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

March 25, 2020

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

SUBJECT: BRAIDWOOD GENERATING STATION – BIENNIAL PROBLEM IDENTIFICATION AND RESOLUTION INSPECTION REPORT 05000456/2020010 AND 05000457/2020010

Dear Mr. Hanson:

On February 28, 2020, the U.S. Nuclear Regulatory Commission (NRC) completed a problem identification and resolution inspection at your Braidwood Generating Station and discussed the results of this inspection with Ms. M. Marchionda-Palmer, Site Vice President, and other members of your staff. The results of this inspection are documented in the enclosed report.

The NRC inspection team reviewed the station's corrective action program and the station's implementation of the program to evaluate its effectiveness in identifying, prioritizing, evaluating, and correcting problems, and to confirm that the station was complying with NRC regulations and licensee standards for corrective action programs. Based on the samples reviewed, the team determined that your staff's performance in each of these areas adequately supported nuclear safety.

The team also evaluated the station's processes for use of industry and NRC operating experience information and the effectiveness of the station's audits and self-assessments. Based on the samples reviewed, the team determined that your staff's performance in each of these areas adequately supported nuclear safety.

Finally the team reviewed the station's programs to establish and maintain a safety-conscious work environment and interviewed station personnel to evaluate the effectiveness of these programs. Based on the team's observations and the results of these interviews the team found no evidence of challenges to your organization's safety-conscious work environment. Your employees appeared willing to raise nuclear safety concerns through at least one of the several means available.

No findings or violations of more than minor significance were identified during this inspection.

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

Sincerely,

/RA/

Hironori Peterson, Chief
Branch 3
Division of Reactor Projects

Docket Nos. 50-456 and 50-457
License Nos. NPF-72 and NPF-77

Enclosure:
As stated

cc w/ encl: Distribution via LISTSERV®

Letter to Bryan Hanson from Hironori Peterson dated March 25, 2020.

SUBJECT: BRAIDWOOD GENERATING STATION – BIENNIAL PROBLEM IDENTIFICATION AND RESOLUTION INSPECTION REPORT 05000456/2020010 AND 05000457/2020010

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U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report

Docket Numbers:	05000456 and 05000457
License Numbers:	NPF-72 and NPF-77
Report Numbers:	05000456/2020010 and 05000457/2020010
Enterprise Identifier:	I-2020-010-0033
Licensee:	Exelon Generation Company, LLC
Facility:	Braidwood Generating Station
Location:	Braceville, IL
Inspection Dates:	February 03, 2020 to February 28, 2020
Inspectors:	L. Cender, Health Physicist G. Hausman, Senior Reactor Inspector N. Shah, Project Engineer P. Smagacz, Resident Inspector J. Weigandt, Reactor Engineer
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 biennial problem identification and resolution inspection at Braidwood Generating 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

No findings or violations of more than minor significance were identified.

Additional Tracking Items

Type	Issue Number	Title	Report Section	Status
LER	05000456/2019-001-00	LER 2019-001-00 for Braidwood Station, Unit 1, Unit Trip on Low Steam Generator Level Due to Failure of a Controller on a Feedwater Regulating Valve	71153	Closed

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.

OTHER ACTIVITIES – BASELINE

71152B - Problem Identification and Resolution

Biennial Team Inspection (IP Section 02.04) (1 Sample)

(1) The inspectors performed a biennial assessment of the licensee's corrective action program (CAP), use of operating experience, self-assessments and audits, and safety conscious work environment.

- Corrective Action Program Effectiveness: The inspectors assessed the corrective action program's effectiveness in identifying, prioritizing, evaluating, and correcting problems. The inspectors also conducted a 5-year review of the Units 1 and 2 125 Vdc systems.

- Operating Experience, Self-Assessments and Audits: The inspectors assessed the effectiveness of the station's processes for use of operating experience, audits and self-assessments.

- Safety Conscious Work Environment: The inspectors assessed the effectiveness of the station's programs to establish and maintain a safety-conscious work environment.

71153 - Followup 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) Licensee Event Report (LER) 05000456/2019-001-00, "Unit Trip on Low Steam Generator Level Due to Failure of a Controller on a Feedwater Regulating Valve," (ADAMS Accession No. ML19324D929). The inspectors determined that it was not reasonable to foresee or correct the cause discussed in the LER therefore no performance deficiency was identified. The inspectors did not identify a violation of NRC requirements.

INSPECTION RESULTS

Assessment	71152B

Review of Corrective Action Program:

Based on the samples reviewed, the team determined that the licensees' performance in each of these areas adequately supported nuclear safety.

Effectiveness of Problem Identification:

Overall, the station was effective at identifying issues at a low threshold and properly entering them into the CAP as required by station procedures. The team determined that the station was effective at identifying negative trends that could potentially impact nuclear safety. The team interviewed personnel, reviewed documents, walked down portions of the plant, and assessed licensee problem identification.

