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

November 13, 2019

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

SUBJECT: BYRON STATION – INTEGRATED INSPECTION REPORT 05000454/2019003 AND 05000455/2019003

Dear Mr. Hanson:

On September 30, 2019, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Byron Station. On October 2, 2019, the NRC inspectors discussed the results of this inspection with Mr. Harris Welt and other members of your staff. The results of this inspection are documented in the enclosed report.

One finding of very low safety significance (Green) is documented in this report. This finding did not involve a violation of NRC requirements.

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

If you disagree with a finding not associated with a regulatory requirement in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region III; and the NRC Resident Inspector at Byron.

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. 05000454 and 05000455
License Nos. NPF-37 and NPF-66

Enclosure:
As stated

cc: Distribution via LISTSERV®

Letter to Bryan Hanson from Hironori Peterson dated November 13, 2019.

SUBJECT: BYRON STATION – INTEGRATED INSPECTION REPORT 05000454/2019003 AND 05000455/2019003

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U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report

Docket Numbers:	05000454 and 05000455
License Numbers:	NPF-37 and NPF-66
Report Numbers:	05000454/2019003 and 05000455/2019003
Enterprise Identifier:	I-2019-003-0065
Licensee:	Exelon Generation Company, LLC
Facility:	Byron Station
Location:	Byron, IL
Inspection Dates:	July 01, 2019 to September 30, 2019
Inspectors:	S. Bell, Health Physicist D. Betancourt-Roldan, Senior Resident Inspector J. Bozga, Senior Reactor Inspector J. Cassidy, Senior Health Physicist M. Garza, Emergency Preparedness Inspector T. Hartman, Senior Resident Inspector C. Hunt, Resident Inspector V. Petrella, Reactor Inspector L. Rodriguez, Reactor Inspector C. St. Peters, Reactor Engineer C. Thompson, Illinois Emergency Management Agency
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 an integrated inspection at Byron 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. A licensee-identified non-cited violation is documented in report section: 71124.03.

List of Findings and Violations

Loss of Feedwater Flow in Mode 3 due to Securing Startup Feedwater Pump on High Inboard Bearing Temperature			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Initiating Events	Green FIN 05000455/2019003-01 Open/Closed	None	71153
A self-revealed finding of very low safety significance (i.e., Green) was identified for the licensee's failure to implement an established change in work scope requirements as contained in MA-AA-716-010, Maintenance Planning, Revision 21. Specifically, plant personnel performed a startup feedwater (SUFW) pump coupling alignment using a work order that did not contain steps to perform the alignment or acceptance criteria for the alignment that was performed. This resulted in the pump being returned to service misaligned and ultimately led to a loss of feedwater in Mode 3 when the pump was secured on April 22, 2019, due to high bearing temperatures.			

Additional Tracking Items

Type	Issue Number	Title	Report Section	Status
LER	05000455/2019-001-00	LER 0500455/2019-001-00 Manual Actuation of Auxiliary Feedwater Due to High Inboard Motor Bearing Temperature on Startup Feedwater Pump	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 dispatcher, the unit remained 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 dispatcher, the unit remained 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

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

Readiness for Impending Hot Conditions - Extreme High Temperatures on July 18, 2019 to July 19, 2019

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

Unit 1 and Unit 2 Essential Service Water System (SX)
Unit 1 and Unit 2 Station Air Compressors

71111.04Q - Equipment Alignment

Partial Walkdown Sample (IP Section 03.01) (5 Samples)

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

(1) 1A Residual Heat Removal (RHR) train during planned 18 RHR outage on July 16, 2019

(2) 1B Diesel Generator (DG) during planned 1A Containment Spray (CS) pump work window on September 10, 2019
(3) 1B CS pump during 1A CS pump work window on September 11, 2019
(4) 2A SX pump with 2B SX pump out-of-service for planned maintenance on September 16, 2019
(5) 4160V and 6.9 KV switchgear walkdown during Station Auxiliary Transformer (SAT) 141 outage and yellow risk window on September 21, 2019

71111.05Q - Fire Protection

Quarterly Inspection (IP Section 03.01) (6 Samples)

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

(1) Fire Zone (FZ) 3.1-2 Auxiliary Building 414'-0" Elevation Unit 2 Cable Riser Room on July 15, 2019
(2) FZ 11.2A-1 1A RHR Room on July 15, 2019
(3) FZ 9.9-1 1B DG room on August 20, 2019
(4) FZ 5.4-1 Division 12 Miscellaneous Electrical Equipment and Battery Room on August 21, 2019
(5) FZ 5.6-2 Division 21 Miscellaneous Electrical Equipment and Battery Room on August 21, 2019
(6) FZ 3.1-2 Auxiliary Building 426'-0' Elevation Unit 2 Cable Riser Room on September 25, 2019

