



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
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May 1, 2019

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

SUBJECT: BRAIDWOOD STATION, UNITS 1 AND 2—NRC INTEGRATED INSPECTION
REPORT 05000456/2019001; 05000457/2019001; AND 07200073/2019001

Dear Mr. Hanson:

On March 31, 2019, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Braidwood Station Units 1, and 2. On April 8, 2019, the NRC inspectors discussed the results of this inspection with Site Vice President, Ms. M. Marchionda and other members of your staff. The results of this inspection are documented in the enclosed report.

No NRC-identified or self-revealing findings were identified during this inspection. However, one Severity Level IV violation without an associated finding is documented in this report. We are treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2.a of the Enforcement Policy.

If you contest the violation or 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 Braidwood.

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/

Hironori Peterson, Chief
Branch 3
Division of Reactor Projects

Docket Nos.: 05000456; 05000457; and
07200073

License Nos.: NPF-72; NPF-77

Enclosure:

IR 05000456/2019001; 05000457/2019001;
07200073/2019001

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Letter to Bryan Hanson from Hironori Peterson dated May 1, 2019

SUBJECT: BRAIDWOOD STATION, UNITS 1 AND 2—NRC INTEGRATED INSPECTION
REPORT 05000456/2019001 AND 05000457/2019001

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**U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report**

Docket Numbers: 05000456; 05000457; and 07200073

License Numbers: NPF-72 and NPF-77

Report Numbers: 05000456/2019001; 05000457/2019001; and 07200073/2019001

Enterprise Identifier: I-2019-001-0056 and I-2019-001-0109

Licensee: Exelon Generation Co., LLC

Facility: Braidwood Station, Units 1 and 2

Location: Braceville, IL

Inspection Dates: January 01, 2019 to March 31, 2019

Inspectors: D. Betancourt-Roldan, Senior Resident Inspector
J. Dalzell, Health Physicist
M. Garza, Emergency Preparedness Inspector
T. Go, Health Physicist
D. Kimble, Senior Resident Inspector
M. Learn, Reactor Engineer
P. Smagacz, Resident Inspector

Approved By: Hironori Peterson, Chief
Branch 3
Division of Reactor Projects

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee’s performance by conducting a quarterly inspection at Braidwood 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. Findings and violations being considered in the NRC’s assessment are summarized in the table below.

List of Findings and Violations

Operation at Power with Reactor Coolant System (RCS) Pressure Boundary Leakage			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Not Applicable	No Performance Deficiency NCV 05000457/2019001-01 Open/Closed	N/A	71153
A self-revealed Severity Level (SL) IV non-cited violation (NCV) of Technical Specification (TS) 3.4.13, RCS Operational Leakage, was identified when it was discovered following shut down for a scheduled refueling outage that an RCS leak on Unit 2 that the licensee had been tracking as unidentified RCS leakage within the acceptable limits of TS 3.4.13(b) was actually pressure boundary leakage.			

Additional Tracking Items

Type	Issue Number	Title	Report Section	Status
LER	05000457/2018-001-00	LER 2018-001-00 for Braidwood Station, Unit 2, Reactor Coolant System Pressure Boundary Leak on a Steam Generator Bowl Drain Line due to High Cycle Fatigue Cracking Initiated from Small Welding Defects.	71153	Closed

PLANT STATUS

Unit 1 began the inspection period operating at full power. With the exception of minor reductions in power to support scheduled testing activities or small load changes requested by the transmission system dispatcher, the unit remained operating at or near full power for the entire inspection period.

Unit 2 began the inspection period operating at full power. With the exception of minor reductions in power to support scheduled testing activities or small load changes requested by the transmission system dispatcher, the unit remained operating at or near full power for the entire 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

Impending Severe Weather Sample (IP Section 03.03) (1 Sample)

The inspectors evaluated the site's readiness for impending adverse winter weather conditions and for extreme/extended cold temperatures during the week ending February 2, 2019.

71111.04 - Equipment Alignment

Partial Walkdown (IP Section 02.01) (4 Samples)

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

- (1) The 2A Component Cooling (CC) train during 2B CC train maintenance during the week ending January 19, 2019;
- (2) The 2A Containment Spray (CS) train while the 2B CS train was inoperable during the week ending January 26, 2019;
- (3) The 2A Emergency Diesel Generator (EDG) with 2B EDG out of service for maintenance during the week ending February 16, 2019; and
- (4) The 1B CS train while the 1A CS train was undergoing maintenance during the week ending March 2, 2019.

71111.04S - Equipment Alignment

Complete Walkdown (IP Section 02.02) (1 Sample)

The inspectors evaluated system status and configuration during a complete alignment verification of the Unit 2 Auxiliary Feedwater (AF) system during the weeks ending February 9, 2019, through March 9, 2019.

71111.05A - Fire Protection (Annual)

Annual Inspection (IP Section 03.02) (1 Sample)

The inspectors evaluated the performance of the station's fire brigade during the week ending March 2, 2019. The evaluation included direct observation of an in-plant fire drill conducted by the licensee on February 25, 2019.

71111.05Q - Fire Protection

Quarterly Inspection (IP Section 03.01) (2 Samples)

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

- (1) The Unit 1 and Unit 2 CC pump area of the station's Auxiliary Building, Fire Zone 11.3-0, during the week ending February 9, 2019; and
- (2) The 2B EDG room, Fire Zones 9.1-2 and 9.4-2, during the week ending March 2, 2019.

71111.07A - Heat Sink Performance

Annual Review (IP Section 02.01) (1 Sample)

The inspectors evaluated the performance of the following heat sink systems/components:

The 2B EDG jacket water heat exchangers while undergoing eddy current testing and inspection during the weeks ending February 16, 2019, through February 23, 2019.

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)

The inspectors observed and evaluated licensed operator performance in the Control Room during various activities during the weeks ending February 23, 2019, through March 30, 2019.

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

The inspectors performed an observation of a crew of licensed operators in the station's simulator during a graded casualty scenario on March 19, 2019.

71111.12 - Maintenance Effectiveness

Routine Maintenance Effectiveness Inspection (IP Section 02.01) (1 Sample)

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

The licensee's efforts to restore the 2B Safety Injection (SI) train to operation following repetitive foreign material intrusion issues. The inspectors' reviews were conducted during the weeks ending January 19, 2019, through March 23, 2019.

71111.13 - Maintenance Risk Assessments and Emergent Work Control

Risk Assessment and Management Sample (IP Section 03.01) (2 Samples)

The inspectors evaluated the licensee's management of risk for the following planned and emergent work activities:

- (1) The disassembly and inspection of the 2B SI pump as documented in Work Order (WO) 4871866 during the week ending January 19, 2019; and
- (2) The planned 2B EDG maintenance work window activities as documented in WO 4681758 during the week ending February 16, 2019.

71111.15 - Operability Determinations and Functionality Assessments

Operability Determinations and Functionality Assessments (IP Section 02.01) (4 Samples)

The inspectors evaluated the following operability determinations and functionality assessments:

- (1) The identification of foreign material in the 2B SI train as documented in Issue Report (IR) 4210285 during the weeks ending January 19, 2019, through February 9, 2019;
- (2) The failure of the 1C Reactor Coolant System (RCS) cold leg temperature indication as documented in IR 4219529 during the week ending February 16, 2019;
- (3) The failure of the 2B EDG room ventilation fan (2VD01CB) breaker to close on demand as documented in IR 4220844 during the weeks ending February 23, 2019, through March 30, 2019; and
- (4) The issues associated with a primary water leak from the fill line to the 1C Reactor Coolant Pump seal package standpipe as documented in IR 4223051 during the weeks ending March 16, 2019, through March 30, 2019.