One item of note, while observing surveillance testing, the NRC resident inspectors noted that the flow gauge for the 2B residual heat removal pump was not responding properly. The licensee staff did not capture this issue in the CAP, in part, due to the belief that this was a low-level concern. However, after prompting by the inspectors, the licensee recognized that this gauge also controls the position of the downstream flow valve, which could impact pump operability. Although the licensee later verified the pump was operable, the initial lack of sensitivity potentially resulted in a more significant issue being missed. The licensee documented this issue as AR 4322053

Effectiveness of Prioritization and Evaluation of Issues:

In-depth reviews of a risk-informed sampling of Action Request (ARs), work orders (WOs), and cause evaluations were completed, including a 5-year time period for the 125 Vdc. The team determined that the licensee had established a low threshold for entering issues into the CAP, that the issues were generally being appropriately prioritized and evaluated for resolution, and that the corrective actions (CAs) were implemented to mitigate the risk of issues occurring that could affect overall system operability and/or reliability.

The inspectors noted that the licensee had identified potential degradation of the feedwater check valves (AR 4291137), as a contributing cause to a Unit 1 reactor trip documented in AR 4281429. As part of the trip evaluation, the licensee decided to continue operating with the valves in the degraded condition; however, the inspectors noted that there was no assigned action to assess and document the risk impact of this decision. The inspectors noted that while the licensee had done some risk assessment and had proposed actions to address the issue, these actions were not subject to the normal station management review/challenge process, since they were not tied to a formal CAP action. The inspectors subsequently concluded that the licensee's justification for continued operation was reasonable and did not identify any open safety concern. However, the licensee's decision to not assign a formal CAP action and therefore bypass the normal management review process was documented as AR 4322046.

The inspectors also noted that while issue evaluations were generally sound, there were several examples where additional research was needed to understand the technical basis, primarily due to a lack of clear documentation. This theme had previously been identified in earlier licensee self-assessments and CAP audits and continued to be a concern.

The licensee documented this observation as AR 4322045.

Effectiveness of Corrective Actions:

The team concluded that the licensee was generally effective in developing CAs that were appropriately focused to correct the identified problem and to address the root and contributing causes for significant issues in order to preclude repetition. The licensee generally completed CAs in a timely manner and in accordance with procedural requirements commensurate with the safety significance of the issue. For NRC identified issues, the team determined that the licensee generally assigned CAs that were effective and timely.

During a walk down of the Unit 1 feedwater system, the inspectors identified an open deficiency tag on the Unit 1 Main Feedwater Regulating Valve Control Panel Display (panel 1PL1001). This panel was not safety-related. Specifically, the display was not receiving data or displaying valve position. The inspectors noted that the issue was identified in July 2019 under AR 4263048. In this AR, the licensee had noted that this panel was needed for an Adverse Condition Monitoring Plan. Subsequently, AR 4294972 was initiated in November 2019, as the display had not been repaired. After checking the CAP database and querying the licensee, the inspectors determined that both ARs were closed to a work order, which was then closed with no action taken. Subsequently, the inspectors determined that this display was not needed for indications or trending, but was used as a back-up indication by the control room. The licensee documented the failure to fix this issue as AR 4321854.

No violations or findings were identified.

Assessment	71152B

5-year Review of Units 1 and 2 125V DC Systems:

The inspectors performed an expanded 5-year review of the Units 1 and 2 125 Vdc system; specifically, by performing system walk-downs and evaluating condition reports, engineering changes, and work orders. The inspectors also interviewed the system engineer responsible for this system. Overall, the inspectors determined that the licensee was effectively managing issues associated with this system.

Since 2014, the licensee has observed intermittent grounds on both the Units 1 and 2 DC bus systems (i.e., buses 111, 112, 211 and 212). These grounds were primarily attributed to equipment issues (bus 111) and potential water intrusion due to wet weather (buses 112, 211 and 212). These grounds were documented in the CAP and the NRC resident inspectors had been reviewing them through the baseline inspection program. Because of the intermittent and/or short-lived nature of the grounds, the location of the grounds was difficult to discern. The inspectors identified no operability or other immediate safety concerns with these grounds and concluded that the licensee had taken proactive actions to find and correct the cause of the grounds.

No violations or findings were identified.

Assessment	71152B

Operating Experience, Self-Assessment and Audits:

The inspectors reviewed operating experience (OpE) captured in the CAP and sampled OpE from NRC, industry, vendors, and third-party groups. Overall, for the samples selected, the licensee was generally performing the appropriate assessments for station applicability. Through interviews and observations at selected station meetings, the inspectors also concluded that OpE was being appropriately used in daily plant activities.

The inspectors determined that the licensee was adequately performing self-assessments and audits in accordance with licensee procedures and implementing corrective actions as needed. Of note, the inspectors observed that the overall conclusions of the licensee's self-assessment and Nuclear Oversight audit of the CAP program done prior to this NRC inspection, was consistent with the inspectors' observations.

No violations or findings were identified.

Assessment	71152B

Review of Safety Conscious Work Environment:

The inspectors observed various station meetings, including those in which new CAP items were reviewed, and interviewed a representative cross-section of station personnel, both individually and small groups. Additionally, the inspectors interviewed the Employee Concerns Program (ECP) Coordinator, reviewed recent case logs and case files and inquired about the program during interviews with station personnel.