71111.06 - Flood Protection Measures

Inspection Activities - Internal Flooding (IP Section 02.02a.) (2 Samples)

The inspectors evaluated internal flooding mitigation protections in the:

(1) Internal Flood Review - 1A RHR pump room (Zone S2-8A) on July 16, 2019
(2) Internal Flood Review - 1A centrifugal charging pump room (Zone S3-10A) on September 25, 2019

71111.07T - Heat Sink Performance

Triennial Review (IP Section 02.02) (3 Samples)

The inspectors evaluated heat exchanger/sink performance on the following:

(1) 2A Essential Service Water (SX) Pump Lube Oil Cooler (2SX01AA), cooled by the service water system, Section 02.02.b;
(2) 1B Residual Heat Removal (RHR) Heat Exchanger (1RH02AB), cooled by a closed loop cooling water system, Section 02.02.c; and
(3) Ultimate Heat Sink, Sections 02.02.d.3 and 02.02.d.5.

71111.11Q - Licensed Operator Requalification Program and Licensed Operator Performance

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

(1) The inspectors observed and evaluated licensed operator performance in the Control Room during 1FW540 repair, inclement weather during Advanced Nuclear Disptatch (AND) ramping and U2 Component Coolers (CC) Heat Exchange (HX) work window (yellow risk) on August 22, 2019.

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

(1) The inspectors observed and evaluated Operator Requalification Training on July 16, 2019

71111.12 - Maintenance Effectiveness

Routine Maintenance Effectiveness Inspection (IP Section 02.01) (2 Samples)

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

(1) Control Room Chillers (VC-01) on July 15, 2019
(2) Auxiliary Power (AP-4) on July 15, 2019

71111.13 - Maintenance Risk Assessments and Emergent Work Control

Risk Assessment and Management Sample (IP Section 03.01) (4 Samples)

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

(1) Protected equipment walkdown during 1B RHR outage on July 16, 2019
(2) Action Request (AR) 04269818 Unexpected alarm; 2B Reactor Coolant Pump (RCP) Upper Oil Reservoir Level Low on August 16, 2019
(3) 2C Main Steam Isolation Valve (MSIC) Standby Accumulator Leak on August 12, 2019
(4) Unit 2 CC HX planned work window protected equipment walkdown on September 3, 2019

71111.15 - Operability Determinations and Functionality Assessments

Operability Determination or Functionality Assessment (IP Section 02.02) (5 Samples)

The inspectors evaluated the following operability determinations and functionality assessments:

(1) AR 04256108, Control Room Envelope (CRE) Differential Pressure (D/P) Testing Not Staggered at 18 M Interval on July 2, 2019
(2) AR 04272503 Notification of Code NonConformance for Replacement Steam Generators (SGs) on August 16, 2019

(3) AR 04272211 2B Auxiliary Feedwater (AF) Pump Outboard Seal Leak Getting Worse on August 21, 2019
(4) AR 04272125 Extent of Condition from AR 04263474 on September 12, 2019
(5) AR 04270087 2A Emergency Diesel Generator D/G Tripped During Start For Monthly Run on September 27, 2019

71111.19 - Post-Maintenance Testing

Post-Maintenance Test Sample (IP Section 03.01) (7 Samples)

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

(1) 1BOSR 5.5.8.RH.5-2A, Group A Inservice Testing (IST) Requirements for Residual Heat Removal Pump 1RH01PB, Rev. 12, following work window on July 17, 2019
(2) 2BOSR 5.5.8.RH.5-2A, Group A Inservice Testing (IST) Requirements For Residual Heat Removal Pump 2RH01PB, Rev. 12, following work window on July 23, 2019
(3) 2A Emergency Diesel Generator run following corrective maintenance on August 16, 2019
(4) 2A Safety Inspection (SI) pump PMT following a planned work window on September 5, 2019
(5) 1BOSR 5.5.8CS.5-1c, Comprehensive Inservice Testing (IST) Requirements for Containment Spray Pump 1CS01PA, Revision 8 on September 11, 2019
(6) 2BOSR 5.5.8.RH.5-1a, Group A Inservice Testing (IST) Requirements for Residual Heat Removal Pump 2RH01PA, Revision 11 on September 11, 2019
(7) PMT of the bus 212 Battery Charger following a planned work window on September 27, 2019

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

Surveillance Tests (other) (IP Section 03.01) (3 Samples)

(1) 2A Safety Injection Pump IST on July 9, 2019
(2) 2BOSR 5.2.5-1, ECCS Subsystem Automatic Valve Actuation Test, Revision 6 on July 24, 2019
(3) Solid State Protection System (SSPS) and Reactor Trip Breaker Trip Actuating Device Operational Test (TADOT) Surveillance Frequency Extension on August 21, 2019

FLEX Testing (IP Section 03.02) (1 Sample)

(1) Flex Pump Annual Flow Surveillance on July 2, 2019

71114.04 - Emergency Action Level and Emergency Plan Changes

Inspection Review (IP Section 02.01-02.03) (1 Sample)

(1) The inspectors evaluated the following submitted Emergency Action Level and Emergency Plan changes.