71111.19 - Post Maintenance Testing

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

The inspectors evaluated the following post maintenance testing activities:

- (1) Operability testing for the 2B SI pump following emergent maintenance activities under WO 4871866 during the weeks ending January 19, 2019, through January 26, 2019;

- (2) Functional testing of essential service water valve 1SX114A following maintenance as documented in WO 1103185 during the week ending February 2, 2019; and
- (3) Operability testing of the 2B EDG following a planned maintenance work window as documented in WO 4885091 during the week ending February 23, 2019.

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance testing activities:

In Service Testing (IST) (IP Section 03.01) (2 Samples)

- (1) 1BwOSR 5.5.8.CC-7A, Comprehensive Inservice Testing (IST) Requirements for Component Cooling Pump (1CC01PA) and Discharge Check Valves, during the week ending January 12, 2019; and
- (2) 1B2OSR 5.5.8.SX-6B, Comprehensive Inservice Testing (IST) Requirements for 1B Essential Service Water Pump (1SX01PB), during the week ending February 23, 2019.

Reactor Coolant System (RCS) Leak Detection (IP Section 03.01) (1 Sample)

Detailed review of the calculated Unit 2 RCS unidentified leakage values during the week ending February 9, 2019.

Surveillance Testing (IP Section 03.01) (3 Samples)

- (1) 2BwOSR 3.8.1.2-1, *Unit 2 2A Diesel Generator Operability Surveillance*, during the week ending January 12, 2019;
- (2) The licensee's extension of the testing frequency for their 4.16 kV emergency bus undervoltage and degraded voltage relay surveillance tests during the weeks ending January 22, 2019, through February 16, 2019; and
- (3) 1BwOSR3.7.5.4-2, *Unit One Diesel Driven Auxiliary Feedwater Pump Surveillance*, during the week ending February 23, 2019.

71114.02 - Alert and Notification System Testing

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

The inspectors evaluated the following maintenance and testing of the alert and notification system:

- 2017 Braidwood/Dresden Plant Warning System Maintenance and Operation Report; and
- 2018 Braidwood/Dresden Plant Warning System Maintenance and Operation Report

71114.03 - Emergency Response Organization Staffing and Augmentation System

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

The inspectors evaluated the readiness of the Emergency Preparedness Organization.

71114.05 - Maintenance of Emergency Preparedness

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

The inspectors evaluated the maintenance of the emergency preparedness program.

71114.06 - Drill Evaluation

Emergency Preparedness (EP) Drill (IP Section 02.01) (2 Samples)

The inspectors observed and evaluated the following licensee EP drill activities:

- (1) A full scale emergency response organization drill conducted on January 29, 2019; and
- (2) A full scale emergency response organization drill conducted on March 5, 2019.

RADIATION SAFETY

71124.01 - Radiological Hazard Assessment and Exposure Controls

Contamination and Radioactive Material Control (IP Section 02.03) (1 Sample)

The inspectors evaluated licensee processes for monitoring and controlling contamination and radioactive material. The inspectors verified the following sealed sources are accounted for and are intact:

- BwS-102; Neutron-Ball in the Back of Calibration Facility Containing Am(Be) Source;
- Bws-104i; Neutron Calibration in the Back of Calibration Facility Containing Cf-252 Source;
- BwS-105i; Shepherd 89 in the Calibration Facility Containing Cs-137 Source;
- BwS-106i; Shepherd 89 in the Calibration Facility Containing Cs-137 Source; and
- BwS-34; (RT-11 Source) inside a Locked Cabinet in the Calibration Facility Containing Cs-137 Source.

71124.02 - Occupational ALARA Planning and Controls

Radiological Work Planning (IP Section 02.01) (1 Sample)

The inspectors evaluated the licensee's radiological work planning by reviewing the following activities:

- RWP BW-02-17-00506; A2R19 Containment/Auxiliary Building Outage Snubbers Removal, Testing and Installation;
- RWP BW-02-17-00510; A2R19 Containment/Auxiliary Building Outage Valve Work with Added Controls Tasks 1 through 5;
- RWP BW-02-17-00513; A2R19 Outage RP Activities;
- RWP BW-02-17-00534; A2R19 Reactor Head Cavitation Peening Tasks;
- RWP BW-02-18-00502; A2R20 Containment and Auxiliary In-Service-Inspection (ISI) Prep and Exam;
- RWP BW-02-18-00614; A2R20 Upper Internals Reactor Head Lifts; and

- RWP BW-01-18-00534; A1R20 Reactor Head Cavitation Peening Tasks.

Verification of Dose Estimates and Exposure Tracking Systems (IP Section 02.02)
(1 Sample)

The inspectors evaluated dose estimates and exposure tracking. The inspectors reviewed the following ALARA planning documents:

- ALARA BW-02-17-00506; A2R19 Containment/Auxiliary Building Outage Snubbers Removal, Testing and Installation;
- ALARA BW-02-17-00510; A2R19 Containment / auxiliary Building Outage Valve Work with Added Controls Tasks 1 through 5;
- ALARA BW-02-17-00513; A2R19 Outage RP Activities;
- ALARA BW-02-17-00534; A2R19 Reactor Head Cavitation Peening Tasks;
- ALARA BW-02-18-00502; A2R20 Containment and Auxiliary In-Service-Inspection (ISI) Prep and Exam;
- ALARA BW-02-18-00614; A2R20 Upper Internals Reactor Head Lifts; and
- ALARA BW-01-18-00534; A1R20 Reactor Head Cavitation Peening Tasks.

Additionally, the inspectors reviewed the following radiological outcome evaluations:

- RWP BW-02-17-00534; A2R19 Reactor Head Cavitation Peening Tasks;
- RWP BW-02-18-00502; A2R20 Containment and Auxiliary ISI Prep and Exam;
- RWP BW-02-18-00645; A2R20 "C" Reactor Coolant Pump Motor Replacements; and
- RWP BW-01-18-00534; A1R20 Reactor Head Cavitation Peening Tasks.

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

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

1st quarter 2018 – 4th quarter 2018

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

1st quarter 2018 – 4th quarter 2018

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

1st quarter 2018 – 4th quarter 2018

IE01: Unplanned Scrams per 7000 Critical Hours Sample (IP Section 02.01) (2 Samples)

- (1) Unit 1 1st quarter 2018 – 4th quarter 2018; and
- (2) Unit 2 1st quarter 2018 – 4th quarter 2018.

IE03: Unplanned Power Changes per 7000 Critical Hours Sample (IP Section 02.02)
(2 Samples)

- (1) Unit 1 1st quarter 2018 – 4th quarter 2018; and
- (2) Unit 2 1st quarter 2018 – 4th quarter 2018.

IE04: Unplanned Scrams with Complications (USwC) Sample (IP Section 02.03)
(2 Samples)

- (1) Unit 1 1st quarter 2018 – 4th quarter 2018; and
- (2) Unit 2 1st quarter 2018 – 4th quarter 2018.

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

Monthly Data Elements for NRC Occupational Exposure Control Effectiveness; data reviewed from April 2018 through December 2018

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 the station's corrective action program related to the following issues:

- (1) The formal causal evaluation for the identification of foreign material within the 2B SI system as documented in IR 42039892 during the weeks ending March 9, 2019, through March 30, 2019; and
- (2) The root cause evaluation for the identification of foreign material within the Unit 2 K-14 rod control cluster assembly (RCCA) as documented in IR 4186542 during the weeks ending March 9, 2019, through March 30, 2019.