During interviews, several licensee staff stated a lack of confidence in the licensee's ability to correct low level issues. This was primarily based on issues taking a significant time to resolve and/or being closed without any apparent action being taken. This perception caused some interviewees to state that they likely wouldn't continue to document these concerns in the CAP. The inspectors determined that much of this was due to the lack of clear feedback on what actions were being taken to address the issue and understanding of what certain CAP actions (such as "closed to trend") actually meant. The inspectors also determined that the interviewees would not hesitate to raise a concern if they believed that plant or worker safety was potentially involved. This concern was discussed with the licensee, who documented it as AR 4322027.

Overall, inspectors found no evidence of challenges to the licensee's safety conscious work environment (SCWE). Licensee's employees were willing to raise nuclear safety concerns through at least one of several means available. Workers expressed favorable opinions of the ECP during interviews, and those that had utilized it had no concerns regarding the overall outcome. The inspectors noted that the licensee had generally addressed potential SCWE issues in the ECP and identified no significant trends with documented issues within the last two-years.

No violations or findings were identified.

Observation: LER closeout observation	71152B

Review of Root Cause of Unit 1 Trip on Low Steam Generator Level:

The inspectors performed a detailed review of LER 2019-01-00, "Unit 1 Trip on Low Steam Generator Level Due to Failure of a Controller on a Feedwater Regulating Valve." A root cause evaluation for this issue was performed under AR 4281429. As part of this evaluation, the licensee reviewed a previous root cause evaluation for a 2018 Unit 1 reactor trip, also caused by a feedwater controller malfunction, documented in AR 4144070. Although the feedwater system is non-safety related, it is a system important to plant risk.

Based on the results of the 2018 evaluation, the licensee revised the 2019 evaluation to include additional information regarding performance issues with the feedwater check valves. Specifically, these valves would occasionally not fully open (AR 4165777), resulting in partial flow restrictions in the feedwater system. Although the licensee had taken corrective action, this issue remained a concern and was a contributor in the 2019 Unit 1 reactor trip.

In the 2019 evaluation, the licensee elected to continue operating with these valves in a degraded condition; however, there was no formal CAP action initiated to assess the potential operational risk of this decision. The inspectors noted that the licensee had opened an Adverse Condition Monitoring Plan (ACMP) to monitor the check valve performance and had developed a white paper to evaluate the operational risk and offer several recommendations to improve operating reliability. However, because these actions were not formally tied back to AR 4281429, they were not subject to management review through the normal CAP screening processes or other means. Therefore, these documents did not constitute a formal decision and/or risk assessment to justify continued operation with the degraded check valves.

After reviewing the white paper, ACMP and discussing the issue with plant engineers, the inspector concluded the licensee could reasonably justify continued operation with the degraded check valves. Additionally, inspectors noted this issue was being tracked in the U1 system health report and the Plant Health Committee approved replacement of the existing valves with a new style of valve. These actions were being tracked in the CAP under AR 4291137.

The inspectors concluded that although the licensee had not taken a formal CAP action to justify continued operation with the degraded Unit 1 feedwater check valves, the implemented controls were appropriate to manage the risk until the issue was corrected. Therefore, no violations or findings were identified. The licensee documented the failure to assign a formal action in AR 4322046.

EXIT MEETINGS AND DEBRIEFS

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

- On February 28, 2020, the inspectors presented the biennial problem identification and resolution inspection results to Ms. M. Marchionda-Palmer, Site Vice President, and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71152B	Corrective Action Documents	2448240	Westinghouse NSAL-15-1 . FQ(Z) Tech Spec Surveillance	02/05/2015
		2567071	OSP-A-CT--Exciter Stator Phase Banding Is Loosening	10/07/2015
		2589930	Root Cause Report: Severe Corrosion and Degraded Coating Observed on Line 0SXH2AA-6	12/29/2015
		2589930	Heavy General Corrosion on 0SXH2AA 6" in 0SX165A Pit	11/19/2015
		270540	DC System Trend IR (January 2014 – July 2019)	08/08/2019
		3993342	Request Formal OPEX Review for ICES 407278	04/03/2017
		4066205	Braidwood Station OPEX Level 3 Review - NRC IN 2017-06	10/24/2017
		4071655	Preparation for NRC Problem Identification and Resolution Inspection	06/01/2018
		4074647	Ops Effectiveness Review of ATV Actions Self-Assessment	11/14/2017
		4081071	Level 3 OPEX Review Needed--Unusual Event Hydrogen Leak	12/05/2017
		4083304	DC System Short Circuit Calculation Update	12/12/2017
		4086455	Green NCV - Errors in Analysis of Record for MS Line HELB	12/21/2017
		4107379	Security 24 HR Loggable SY-AA-103-500 Procedure Not Followed	02/23/2018
		4110095	PI&R Deficiency (OBJ 2H): Shift Review Bypassed	03/01/2018
		4110095	PI&R Deficiency: Shift Review Bypassed	03/01/2018
		4110536	PI&R Deficiency Inappropriate NCAP IR	03/02/2018
		4115813	Failed Gasket of 2B AF PP Gearbox Oil Cooler	03/16/2018
		4123789	PI&R Deficiency: Aging Management Program	04/06/2018
		4124952	RCS Pressure Transient During 7300 TCP Mod	04/10/2018
		4126942	Level 2 C&T Event--Work Stopped on 1PA08J and 1PA09J	04/15/2018
		4128714	OSP-A Loss of ESF Bus 141 During 1A EDG Sequencer Testing	04/19/2018
		4129240	OSP-X 1RC01R NDE Results for 1RV-03-002 Reactor Head Weld	06/19/2020
		4131031	EC 620239 Poorly Written Lacks Operational Experience	04/26/2018
		4132550	Root Cause Report: Unit 1 A1R20 Turbine Trip	06/22/2018
		4143493	PI&R Deficiency: Untimely IR Generation Review	06/01/2018

