	13
		QCMM 1515-08	Inspection of Safety and Non-Safety Related Check Valves During Disassembly, Repair and Reassembly of Valves	19
		QCMM 3200-01	Feedwater Check Valve Disassembly, Inspection, Test, and Reassembly	26
		QCMMS 1500-01	IST Relief Valve Set-Point Testing	46
71153	Corrective Action Documents	AR 4410299	Trip of Reserve Aux Transformer T-12 During Q1R26	05/19/2021
		AR 4425369	1B FWRV Positioner Hunting in Auto and Manual at Full Power	05/24/2021
	Engineering Evaluations	FS1-0054583	Transmittal of Supplemental Information for QCI1-27 Reload Safety Analysis Report- Operation with one Manual FRV	1
	Procedures	MA-AA-1000	Conduct of Maintenance	22