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

Event Report (IP Section 03.02) (1 Sample)

The inspectors evaluated and closed the following licensee event reports (LERs). Copies of LERs may be accessed at <https://lersearch.inl.gov/LERSearchCriteria.aspx>:

- LER 05000457/2018-001-000, Unit 2 Reactor Pressure System Coolant Boundary Leak on a Steam Generator Bowl Drain Line Due to High Cycle Fatigue Cracking Initiated from Small Welding Defects. (ADAMS Accession No. ML18340A014)

Additional details regarding the disposition of this LER are documented in the Results section.

OTHER ACTIVITIES – TEMPORARY INSTRUCTIONS, INFREQUENT AND ABNORMAL

60855.1 - Operation of an Independent Spent Fuel Storage Installation at Operating Plants

Operation of an ISFSI at Operating Plant (1 Sample)

The inspectors evaluated the licensee's operation of the independent spent fuel storage installation from March 18 to March 25, 2019. Specifically, the inspectors evaluated:

- the material and radiological condition of the ISFSI and loaded storage casks through independently observing the structural condition, and reviewing the licensee's radiological surveys;
- heavy lifts of the loaded transfer cask from the wet pit to the cask processing area and from the cask processing area to the transfer location;
- non-destructive evaluations of the multi-purpose canister (MPC) lid to shell weld;
- processing of the MPC for storage including removal of bulk water, and drying using forced helium dehydration;
- transfer of the MPC;
- the fuel selection for the MPC;
- changes to the 72.212 report; and
- changes screened and evaluated using 10 CFR 72.48.

INSPECTION RESULTS

Observation	71152
<p>The inspectors performed a detailed review of IR 4203982, 2B Safety Injection Pump Low Recirculation Flow Rate. The licensee's causal evaluation for this issue involved the review of a series of events, beginning in October of 2018 during the scheduled Unit 2 A2R20 refueling outage and followed by events that occurred with the unit operating at power in December of 2018 and January of 2019. In each case, the 2B SI pump recirculation flow was found to be reduced during testing, and subsequent inspection and disassembly of 2B SI train components revealed that foreign material had become lodged in the orifice of the pump's minimum flow recirculation line. In all three instances, the licensee removed the foreign material and restored the 2B SI train to its nominal flow characteristics. The inspectors determined that the technical evaluations performed by the licensee for these cases were able to adequately demonstrate that the presence of the foreign material had not impacted the 2B SI train's performance enough to have rendered it incapable of performing its specified safety function.</p> <p>In each of the three instances, the foreign material removed from the 2B SI train was similar. Diagnostic testing revealed that the material was made of aluminum, and in several instances the small pieces removed had remained sufficiently intact that some alphanumeric characters could be discerned when the debris was flattened out. Altogether, this information led the licensee to conclude that the material had most probably been an aluminum identification tag of some sort that had been inadvertently introduced into the system.</p> <p>After the January 2019 event, the licensee's investigation positively identified the debris as a manufacturer's aluminum nameplate tag that had been affixed to the inside of the Unit 2 refueling water storage tank (RWST) access hatch with a glue/adhesive. The Unit 1 and Unit 2 RWST access hatches had been most recently opened in November of 2017 to</p>	

facilitate modifications to strengthen each RWST access hatch for protection against tornado-driven missiles. At that time, site personnel had noted that the manufacturer's aluminum nameplate tag that was affixed on the inside of the Unit 1 RWST access hatch was loose due to the degradation of its glue/adhesive, and removed it. The personnel did not, however, enter this degraded condition into the station's corrective action program. As a result, no actions were generated to review or assess the situation of the manufacturer's aluminum nameplate tag that was affixed on the inside of the Unit 2 RWST access hatch; over time its glue/adhesive also degraded and the tag fell into the Unit 2 RWST.

The licensee's evaluation of the overall issue concluded that their personnel had not had an appropriately questioning attitude towards foreign material exclusion in 2017 when the RWST hatch modifications were made. This conclusion was rolled into another causal evaluation that the licensee was conducting under IR 4198029, Foreign Material Exclusion (FME) – Declining Trend. This causal evaluation had concluded that a broader downturn in FME program performance at the station was due primarily with the inaccurate perception of FME risk by station personnel, combined with a mindset regarding FME that was reactive instead of proactive. Following review by the inspectors, no issues regarding any of these conclusions were identified. Similarly, the inspectors concluded that the licensee had established reasonable corrective actions to address the issues.

Observation	71152
<p>The inspectors performed a detailed review of IR 4186542, Unit 2 Control Rod K-14 Stuck at 210 Steps During Digital Rod Position Indication Surveillance. The licensee's root cause evaluation for this issue determined that a small pin from one of the licensee's control rod drive mechanism latching/unlatching tools, albeit tack welded in place, had fallen out during refueling operations and became lodged in the K-14 RCCA mechanism. The licensee's evaluation had positively determined that the pin had been lost from the latching/unlatching tool during the scheduled Unit 2 A2R20 refueling outage in the fall of 2018 and had not, therefore, been present within the K-14 RCCA drive mechanism during the previous Unit 2 operating cycle. As a result, there had been no loss of RCCA safety function. The licensee was able to retrieve the pin and the K-14 RCCA was tested satisfactorily prior to Unit 2 restart from the A2R20 refueling outage.</p> <p>The licensee's evaluation of the issue concluded that there were inadequate foreign material exclusion (FME) controls in place with respect to the Level 1 FME control zone surrounding the station's spent fuel pool and reactor refueling cavities. Additionally, the licensee concluded that there were also issues associated with the controls established for the physical configuration of the latching/unlatching tool, which was a device refurbished and maintained by a licensee vendor. Following review by the inspectors, no issues regarding any of these conclusions were identified. Similarly, the inspectors concluded that the licensee had established reasonable corrective actions to address the issues.</p>	

Operation at Power with Reactor Coolant System (RCS) Pressure Boundary Leakage			
Cornerstone	Significance/Severity	Cross-Cutting Aspect	Report Section
Not Applicable	No Performance Deficiency Severity Level IV NCV 05000457/2019001-01 Open/Closed	N/A	71153
<p>A self-revealed Severity Level (SL) IV non-cited violation (NCV) of Technical Specification (TS) 3.4.13, RCS Operational Leakage, was identified when it was discovered following shut down for a scheduled refueling outage that an RCS leak on Unit 2 that the licensee had been tracking as unidentified RCS leakage within the acceptable limits of TS 3.4.13(b) was actually pressure boundary leakage.</p> <p><u>Description:</u></p> <p>On November 25, 2017, the Unit 2 RCS unidentified leak rate underwent a step increase from approximately 0.026 gpm to approximately 0.113 gpm. Coincident with this increase in measured RCS unidentified leak rate, the licensee also saw an increase in Unit 2 containment radiation from noble gases and detected the presence of radioisotopes common to RCS fluid in the Unit 2 containment sump.</p> <p>The licensee performed a number of actions to identify the location and nature of the RCS leakage, including physical inspections of accessible areas of the Unit 2 containment and robotic inspections of other areas. However, the leak location could not be identified. An adverse condition monitoring plan that consisted of trigger points for follow on actions, including possible unit shutdown, was developed by the licensee for the long-term management of the condition. The licensee continued to monitor the leak rate, which remained stable for the remainder of the operating cycle.</p> <p>On October 8, 2018, Unit 2 was shut down for scheduled refueling outage A2R20. Following unit shutdown and entry into Mode 3, a licensee inspection team, accompanied by inspectors, identified a through-weld leak on the bowl drain for the 2D Steam Generator (SG). This area of the containment had been inaccessible to both physical and robotic inspections while the unit was operating at power.</p> <p>Licensee Event Report (LER) 05000457/2018-001-00, Reactor Coolant System Pressure Boundary Leak on a Steam Generator Bowl Drain Line due to High Cycle Fatigue Cracking Initiated from Small Welding Defects, was submitted by the licensee for this event.</p> <p>Corrective Action: All four SG bowl drain lines had been replaced at the same time during a previous Unit 2 refueling outage in October 2015 as part of the licensee's Alloy 600 steel primary water stress corrosion cracking mitigation efforts. Because of this, the licensee elected to replace all four SG bowl drain lines during their scheduled A2R20 refueling outage, vice just the 2D SG bowl drain line that had failed. Welding for the replacement SG bowl drain lines utilized a smaller weld filler rod – 1/16" vs 1/8" – for the new reducer-to-valve weld location, as well as a more robust 2x1 weld profile recommended by the Electric Power Research Institute (EPRI) for improved stress reduction and material sufficiency.</p> <p>Corrective Action Reference: Issue Report (IR) 4181129.</p>			