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		4143518	PI&R Deficiency: Corrective Action Investigations	06/01/2018
		4144070	U1 Manual Rx Trip	06/04/2018
		4144695	Unit 1 DG-1 Maintenance Rule a(1) Determination	06/06/2018
		4145161	Trend--THU Behaviors	06/07/2018
		4146837	LORT TSA Failure (Isolate WS Flooding)	06/13/2018
		4147583	1PI-AF105 Inlet Pressure Reads Lower Than Outlet Gauge	06/15/2018
		4149089	BYR OPEX: U2 DEHC Drop 2 in Failure Mode	06/21/2018
		4154913	NER NC-18-015 Yellow Adverse Trend in Fleet Fuel Performance	07/10/2018
		4156368	Potential Inventory Loss for Ultimate Heat Sink	07/17/2018
		4158520	NRC ID'D - Support on 1B DG Lube Oil - Not Fret Protected	07/24/2018
		4158523	NRC ID'D - 5 Missing Shroud Bolts - Top of 1B DG	07/24/2018
		4160763	PI&R: UFSAR Revision Not Tracked Properly	08/01/2018
		4167984	2Q18 Green NCV--Inadequate Maintenance Work Instructions	08/28/2018
		4167985	2Q18 Green Finding--Work Instruction Error Caused RCS Issue	08/28/2018
		4182698	OSP-X 2B SI Pump Recirculation Flow Anomaly	10/11/2018
		4182783	OSP-A 2B SI Pump Recirculation Line Restriction	10/12/2018
		4183593	Inspection Results of 2B SI Pump Recirculation Line FME	10/15/2018
		4186040	NRC ID During Mode 4 Containment Walk Down	10/21/2018
		4188177	FME Identified in K-14 RCCA Assembly	10/26/2018
		4190621	NRC Green LIV - Security Inspection	11/01/2018
		4190742	Digital FRV Controlling with Integral Function	11/01/2018
		4193552	Notification Part 21 Framatome RFM Manipulator Gripper	11/09/2018
		4197712	OPS Focus, Monitoring Plant Conditions Closely	11/26/2018
		4198029	Foreign Material Exclusion (FME) - Declining Trend	02/22/2019
		4203982	2B SI Pump Low Recirculation Flow Rate	03/21/2019
		4210285	Source of FME ins 2B SI System	01/11/2019
		4216119	Level 3 OPEX Review Requested	01/31/2019
		4217023	DBAI: HELB Manual Actions	12/10/2014
		4217133	DBAI: Global Effects of Missile Impact on RWST Hatch Cover	02/04/2019

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		4217715	Self-Assessment: Ops Mid-Cycle with OJT/TPE/Inst/SMEs	02/06/2019
		4217716	Self-Assessment: Ops 71111.11	02/06/2019
		4217944	Level 3 OPEX Review--ICES 449343	04/24/2019
		4222716	Loose Conduit Nut on 1B AF Pump	02/22/2019
		4224262	DG Temperature Switch - Part 21 Evaluation	02/27/2019
		4229548	Potential Part 21 Applicability on Battery Charger 111	10/17/2019
		4232818	FME: 2TO5337A Inspection Revealed FM	08/10/2019
		4233266	Two DEP Failures of an Evaluated Simulator Scenario	03/26/2019
		4235177	FME: Metal Tag Cable Created I/A Leak on 1LC-ES086	04/01/2019
		4236442	NOS ID RCR 4145161 Contained Descripencies: CA Not Classified	04/04/2019
		4254840	2BWOA RCP-2 Entry	06/06/2019
		4256355	Self Assessment FME	06/12/2019
		4261661	One ILT SRO-I Preliminary Denied License By NRC	07/03/2019
		4263659	Scaffold Tie Off to Structure Broke--Div 12 ESF Room	07/12/2019
		4265036	DC Bus 212 Ground (2DC06E – 125 Vdc ESF – Distribution Center Bus 212)	07/18/2019
		4265545	Unexpected Annunciator 1-21-D6. DC Bus 111 Ground (1DC05E 125 Vdc ESF Dist. Cent 111 Assembly)	07/19/2019
		4266244	Perform OPEX Review of 2019 INPO FME AFIs	09/24/2019
		4267116	DC Bus 212 Ground (2DC06E – 125 Vdc ESF Dist. Cent 212 Assembly)	07/26/2019
		4268875	Station Vulnerability Issue Due to Ginna OPEX 458342	08/01/2019
		4268944	NOS ID 2018 Bioassay Prgm Periodic Measuremt Not Performed	08/01/2019
		4269225	Efficiency Impact Seen With Lake Softening	07/25/2019
		4269360	DC Bus 212 Ground (2DC06E – 125 Vdc ESF Dist. Cent 212 Assembly)	08/03/2019
		4270275	+96 Vdc Ground on DC 111	08/07/2019
		4270893	2TO5337A Inspection Revealed FM	08/10/2019
		4272759	Pilot Cell 19 at 91F (>90F Admin Limit) 2DC01E (2DC01E – ESF Battery 211 Assembly)	08/18/2019
		4272834	DC 112 Specific Gravity Deviation High (1DC02E – ESF	08/18/2019

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			Battery 112 Assembly)	
		4273460	OP-AA-105-102, Att 1 Not Complete for First Qtr 2019	08/20/2019
		4273637	Crew Learning for LORT Scenario	08/22/2019
		4277166	DC Bus 211 Ground (2DC05E – 125 Vdc ESF Dist. Center Bus 211 Assembly)	09/06/2019
		4277356	Unexpected Alarm 1-21-E8 125 Vdc Batt Charger 111 Trouble	09/06/2019
		4278172	Part 21 Closure Actions Inadequate	10/10/2019
		4278351	60 DPM JW Leak 1B EDG--1DG01KB	09/11/2019
		4278530	Proactive Inspection to Prevent Grounds 1AP01E (1AP01E – Unit Aux. Power Transformer 141-1)	09/11/2019
		4278534	Proactive Inspection to Prevent Grounds 2AP70E (2AP70E – Unit Aux. Power Transformer 241-2)	09/11/2019
		4278536	Proactive Inspection to Prevent Grounds 1AP02E (1AP02E – Transformer, System Aux Trans 142-1)	09/11/2019
		4278539	Proactive Inspection to Prevent Grounds 1AP71E (1AP71E – System Aux Transformer 142-2)	09/11/2019
		4278540	Proactive Inspection to Prevent Grounds 2AP02E (2AP02E – System Aux. Power Transformer 242-1)	09/11/2019
		4278544	Proactive Inspection to Prevent Grounds 2AP71E (2AP71E – System Aux. Power Transformer 242-2)	09/11/2019
		4278548	Proactive Inspection to Prevent Grounds 1SY01E (1SY01E – SAT 142-1 E.O. Disc Switch)	09/11/2019
		4278549	Proactive Inspection to Prevent Grounds 1SY02E (1SY02E – SAT 142-2 E.O. Disc Switch)	09/11/2019
		4278551	Proactive Inspection to Prevent Grounds 2SY01E (2SY01E – SAT 242-1 E.O. Disc Switch)	09/11/2019
		4278557	Proactive Inspection to Prevent Grounds 1FP01EA (1FP01EA – Outside FP Alarm Horn for Transformer Area)	09/11/2019
		4278558	Proactive Inspection to Prevent Grounds 1FP01EB (1FP01EB – Inside FP Alarm Horn for Transformer Area)	09/11/2019
		4278559	Proactive Inspection to Prevent Grounds 2FP01EA (2FP01EA – Alarm Horn Outdoor Transformer Area)	09/11/2019
		4278561	Proactive Inspection to Prevent Grounds 2FP01EB	09/11/2019

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			(2FP01EB – Alarm Horn Outdoor Transformer Area)	
		4281258	1ER-DC05E Positive Ground Pushed Is > Rounds Maximum (1ER DC05E DC Bus 111 Ground Voltage Recorder)	09/22/2019
		4282020	DC ESF Bus 112 Ground Alarm Received (1DC06E – 125 Vdc ESF Dist. Cent 112 Assembly)	09/25/2019
		4282409	NOS ID'D: 1 of 10 LORT JPM Score Sheets was Incomplete	09/26/2019
		4283427	FME: Foreign Material Found During Disassembly of 1PS124A	09/30/2019
		4283868	2020 Pre-NRC Problem Identification and Resolution Inspection	01/17/2020
		4285090	1B AF Pump Flow Lower Than Acceptable Flow	10/04/2019
		4285470	02-OSP-F Unexpected Alarm DC 112 Ground	10/06/2019
		4285532	-122 Vdc 112 Ground	10/07/2019
		4286018	212 DC Ground	10/08/2019
		4286217	05-OSP-X Received Unexpected ALM 1-21-E8, 111 Battery Charger Trouble (1DC03C Battery Charger 111)	10/09/2019
		4287611	FME - Metal Shavings Found in ES Piping	10/14/2019
		4288186	10-OSP-R T/S Multiple Spurious Alarms on DC 111 Charger (1DC03E 125 Vdc Battery Charger 111)	10/16/2019
		4288445	11-OSP-R Intermittent DC Bus 112 Ground (1DC06E – 125 Vdc ESF Dist. Cent 112)	10/16/2019
		4289894	Unexpected Alarm 1-22-D6 DC Bus 112 Ground	10/21/2019
		4295309	1ER-DC05E Reads > 75 V (1ER-DC05E – DC Bus 111 Ground Voltage Recorder)	11/07/2019
		4298533	DC Bus 212 Ground Detector Is Degraded (2ER-DC06E – DC Bus 212 Ground Voltage Recorder)	11/19/2019
		4298558	125 Vdc Battery Charger 111 Alarm Received After Ground Check (1ER-DC05E DC Bus 111 Ground Voltage Recorder)	11/20/2019
		4298558	125 Vdc Battery Charger 111 Alarm Received After Ground Check	11/20/2019
		4300007	DC 112 Ground During FP RTS (1FP02J – Fire Protection Cabinet 1FP02J)	11/26/2019
		4301635	Clearance & Tagging Annual Audit Deficiency - Ops	12/04/2019