Performance Assessment:

Performance Deficiency: The inspectors determined the condition was not reasonably foreseeable and preventable by the licensee and did not, therefore, constitute a performance deficiency. Specifically, the replacement of all four Unit 2 SG bowl drain lines had been accomplished by the licensee during their A2R18 refueling outage in October 2015. The replacements matched the original construction fillet weld configuration for the SG bowl drain line welds, had met all applicable codes and standards for both design and execution, and had passed all required inspection and nondestructive testing prior to service. In their CAP investigation, the licensee concluded that the apparent cause for the failure was a small welding defect at the root of the socket fillet weld that served as the initiation site for a crack caused by high cycle fatigue. From follow on interpretation by weld experts that the licensee consulted, the primary contributing cause for the weld defect was most probably the lack of root penetration to the valve socket joint and the lack of insert/socket/weld material fusion. It is highly likely that the defect originated at the start/stop point of the weld where temperatures would have been the lowest for the longest period during the weld execution.

Cross-Cutting Aspect: Not Applicable. Cross cutting aspects are not applicable to results other than ROP findings.

Enforcement:

Traditional Enforcement is being used to disposition this violation with no associated Reactor Oversight Process performance deficiency, per NRC Memorandum Interim Guidance for Dispositioning Severity Level IV Violations with No Associated Performance Deficiency, dated June 15, 2018 (ADAMS Accession No. ML18158A220). The inspectors assessed the severity of the violation using Section 6.0 of the NRC Enforcement Policy and determined the significance is appropriately characterized as Severity Level IV due to the inappreciable potential safety consequences. Conservatively assuming that the 2D SG bowl drain (a 0.375" line) had fully separated, a single RCS charging pump would have been sufficient to make up for the RCS inventory loss and permit an orderly unit shutdown. Thus, the through-weld leak on the bowl drain for the 2D SG was fully bounded by the evaluations discussed in Chapter 15.6.2 of the Updated Final Safety Analysis Report (UFSAR) and did not place Unit 2 into any unanalyzed conditions.

Violation: Braidwood Unit 2 TS 3.4.13, RCS Operational Leakage, requires that no pressure boundary leakage exist while the unit is in Modes 1, 2, 3, and 4. With any pressure boundary leakage existent, Action Statement Condition B requires that the unit be placed in Mode 3 within 6 hours and in Mode 5 within 36 hours. Contrary to this requirement, Unit 2 was operated in Mode 1 with pressure boundary leakage from a through-weld leak on the bowl drain for the 2D SG between November 25, 2017, and October 8, 2018.

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

EXIT MEETINGS AND DEBRIEFS

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

- On April 8, 2019, the inspector presented the quarterly integrated inspection results to Site Vice President, Ms. M. Marchionda and other members of the licensee staff.

DOCUMENTS REVIEWED

71111.01 - Adverse Weather Protection

Action Requests/Issue Reports:

- 4200610; Unit 1 Refueling Water Storage Tank Heat Trace Beacon Not Lighting; 12/06/2019
- 4212518; Received Unexpected Annunciator 0-34-B1; 01/20/2019
- 4212521; Security ID: Bollards Not Operating Correctly; 01/20/2019
- 4215335; Security ID: Outside Routes Limited Due to Adverse Weather; 01/30/2019

Procedures:

- 0BwOA ENV-1; Adverse Weather Conditions Unit 0; Revision 123
- OP-AA-102-102; General Area Checks and Operator Field Rounds; Revision 15
- OP-AA-108-107-1001; Station Response to Grid Capacity Conditions; Revision 7
- OP-AA-108-111-1001; Severe Weather and Natural Disaster Guidelines; Revision 17
- OP-BR-102-102-1001; Augmented Operator Field Rounds; Revision 3
- WC-AA-107; Seasonal Readiness; Revision 21

71111.04 - Equipment Alignment

Action Requests/Issue Reports:

- 0961773; 2CS046A Appears to Have NaOH Packing Leak; 09/04/2009
- 4158727; U2 CS Tank High Level Alarm 2-3-C3 and Troubleshooter Result; 07/25/2018
- 4168430; 2A CS Pump Differential Pressure Less than 186 psid; 08/30/2018
- 4219633; Corrosion Identified on 2DG01KB-AC Jacket Water Standpipe Drain; 02/13/2019
- 4226617; Degraded Condition Identified During 1AF017A Diagnostic Testing; 03/05/2019

Procedures:

- BwOP AF-E2; Electrical Lineup – Unit 2 Operating; Revision 11
- BwOP AF-M2; Operating Mechanical Lineup, Auxiliary Feedwater, Unit 2; Revision 18
- BwOP CS-E1; Electrical Lineup – Unit 1 Containment Spray System; Revision 4
- BwOP CS-E2; Electrical Lineup Unit 2; Revision 3
- BwOP CS-M1; Operating Mechanical Lineup Unit 1; Revision 12
- BwOP CS-M2; Operating Mechanical Lineup Unit 2; Revision 11
- BwOP DG-E3; Electrical Lineup – Unit 2; Revision 7
- BwOP DG-M2; Operating Mechanical Lineup Unit 2; Revision 15
- BwOP SI-E2; Electrical Lineup – Unit 2 Operating; Revision 10
- BwOP SI-M2; Operating Mechanical Lineup Unit 2; Revision 24

Drawings/Prints:

- M-122; Diagram of Auxiliary Feed Water Unit 2; Revision BG
- M-136; Diagram of Safety Injection System; Revision BR
- M-2122; P&ID/C&I Diagram Auxiliary Feedwater System AF; Revision M

Work Orders:

- 1738567; Unit 2 Train B Auxiliary Feedwater Pump Emergency Actuation Signal 18 Month Verification; 05/14/2017
- 1897946; Unit 2 Train A Auxiliary Feedwater Pump Emergency Actuation Signal 18 Month Verification; 10/09/2018
- 4840441; AF001A/3A-2AF01PA Group A Quarterly Pump Surveillance; 12/05/2018
- 4853244; Unit 2 Train-A Auxiliary Feedwater Valves ASME Quarterly; 12/07/2018
- 4859817; Unit 2 Train-B Auxiliary Feedwater Valves ASME Quarterly; 12/14/2018
- 4870114; LR-2B Auxiliary Feedwater Pump Monthly Surveillance Run; 01/18/2019