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		4302464	Unexpected Alarms 1-21-D6 and 1-21-E8 (1DC05E 125 Vdc ESF Dist. Cent 111 Assembly)	12/09/2019
		4302464	Unexpected Alarms 1-21-D6 and 1-21-E8	12/09/2019
		4304503	Erratic Negative Ground Volt Reading When Depressed DC 212	12/17/2019
		4304938	Level 3 Config Control: Zero d/p Indicated on 0PDI-VC058	12/19/2019
		4308125	Battery 212 Charger Circuit Card Issue (2DC04E – 125 Vdc Battery Charger 212 Assembly)	01/05/2020
		4308795	Unexpected Annunciator: 1-21-E8 (1DC03E 125 Vdc Battery Charger 111)	01/08/2020
	Corrective Action Documents Resulting from Inspection	4321466	NRC ID: Issue With Rigging Restraint	02/25/2020
		4321854	NRC ID'd Deficiency on 1PL100J With No Open WR/WO	02/27/2020
	Drawings	20E-1-4030DC05	Schematic Diagram, 125 Vdc ESF Distribution Center, Bus 111, Part 1, 1DC05E	X
		20E-1-4030DC06	Schematic Diagram, 125 Vdc ESF Distribution Center, Bus 111, Part 2, 1DC05E	P
		AC-7	AC One Line Diagram, January 6, 2015 (For Training Use Only)	8
		DC-1	125 Vdc System (For Training Use Only)	9
		DC-2	250 Vdc System (For Training Use Only)	3
	Engineering Changes	625953	Evaluate Impact on Safety Analyses due to As-Found ECCS Flow Rates	10/20/2018
		BR-19-002	Surveillance Test Interval (STI) Evaluation: Revise The 125 Vdc ESF Battery Bank and Charger Operability Weekly Surveillance Frequency from Once per 7-days to Once per 31-days	0
		BRW-15-006	Surveillance Test Interval (STI) Evaluation: Change the STI for Service Test (SR 3.8.4.3) to an 18-month Staggered Test Basis	2
	Engineering Evaluations	2541232-46-01	ICES 318417, Sequoyah Unit 1 Trip Due to Loss of Vital Inverter Power Board	05/19/2016
		2683598-83	ICES 323906, Prairie Island Diesel Driven Fire Pump Failed	09/22/2016

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			to Start	
		4128714	Multiple Losses of ESF Bus 141 during 1A Diesel Generator Sequence Testing in A1R20	06/08/2018
		4190742	Feedwater Regulating Valve Oscillations During Power Ascension	01/17/2019
		4192903	2018 Equipment Reliability Evaluation	12/10/2018
		ATI 02541232-46-01	ICES 318417, Sequoyah Unit 1 Trip Due to Loss of Vital Inverter Power Board	05/19/2016
		ATI 02683598-83	ICES 323906, Prairie Island Diesel Driven Fire Pump Failed to Start	09/22/2016
		ATI 03969265-82	ICES 407851, Palo Verde Unit 2 Inverter Failed to Transfer to Emergency Power	No Date Given
		ATI 03993342-02	ICES 407278, Catawba Battery System Cell Failure	04/04/2017
		ATI 04008241-33	ICES 408139, Fermi Unit 2 Uninterruptible Power Supply Inverter Failed to Start	No Date Given
		ATI 04048975-28	ICES 420726, Fermi Unit 2 Balance of Plant Battery Charger Failed to Charge	09/27/2017
		ATI 04048975-96	ICES 426149, Byron Unit 2 Battery Charger Input Breaker Tripped Open	No Date Given
		ATI 04066205-02	NRC IN 2017-06: Battery and Battery Charger Short-Circuit Current Contributions to a Fault on the Direct Current Distribution System	12/13/2017
		ATI 04242973-53	IRIS 460461, Quad Cities Unit 1 24/48 Vdc Charger Tripped	10/30/2019
	Miscellaneous		2018 ECP Logs	
			2019 ECP Logs	
			2019 ECP Files	
			Plant Health Committee Agenda	02/24/2020
			Braidwood Management Review Committee Agenda	02/11/2020; 02/13/2020; 02/24/2020
			Station Ownership Committee Package	02/10/2020; 02/12/2020; 02/13/2020; 02/24/2020

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			Station Trend Report	November 2019
			Station Trend Report	December 2019
		--	Final Safety Evaluation for PWROG Topical Report WCAP-17661, Rev. 1, "Improved RAOC and CAOC FQ Surveillance Technical Specifications,"	
		2018 ECP Files		
		IEEE-450 Standard	IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications	1995
		ML052350494	NUREG-0800, Standard Review Plan, 8.3.2 D-C Power-Systems	2
		ML122130601	IN 2013-05; Battery Expected Life and Its Potential Impact on Surveillance Requirements	03/19/2013
		PI-AA-125-1006, Att 20	Performance Analysis 04281548-06	10/30/2019
		PI-AA-3	Exelon Nuclear Policy: Nuclear Safety Culture	02/05/2015
		PORC Meeting: 18-025	PORC Topic: Surveillance Test Interval (STI) BRW-15-006 - Change the STI for Service Test (SR 3.8.4.3) To An 18-Month Staggered Test Basis	09/20/2018
		STS428.TG	NRC Inspection Manual, Part 9900: Technical Guidance, Standard Technical Specifications, Section 4.2.8.X.X. Surveillance Requirements – 125 Volt Battery Bank	10/01/1979
	Operability Evaluations	18-001	2B SI Pump Low Recirc Flow Rate	1
	Procedures	1BwHSR 3.8.4.2-111	Unit One 125 Volt ESF Battery Charger 111 Capacity Test	4
		1BwHSR 3.8.4.2-112	Unit One 125 Volt ESF Battery Charger 112 Capacity Test	1
		1BwHSR 3.8.4.3-111	Unit One 125 Volt ESF Battery Bank 111 Service Test	1
		1BwHSR 3.8.4.3-112	Unit One 125 Volt ESF Battery Bank 112 Service Test	1

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		1BwHSR 3.8.6.6-111	Unit One 125 V ESF Battery Bank 111 Modified Performance Test	4
		1BwHSR 3.8.6.6-112	Unit One 125 V ESF Battery Bank 112 Modified Performance Test	4
		1BwOSR 3.8.6.1-1	Unit One 125 Vdc ESF Battery Bank and Charger 111 Operability Surveillance	18
		1BwOSR 3.8.6.1-2	Unit One 125 Vdc ESF Battery Bank and Charger 112 Operability Surveillance	20
		1BwOSR 3.8.6.5-1	Unit One 125 Vdc ESF Battery Bank 111 Operability Surveillance	15
		1BwOSR 3.8.6.5-2	Unit One 125 Vdc ESF Battery Bank 112 Operability Surveillance	16
		2BwHSR 3.8.4.2-211	Unit Two 125 Volt ESF Battery Charger 211 Capacity Test	4
		2BwHSR 3.8.4.2-212	Unit Two 125 Volt ESF Battery Charger 212 Capacity Test	1
		2BwHSR 3.8.4.3-211	Unit Two 125 Volt ESF Battery Bank 211 Service Test	1
		2BwHSR 3.8.4.3-212	Unit Two 125 Volt ESF Battery Bank 212 Service Test	1
		2BwHSR 3.8.6.6-211	Unit Two 125 V ESF Battery Bank 211 Modified Performance Test	4
		2BwHSR 3.8.6.6-212	Unit Two 125 V ESF Battery Bank 212 Modified Performance Test	4
		2BwOSR 3.8.6.1-1	Unit Two 125 Vdc ESF Battery Bank and Charger 211 Operability Surveillance	18
		2BwOSR 3.8.6.1-2	Unit Two 125 Vdc ESF Battery Bank and Charger 212 Operability Surveillance	18
		2BwOSR 3.8.6.5-1	Unit Two 125 Vdc ESF Battery Bank 211 Operability Surveillance	15
		2BwOSR 3.8.6.5-2	Unit Two 125 Vdc ESF Battery Bank 212 Operability Surveillance	15
		AD-AA-3000	Nuclear Risk Management Process	4
71152B	Procedures	BwHS TRM	125 Volt Battery Bank Surveillance	8