71111.05 - Fire Protection

Action Requests/Issue Reports:

- 4215830; Fire Marshal ID: Pre-Fire Plan Change Needed; 01/31/2019
- 4220906; Diesel Leak About 10 Drops per Minute on 2B EDG (Near 2DG5054B); 02/17/2019
- 4223428; Security Can't Hear PA Announcements in Ready Room; 03/25/2019
- 4226127; Announced Fire Drill Observations; 03/04/2019
- 4226127; Announced Fire Drill Observations; 03/04/2019
- 4228985; Fire Marshal's Quarterly Fire Drill Review Roll-Up; 03/13/2019

Procedures:

- BwAP 1110-1; Fire Protection Program System Requirements; Revision 41
- BwAP 1110-3; Plant Barrier Impairment Program; Revision 38
- BwOP PBI-1; Plant Barrier Impairment Program Pre-Evaluated Barrier Matrix; Revision 2
- CC-AA-201; Plant Barrier Control Program; Revision 12
- ER-AA-600-1069; High Risk Fire Area Identification; Revision 4
- ER-BR-600-1069; Site List of High Risk Fire Areas – Braidwood Unit 1 and Unit 2; Revision 0
- OP-AA-201-004; Fire Prevention for Hot Work; Revision 16
- OP-AA-201-007; Fire Protection System Impairment Control; Revision 0
- OP-AA-201-008; Pre-Fire Plan Manual; Revision 4
- OP-AA-201-009; Control of Transient Combustible Material; Revision 21

Pre-Fire Plans:

- No. 71; Fire Zone 8.5-1; Turbine Building 426' Elevation, Unit 1 Mezzanine Floor (SE); Revision 2
- No. 89; Fire Zones 9.1-2, 9.4-2; DG 401' Elevation Diesel Generator Room 2B & Day Tank Room; Revision 1
- No. 112; Fire Zone 11.3-0; Auxiliary Building 364' Elevation, Unit 1 Auxiliary Building General Area – North; Revision 1
- No. 113; Fire Zone 11.3-0; Auxiliary Building 364' Elevation, Unit 1 Auxiliary Building General Area – South; Revision 1

Other:

- Fire Drill Scenario 20.17.01.23; MCC 133V4 B3 Fire; 01/23/17

71111.07 - Heat Sink Performance

Action Requests/Issue Reports:

- 4145185; Historical FME Identified in 2DG01KA-X1-X2; 06/07/2018
- 4219817; Degradation Found During Inspection of 2DG01KB-X2; 02/13/2019
- 4219915; FME: Extruded Quad Ring Material Found Inside 2B Upper Jacket Water Cooler; 02/14/2019
- 4219927; FME: Extruded Quad Ring Found Inside 2B Lower Jacket Water Cooler; 02/14/2019

Work Orders:

- 1720764; 2DG01KB: Inspect and Eddy Current Test Upper Jacket Water Cooler; 02/13/2019
- 1720765; 2DG01KB: Inspect and Eddy Current Test Lower Jacket Water Cooler; 02/13/2019

71111.11 - Licensed Operator Requalification Program

Action Requests/Issue Reports:

- 4221541; Unexpected Annunciator 1-1-C1 – Spent Fuel Pit Level Low; 02/19/2019
- 4223736; Crew 4.0 Critique for Sluice Gate Boot Seal Failure Response; 02/26/2019

Procedures:

- 1BwOA REFUEL-2; Refueling Cavity or Spent Fuel Pool Level Loss; Revision 107

- BwOP FC-11; Spent Fuel Pool Level Adjustment; Revision 40
- BwOP FC-19; Filling the Spent Fuel Transfer Canal or Spent Fuel Cask Chamber; Revision 12
- BwOP FC-23; Changing Backup Nitrogen Supply to Spent Fuel Pool Sluice Gate Seals; Revision 2
- OP-AA-101-111-1001; Operations Standards and Expectations; Revision 21
- OP-AA-101-113; Operator Fundamentals; Revision 12
- OP-AA-101-113-1006; 4.0 Crew Critique Guidelines; Revision 9
- OP-AA-103-102; Watch-Standing Practices; Revision 18
- OP-AA-103-102-1001; Strategies for Successful Transient Mitigation; Revision 2
- OP-AA-103-103; Operation of Plant Equipment; Revision 1
- OP-AA-104-101; Communications; Revision 3
- OP-AA-108-107-1002; Interface Procedure Between BGE/COMED/PECO and Exelon Generation (Nuclear/Power) for Transmission Operations; Revision 11
- OP-AA-111-101; Operating Narrative Logs and Records; Revision 15
- OP-AA-300; Reactivity Management; Revision 13
- OU-AP-229; Operation of the Spent Fuel Pool Sluice Gates for Byron and Braidwood; Revision 8
- TQ-AA-10; Systematic Approach to Training Process Description; Revision 5
- TQ-AA-150; Operator Training Programs; Revision 17
- TQ-AA-155; Conduct of Simulator Training and Evaluation; Revision 8
- TQ-AA-201; Examination Security and Administration; Revision 17
- TQ-AA-306; Simulator Management; Revision 9
- TQ-BR-201-0113; Braidwood Training Department Simulator Examination Security Actions; Revision 22

71111.12 - Maintenance Effectiveness

Procedures:

- BwMP 3100-025; Removal/Inspection/Replacement of Mechanical Seals in the Safety Injection Pump; Revision 8
- BwMP 3100-050; Inspection and Repair of Safety Injection Pump; Revision 10
- BwMP 3100-057; Safety Injection Pump Internal Assembly Inspection and Rebuild; Revision 2
- ER-AA-310-1002; Maintenance Rule Functions – Safety Significant Classification; Revision 3
- ER-AA-320; Maintenance Rule Implementation per NEI 18-10; Revision 0
- ER-AA-320-1001; Maintenance Rule 18-10 – Scoping; Revision 0
- ER-AA-320-1003; Maintenance Rule 18-10 – Failure Definitions; Revision 0
- ER-AA-320-1004; Maintenance Rule 18-10 – Performance Monitoring and Dispositioning Between (a)(1) and (a)(2); Revision 0

Work Orders:

- 4871866, Part 1; 2SI01PB – Rebuild 2B Safety Injection Pump; 01/14/2019
- 4871866, Part 9; 2SI16BB – Remove Minimum Flow Orifice for Internal Inspection; 01/15/2019

71111.13 - Maintenance Risk Assessments and Emergent Work Control

Action Requests/Issue Reports:

- 4210111; Results of Foreign Material Walkdown Prior to 2SI01PB Work Window; 01/11/2019
- 4220814; 2SX052B Butterfly Valve Replaced with New Valve; 02/17/2019
- 4221573; NRC Identified Transient Combustible in Transient Combustible Free Zone Without Transient Combustible Permit; 02/19/2019

Procedures:

- BwMP 3100-025; Removal/Inspection/Replacement of Mechanical Seals in the Safety Injection Pump; Revision 8
- BwMP 3100-050; Inspection and Repair of Safety Injection Pump; Revision 10
- BwMP 3100-057; Safety Injection Pump Internal Assembly Inspection and Rebuild; Revision 2
- BwMP 3305-19; Disassembly – Reassembly of Jamesbury Wafer – Sphere Butterfly Valves; Revision 10
- ER-AA-330-009; ASME Section XI Repair/Replacement Program; Revision 15
- ER-AA-335-015-2013; VT-2 Visual Examination in Accordance with ASME 2013; Revision 0
- ER-AA-600; Risk Management; Revision 7
- ER-AA-600-1042; On-Line Risk Management; Revision 11
- OP-AA-108-117; Protected Equipment Program; Revision 5
- WC-AA-101-1006; On-Line Risk Management and Assessment; Revision 2
- WC-AA-104; Integrated Risk Management; Revision 25