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		3.8.C.4		
		BwHS TRM 3.8.C.4S1	125 Volt ESF Battery Bank and Rack Surveillance Data Sheet for Battery 111	3
		BwHS TRM 3.8.C.4S2	125 Volt ESF Battery Bank and Rack Surveillance Data Sheet for Battery 112	3
		BwHS TRM 3.8.C.4S3	125 Volt ESF Battery Bank and Rack Surveillance Data Sheet for Battery 211	4
		BwHS TRM 3.8.C.4S4	125 Volt ESF Battery Bank and Rack Surveillance Data Sheet for Battery 212	3
		BwOP DC-5-111	125 Vdc ESF Battery 111 Equalization	9
		BwOP DC-5-112	125 Vdc ESF Battery 112 Equalization	9
		BwOP DC-5-211	125 Vdc ESF Battery 211 Equalization	8
		BwOP DC-5-212	125 Vdc ESF Battery 212 Equalization	8
		ER-AA-2001	Plant Health Committee	25
		ER-AA-320-1004	Maintenance Rule 18-10 - Performance Monitoring and Dispositioning Between (a)(1) and (a)(2)	1
		IP 71152	NRC Problem Identification and Resolution Inspection Procedure	01/01/2015
		MA-AA-716-017	Station Rework Reduction Program	8
		MA-AA-721-1001	Station Battery Testing Strategies	2
		NO-AA-210-1002	Nuclear Oversight Audit Templates	10
		PI-AA-101-1001	Performance Monitoring and Analysis Manual	3
		PI-AA-101-1003	Performance Gap Resolution	0
		PI-AA-115	Operating Experience Program	5
		PI-AA-115-1001	Processing of Level 1 and Level 2 OPEX Evaluations	3
		PI-AA-115-1002	Processing of Level 2 OPEX Evaluations	3
		PI-AA-115-1003	Processing of Level 3 OPEX Evaluations	5
		PI-AA-120	Issue Identification and Screening Process	9
		PI-AA-125	Corrective Action Program Procedure	7
		PI-AA-125-1003	Corrective Action Program Evaluation Manual	5

71152B	Self-Assessments		Braidwood Station Maintenance Rule Periodic a(3) Assessment	December 1, 2017 to January 19, 2019
		4074648	Simulator Management Compliance (per TQ-AA-306)	11/14/2017
		M1C-4	NOS Objective Evidence Report Maintenance Functional Area Audit - Battery Maintenance and Testing (AR 2608396-17)	02/03/2016
		NOSA-BRW-16-01	Braidwood Station Maintenance Audit Report 01/19/2016 to 01/29/2016 (AR2608396)	02/03/2016
		NOSA-BRW-16-05	Braidwood Station Engineering Programs and Station Blackout Audit Report 03/28/2016 to 04/08/2016 (AR2637791)	04/13/2016
		NOSA-BRW-18-01	Braidwood Station Maintenance Functional Area Audit Report 02/19/2018 to 03/2/2018 (AR4090567)	03/08/2018
		NOSA-BRW-18-03	Braidwood Station Emergency Preparedness Audit Report 03/26/2018 to 04/06/2018 (AR4113152)	04/11/2018
		NOSA-BRW-18-09	Braidwood Station In-service Inspection, In-service Testing, and Appendix J Audit Report 08/20/2018 to 08/31/2018 (AR4161245)	09/07/2018
		NOSA-BRW-19-04	Braidwood Station Corrective Action Program Audit Report 03/25/2019 to 04/05/2019 (AR4224677)	04/10/2019
		NOSA-BRW-19-06	Braidwood Station Radiation Protection Audit Report 07/22/2019 to 08/02/2019 (AR4254882)	08/07/2019
		PI-AA-126-1001-F-01	2018 Employee Concerns Program Performance and Effectiveness Review	2
		PIIM 2019-0242	2019-0242 System and Component Monitoring	06/07/2019
71153	Corrective Action Documents	4144070	Unit 1 Manual Reactor Trip Due to Lowering Steam Generator Level - Root Cause Investigation Report	02/12/2020
		4165777	1FW079B Check Valve Further Closed than 1FW079A, C, & D	08/20/2018
		4225240	Review of Byron IR 4185973 FW Reg Valv Travel Transducers	03/01/2019
		4251835	1PL100J Windows Operating System Crashed	05/26/2019
		4263048	1PL100J Screen Illegible	07/10/2019
		4281429	Unit 1 Reactor Trip on 1FW520 Valve Closure	

		4289400	15-OSP-R U1&2 FRV Positioner ByP Reg Handwheel	10/20/2019
		4291137	1FW530 Full Open Following Power Ascension	10/25/2018
		4294972	1PL100J Screen is Fuzzy	11/06/2019
		4296357	A1R21LL - Valve Team Lessons Learned	11/11/2019
		4303483	Troubleshooter Requested for FW Performance Hardening	12/12/2019
		699328	1FW079B Check Valve Further Closed than Expected	11/14/2007
		702428	Modify 1FW520 LOOP to Allow Living with FW Line Restriction	11/21/2007
	Engineering Evaluations	-	Braidwood Unit 1 Feedwater Line C Hydraulic Resistance Imbalance RELAP5 Study	October 2019
	Miscellaneous	Adverse Condition Monitoring and Contingency Plan	U1 Feedwater Regulating Valve (FRV) Position	10/25/2019
		Adverse Condition Monitoring and Contingency Plan	U2 Feedwater Regulating Valve DVC Health	10/29/2019
	Procedures	PI-AA-125-1001	ROOT CAUSE ANALYSIS MANUAL	5
	Work Orders	4829232	1FW079B Check Valve Further Closed than 1FW079A, C, & D	12/01/2019
		4989927	Troubleshooter Requested for FW Performance Hardening	12/15/2019