Work Orders:

- 4681758; 2B Emergency Diesel Generator Jacket Water Freeze Seals; 02/11/2019
- 4866037; 2B Diesel Generator Work Window with Isolating Essential Service Water Flow; 02/11/2019
- 4871866, Part 1; 2SI01PB – Rebuild 2B Safety Injection Pump; 01/14/2019
- 4871866, Part 9; 2SI16BB – Remove Minimum Flow Orifice for Internal Inspection; 01/15/2019

71111.15 - Operability Evaluations and Functionality Assessments

Action Requests/Issue Reports:

- 4203982; FME – 2B Safety Injection Pump Low Recirculation Flow Rate; 12/17/2018
- 4210285; Source of Foreign Material in 2B Safety Injection System; 01/11/2019
- 4219497; Ovation Trouble Alarm Brought in During ATWS Calibration; 02/12/2019
- 4219529; Temperature Indication Failed Low Multiple Times and Reset; 02/12/2019
- 4219601; Unexpected Response During Performance of 1L-FW433 WO 4832669; 02/13/2019
- 4220844; 2VD01CB Breaker Charging Spring Doesn't Charge; 02/17/2019

Procedures:

- 2BwOSR 5.5.8.SI-10B; Group A Inservice Testing Requirements For 2B Safety Injection Pump (2SI01PB); Revision 10
- ER-AA-321; Administrative Requirements for Inservice Testing; Revision 13
- ER-AA-600-1012; Risk Management Documentation; Revision 14
- ER-AA-600-1045; Risk Assessments of Missed or Deficient Surveillances; Revision 7
- OP-AA-106-101-1006; Operational Decision Making Process; Revision 21
- OP-AA-108-111; Adverse Condition Monitoring and Contingency Planning; Revision 13
- OP-AA-108-115; Operability Determinations (CM-1); Revision 21

Work Orders:

- 4871866, Part 2; 2SI01PB – Functional Run and Leak Check for 2B Safety Injection Pump; 01/16/2019
- 4871866, Part 9; 2SI16BB – Remove Minimum Flow Orifice for Internal Inspection; 01/15/2019

Engineering Changes/Technical Evaluations:

- 626729; 2B Safety Injection Pump Low Recirculation Flow Rate; Revision 1

71111.19 - Post-Maintenance Testing

Action Requests/Issue Reports:

- 4220844; 2VD01CB Breaker Charging Spring Doesn't Charge; 02/17/2019

- 4220906; Diesel Leak About 10 Drops per Minute on 2B Emergency Diesel Generator (Near 2DG5054B); 02/17/2019

- 4220931; 2B Diesel Generator Local Speed Indicated 625 RPM; 02/17/2019

Procedures:

- 1BwOSR 5.5.8.SX-1A; Essential Service Water Train A Valve Stroke Surveillance; Revision 10

- 2BwOSR 3.8.1.2-2; 2B Diesel Generator Operability Surveillance; Revision 44

- 2BwOSR 5.5.8.SI-10B; Group A Inservice Testing Requirements For 2B Safety Injection Pump (2SI01PB); Revision 10

- ER-AA-330-001; Section XI Pressure Testing; Revision 16

- ER-AA-335-015-2013; VT-2 Visual Examination in Accordance with ASME 2013; Revision 0

Work Orders:

- 1103185; OP - PMT 1SX114A Valve Strokes; 01/29/2019

- 1558150; OP - PMT Following MMD Rebuild Actuator: 1SX114A; 01/29/2019

- 4871866, Part 12; 2SI16BB-3 – VT-2 Replacement Welds; 01/16/2019

- 4871866, Part 2; 2SI01PB – Functional Run and Leak Check for 2B Safety Injection Pump; 01/16/2019

- 4871866, Part 9; 2SI16BB – Remove Minimum Flow Orifice for Internal Inspection; 01/15/2019

- 4885091; 2B Emergency Diesel Generator Operability Monthly Surveillance; 02/16/2019

71111.22 - Surveillance Testing

Action Requests/Issue Reports:

- 4205657; 1BwOSR 3.4.13.1 Deviation Action Level 1 Was Exceeded; 12/24/2018

- 4222711; 1FI-SX130 Flow Indicator Erratic; 02/22/2019

- 4222716; Loose Conduit Nut on 1B AF Pump; 02/22/2019

Procedures:

- 1BwOSR 3.7.5.4-2; Unit One Diesel Driven Auxiliary Feedwater Pump Surveillance; Revision 21

- 1BwOSR 5.5.8.CC-7A; Comprehensive Inservice Testing (IST) Requirements for Component Cooling Pump (1CC01PA) and Discharge Check Valves; Revision 5

- 1BwOSR 5.5.8.SX-6B; Comprehensive Inservice Testing (IST) Requirements for 1B Essential Service Water Pump (1SX01PB); Revision 14

- 2BwOSR 3.4.13.1; Unit 2 Reactor Coolant System Water Inventory Balance Surveillance; Revision 40

- 2BwOSR 3.8.1.2-1; Unit 2 2A Diesel Generator Operability Surveillance; Revision 45

- ER-AP-331-1003; RCS Leakage Monitoring and Action Plan; Revision 10

- MA-BR-773-401; Braidwood Unit 1 – 4 kV Safety Related Undervoltage and Degraded Voltage Relay Routine; Revision 10

- MA-BR-773-402; Braidwood Unit 2- 4 kV Safety Related Undervoltage and Degraded Voltage Relay Routine; Revision 8

Work Orders:

- 4655408; Comprehensive IST Requirements for 1SX01PB; 02/20/19

- 4669883; Comprehensive IST Requirements for 1CC01PA; 01/08/2019

- 4864522; LR – IST - 2A EDG Operability Monthly; 01/09/2019

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71114.02 - Alert and Notification System Testing

Action Requests/Issue Reports:

- 3987168; EP-Siren Failure (BD18); 03/20/2017

- 3989022; EP-Siren Failure (BD01); 04/03/2017

- 4021678; EP-Siren Failure (BD01); 06/14/2017
- 4026897; EP-Siren Failure (BD01); 06/29/2017
- 4047402; EP-Siren Failure (BW10); 08/30/2017
- 4145904; EP-Siren Failure (BD10); 06/11/2018
- 4154126; EP-Siren Failure (BW01); 07/09/2018
- 4198139; EP-Siren Failure (BW17); 11/28/2018

Other:

- Braidwood/Dresden Plant Warning System Maintenance and Operation Reports; 2017 and 2018
- FEMA-REP-10; Off-Site Emergency Plan Alert and Notification System; 10/18/2016

71114.03 - Emergency Response Organization Staffing and Augmentation System

Action Requests/Issue Reports:

- 4030698; ERO Key Member Participation Less Than 100 Percent; 07/11/2017
- 4079269; BWD ERO 4th Quarter PI Drill UNSAT DCS and Performance Issue; 11/30/2017
- 4084139; Braidwood EP 12/13/17 4th Quarter Call In Drill; 12/14/2017
- 4123720; NOS ID: ERO Cert Guide Didn't Document Candidate Completed Task; 04/06/2018
- 4153208; Ops Staffing Below Required Limit Per BwAP 320-1; 07/05/2018
- 4159590; Ops Staffing Below Required Limit Per BwAP 320-1; 07/28/2018
- 4196411; Braidwood EP 11-28-18 4th Quarter Call In Drill; 11/19/2018
- 4212280; HURB Canceled and Accountability Not Fully Documented; 01/18/2019

Procedures:

- EP-AA-112; ERO/ERF Activation and Operation; Revision 20
- TQ-AA-113; ERO Training and Qualification; Revision 34

Other:

- Call-In Augmentation Drill Results for tests conducted on 12/13/2017, 06/27/2017, 03/15/2018, 06/19/2018, 09/22/2018, and 11/18/2018

71114.05 - Maintenance of Emergency Preparedness

Action Requests/Issue Reports:

- 3971792; BWD EP 2017 OYE Failed Demonstration Criteria OSC; 02/07/2017
- 3987867; Training: Performance EP Failure (DEP); 03/21/2017
- 4035408; Training: Performance EP Failure (DEP); 07/24/2017
- 4079269; BWD ERO 4th Quarter PI Drill Unsats DCS and Performance Issue; 11/30/2017
- 4103315; Braidwood EP Pre-Exercise Failed Overall Objective; 02/12/2018
- 4103318; Braidwood EP Pre-Exercise Failed Facility Objective; 02/12/2018
- 4105318; Braidwood Pre-Ex Demonstration Criteria Failures – TSC; 02/18/2018
- 4105320; Braidwood Pre-Ex Demonstration Criteria Failures – OSC; 02/18/2018
- 4113152; Emergency Preparedness Audit Report; 04/11/2018
- 4114638; Training: Performance EP Failure (DEP); 03/13/2018
- 4117666; EP NRC Exercise DC Failures – OSC; 03/21/2018
- 4123727; NOS ID: Combustible Materials Near a TSC Electrical Panel; 04/06/2018
- 4144356; NRC Emergency Preparedness Baseline Inspection; 01/18/2019
- 4212279; Difference Between EP-AA-1001 Addendum 1 and BWAP 320-01; 01/18/2019

Procedures:

- EP-AA-1000; Standardized Radiological Emergency Plan; Revision 29
- EP-AA-1001; Radiological Emergency Plan Annex for Braidwood Station; Revision 34

Other:

- ERO Drill Reports for drills conducted from the 4th Quarter 2017 through the 4th Quarter 2018

71114.06 - Drill Evaluation

Action Requests/Issue Reports:

- 4213568; 4th Quarter Emergency Preparedness Performance Indicator Drill – Facility Issues; 01/24/2019
- 4213591; 4th Quarter Emergency Preparedness Performance Indicator Drill – Drill Management and Scenario Control; 01/24/2019
- 4213697; 4th Quarter Emergency Preparedness Performance Indicator Drill – Technical Support Center Failed Demonstration Criterion and Comments; 01/24/2019
- 4213702; 4th Quarter Emergency Preparedness Performance Indicator Drills – Main Control Room/Simulator Demonstration Criterion Failures and Comments; 01/24/2019
- 4213706; 4th Quarter Emergency Preparedness Performance Indicator Drill – Operations Support Center Failed Demonstration Criterion and Comments; 01/24/2019
- 4226809; Team ‘E’ EP PI Drill Facility Issues; 03/06/2019
- 4226825; Team ‘E’ EP PI Drill Technical Support Center Failed Demonstration Criterion and Comments; 03/06/2019
- 4226831; Team ‘E’ EP PI Drill Technical Support Center Issues; 03/06/2019
- 4226842; Team ‘E’ EP PI Drill Main Control Room/Simulator Demonstration Criterion Failures; 03/06/2019
- 4226853; Team ‘E’ EP PI Drill Main Control Room Issues; 03/06/2019
- 4226879; Team ‘E’ EP PI Drill Operations Support Center Demonstration Criterion Failures and Comments; 03/06/2019
- 4227493; BW-EP-2019 – Off Year Exercise – Operations Support Center – Failed Demonstration Criterion and Comments; 03/07/2019
- 4227885; BW-EP-2019 – Off Year Exercise – Technical Support Center – Failed Demonstration Criterion; 03/08/2019
- 4230575; BW-EP-2019 – Off Year Exercise – Technical Support Center and Main Control Room Comments; 03/18/2019

Other:

- Braidwood 2019 ‘E’ Emergency Preparedness Performance Indicator Drill Scenario Manual
- Braidwood 2019 Off-Year Exercise (WANO) Manual

71124.01 - Radiological Hazard Assessment and Exposure Controls

Procedures:

- RP-AA-800; Control, Inventory, and Leak Testing of Radioactive Sources; Revision 8

Other:

- National Source Tracking System (NSTS); Annual Inventory Reconciliation; 01/03/2019
- Radioactive Source Inventory Control RP and Chemistry related Radiation Sources; 02/08/2019
- Sources Leak Test Records; RP-AA-800; 02/08/2019

71124.02 – ALARA Planning and Control

Action Requests/Issue Reports:

- 4188407; A2R20 airborne Radioactivity During Cavity Flood-Up; 10/23/2018
- 4183814; A2R20 ISI RWP to Exceed Estimate by 25 Percent; 10/15/2018

Procedures:

- RP-AA-400; ALARA Program; Revision 16
- RP-AA-401; Operational ALARA Planning and Controls; Revision 24
- RP-AA-441; TEDE ALARA Evaluation; Revision 10

Radiation Work Permits (RWPs):

- BW-01-18-00534; A1R20 Reactor Head Cavitation Peening Tasks
- BW-02-17-00506; A2R19 Containment/Auxiliary Building Outage Snubbers Removal, Testing and Installation
- BW-02-17-00510; A2R19 Containment / auxiliary Building Outage Valve Work with Added Controls Tasks 1 through 5
- BW-02-17-00513; A2R19 Outage RP Activities
- BW-02-17-00534; A2R19 Reactor Head Cavitation Peening Tasks
- BW-02-18-00502; A2R20 Containment and Auxiliary In-Service-Inspection (ISI) Prep and Exam
- BW-02-18-00614; A2R20 Upper Internals Reactor Head Lifts

Other:

- Braidwood Station A1R20 RP/ALARA Outage Report Spring 2018
- Braidwood Station A2R19 RP/ALARA Outage Report Spring 2017
- Braidwood Station A2R20 RP/ALARA Outage Report Fall 2018
- NCAP Investigation Report Elevated Dose Rates during A2R19: Exceed Business Plan Goal Dose Rates for A2R219
- ALARA Post Job Review; RP-AA-401; A2R19 Reactor Head Cavitation Peening

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

Other:

- Cask Book Model RT-100; Certificate of Compliance No. 9365, Revision No. 1, for Model No. RT-100
- Docket No. 71-9365; Safety Evaluation Report for Model No. RT-100 Package
- Form 540; Uniform Low level Radioactive Waste Manifest Shipping Paper; Manifest No. RWS 19-004
- Form 541; Uniform Low level Radioactive Waste Manifest; Container and Waste Description for NRC Requirements for Control, Transfer and Disposal of Radioactive Waste; RWS 19-004
- NRC Letter RS-14-190; Revision to Registration of Exelon Generation Company, LLC as an Authorized User of NRC-Licensed Transport Package RT-100

71151 - Performance Indicator Verification

Action Requests/Issue Reports:

- 4125550; February NRC Drill and Exercise Performance PI Did Not Include All LORT NRC Drill and Exercise Performance Opportunities; 04/11/2018
- 4212281; Two EP Reports Not Available In EDMS; 01/18/2019
- 4218292; Drill and Exercise Performance Summary Sheet Time Errors – Time to Notify; 02/07/2019

Procedures:

- LS-AA-2001; Collecting and Reporting of NRC Performance Indicator Data; Revision 15
- LS-AA-2010; Monthly Data Elements for NRC/WANO Unit/Reactor Shutdown Occurrences; Revision 5
- LS-AA-2030; Monthly Data Elements for NRC Unplanned Power Changes per 7000 Critical Hours; Revision 5
- LS-AA-2110; Monthly Data Elements for NRC Emergency Response Organization (ERO) Drill Participation; Revision 7
- LS-AA-2120; Monthly Data Elements for NRC Drill/Exercise Performance; Revision 4

- LS-AA-2130; Monthly Data Elements for NRC Alert and Notification (ANS) Reliability; Revision 5
- LS-AA-2140; Monthly Data Elements for NRC Occupational Exposure Control Effectiveness; Revision 5

Other:

- NRC Performance Indicator Data; Emergency Preparedness – Alert and Notification System Reliability; January 2018 through December 2018
- NRC Performance Indicator Data; Emergency Preparedness – Drill/Exercise Performance; January 2018 through December 2018
- NRC Performance Indicator Data; Emergency Preparedness – ERO Readiness; January 2018 through December 2018
- NRC Performance Indicator Data; Initiating Events – Unit/Reactor Shutdown Occurrences; January 2018 through December 2018
- NRC Performance Indicator Data; Initiating Events – Unplanned Power Changes per 7000 Critical Hours; January 2018 through December 2018
- NRC Performance Indicator Data; Occupational Exposure Control Effectiveness; January 2018 through December 2018

71152 - Identification and Resolution of Problems

Action Requests/Issue Reports:

- 4182263; OSP-X: 2B Safety Injection Cold Leg Flow Unbalance 2BwOSR 5.5.8.SI-11; 10/10/2018
- 4182301; OSP-X: 2B Safety Injection Cold Leg Flow Unbalance Follow-Up; 10/11/2018
- 4182307; 2BwOSR 5.5.8.CV-8 – Unit 2 IST CV System Test Results for A2R20; 10/11/2018
- 4182698; OSP-X: 2B Safety Injection Pump Recirculation Flow Anomaly; 10/11/2018
- 4182783; OSP-A: 2B Safety Injection Pump Recirculation Line Restriction; 10/12/2018
- 4183360; 2SI8822B Inspection Results FME; 10/14/2018
- 4183402; 2SI8810D Inspection Results FME; 10/14/2018
- 4183593; Inspection Results of 2B Safety Injection Pump Recirculation Line FME; 10/15/2018
- 4183978; OSP-X: Low Flow Observed on 2B Safety Injection Cold Leg During 2B Safety Injection Pump Runs; 10/16/2018
- 4186542; Unit 2 Control Rod K-14 Stuck at 210 Steps During DRPI Surveillance; 10/22/2018
- 4188177; Foreign Material Identified in K-14 Rod Cluster Control Assembly; 10/26/2018
- 4198029; Foreign Material Exclusion (FME) – Declining Trend; 11/27/2019
- 4203982; FME – 2B Safety Injection Pump Low Recirculation Flow Rate; 12/17/2018
- 4210285; Source of Foreign Material in 2B Safety Injection System; 01/11/2019

Procedures:

- NO-AA-10; Quality Assurance Topical Report (QATR); Revision 94
- PI-AA-120; Issue Identification and Screening Process; Revision 8
- PI-AA-125; Corrective Action Program (CAP) Procedure; Revision 6
- PI-AA-125-1001; Root Cause Analysis Manual; Revision 3
- PI-AA-125-1003; Corrective Action Program Evaluation Manual; Revision 4

Engineering Changes/Technical Evaluations:

- 626729; 2B Safety Injection Pump Low Recirculation Flow Rate; Revision 1

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

Action Requests/Issue Reports:

- 4177307; Unit 2 RCS Leak Rate Deviation Action Level II Exceeded; 09/26/2018
- 4181129; OSP-A: Through Wall Leak on 2D Steam Generator Bowl Drain Line; 10/08/2018

- 4182245; OSP-X: 2B Steam Generator Extent of Condition Inspection – 3/32 Inch Rounded Indication; 10/10/2015
- 4182247; OSP-X: 2A Steam Generator Extent of Condition Inspection – 1/32 Inch Rounded Indication; 10/10/2015

60855.1 - Operation of an Independent Spent Fuel Storage Installation at Operating Plants

Action Requests/Issue Reports:

- 4233412; NRC Questioned MPC 402 Lid to Shell NDE Results; 03/25/2019

Procedures:

- BwFP FH-83; Spent Fuel Cask Contingency Actions; Revision 14
- GQP-9.2; High Temperature Liquid Penetrant Examination and Acceptance Standards for Welds, Base Materials, and Cladding; Revision 10
- GQP-9.6; Visual Examination of Welds; Revision 18
- OU-AA-630-101; Dry Cask Storage Compliance Inspections, Checklist A; Revision 0
- OU-MW-671-300; MPC Processing Forced Helium Dehydration (FHD) for PWRs; Revision 7

Work Orders:

- 4696937-01; Overhead Crane Yearly Inspection; 07/25/2018
- 4696937-03; 0HC03G Support MMD's Preventative Maintenance on Tool Hoist; 03/27/2018
- 4851479-01; Quarterly Walkdown of Dry Cask Storage; 01/22/2019
- 4883348-01; Overhead, Gantry and Jib Cranes Monthly Inspection; 02/26/2019

Engineering Changes/Technical Evaluations:

- 406124; Dry Cask Storage License Upgrade to Certificate of Compliance Amendment 9, Revision 1, and Holtec HI-STORM 100 Final Safety Analysis Report, Revision 13; 09/28/2016
- 619629; Spent Fuel Casks for the 2017 Dry Cask Storage Loading Campaign; 06/27/2017
- 620873; Alternative Rigging Bridles For HI-TRAC Water Shield Ring and Empty MPC Lid – ISFSI; 08/24/2017
- 624435; Holtec Non-Mechanistic Tip-Over Calculation 72.48-187, Revision 0; 08/10/2018
- 626785; Spent Fuel Casks for the 2019 Dry Cask Storage Loading Campaign; 01/29/2019

Nondestructive Examination (NDE) Reports:

- 914602-402-01; Lid to Shell/SN 402; 03/20/2019
- 914602-402-02; Lid to Shell/SN 402; 03/21/2019
- 914602-402-03; Lid to Shell/SN 402; 03/21/2019
- 914602-402-04; Lid to Shell/SN 402; 03/21/2019

Other:

- BRW-18-0041-N; Fuel Selection Packages BWD-0027 through BWD-0031; Revision 0
- BRW-18-0042-N; Alternate Fuel Assembly List for 2019 ISFSI Campaign; Revision 0
- RRTI-1767-003; Request for Technical Information; 03/23/2012
- Braidwood Spent Fuel Loading Campaign Readiness Assessment; 02/08/2019
- Braidwood Nuclear Power Station, Units 1 and 2, 10 CFR 72.212 Evaluation Report; Revision 3
- Radiation Protection Survey No. 2018-011349; ISFSI Pad Survey Map; 04/26/2018