- Evaluation 18-45; Exelon Nuclear Standardized Radiological Emergency Plan, Revision 30; 02/14/2019

This evaluation does not constitute NRC approval.

71114.06 - Drill Evaluation

Drill/Training Evolution Observation (IP Section 03.02) (1 Sample)

The inspectors evaluated:

(1) the licensee's NRC pre-exercise drill on September 24, 2019

RADIATION SAFETY

71124.01 - Radiological Hazard Assessment and Exposure Controls

High Radiation Area and Very High Radiation Area Controls (IP Section 02.05) (1 Partial)

(1) (Partial)
The inspectors evaluated risk-significant high radiation area and very high radiation area controls.

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.

(1) The inspectors reviewed the following activities:
- B1R22 1C RCP Motor Replacement
- B2R21 Reactor Disassembly-Reassembly
- B2R21 Fuel Moves

This completes the inspection activity initiated in inspection report 2018003.

Implementation of ALARA and Radiological Work Controls (IP Section 02.03) (1 Sample)

The inspectors reviewed as low as reasonably achievable practices and radiological work controls.

(1) The inspectors reviewed the following activities:
- B1R22 1C RCP Motor Replacement
- B2R21 Reactor Disassembly-Reassembly
- B2R21 Fuel Moves

This completes the inspection activity initiated in inspection report 2018003.

71124.03 - In-Plant Airborne Radioactivity Control and Mitigation

Use of Respiratory Protection Devices (IP Section 02.02) (1 Sample)

The inspectors evaluated the licensee's use of respiratory protection devices by:

(1) Observing in-field applications; verifying the licensee validated the level of protection provided by the devices; inspecting the material condition of devices, reviewing records and certification of devices issued for use; reviewing the qualifications of workers that use the devices; and observing workers' donning, doffing and testing devices. This completes the inspection activity initiated in inspection report 2018003.

Self-Contained Breathing Apparatus for Emergency Use (IP Section 02.03) (1 Sample)

The inspectors evaluated self-contained breathing apparatus program implementation.

(1) The inspectors reviewed the following:

Status and Surveillance Records for Self-Contained Breathing Apparatus

- MSA Firehawk Rack Number 473
- MSA Firehawk Rack Number 474
- MSA Firehawk Rack Number 400

Self-Contained Breathing Apparatus Fit for On-Shift Operators

- Operations Control Room Crew Delta 09/17/2019

Self-Contained Breathing Apparatus Maintenance Check

- MSA Firehawk Rack Number 450
- MSA Firehawk Rack Number 412
- MSA Firehawk Rack Number 414

71124.04 - Occupational Dose Assessment

External Dosimetry (IP Section 02.02) (1 Sample)

(1) The inspectors evaluated the external dosimetry program implementation.

Internal Dosimetry (IP Section 02.03) (1 Sample)

The inspectors evaluated the internal dosimetry program implementation.

(1) The inspectors reviewed the following:

Whole Body Counts

- Routine Whole Body Count 01/24/2019 10:04
- Routine Whole Body Count 01/31/2019 10:35
- Possible Intake Whole Body Count 04/09/2019 12:24

In-Vitro Internal Monitoring

- None were available during this inspection.

Dose Assessments Performed Using Air Sampling and Derived Air Concentration-Hour Monitoring

- None were available during this inspection.

Special Dosimetric Situations (IP Section 02.04) (1 Sample)

The inspectors evaluated the following special dosimetric situation:

(1) The inspectors evaluated the procedures established for special dosimetric siuations. There were no records available during the inspection for:
- application of NRC-approved external dosimetry methods (i.e EDEX)
- shallow dose equivalent
- neutron dose assessments
- declared pregnant worker

71124.06 - Radioactive Gaseous and Liquid Effluent Treatment

Walk Downs and Observations (IP Section 02.01) (1 Sample)

The inspectors walked down the following gaseous and liquid radioactive effluent monitoring and filtered ventilation systems to assess the material condition and verify proper alignment according to plant design:

(1)
- Release Tanks (Liquid)
- Waste Gas Holdup System
- Ventilation Exhaust Treatment System

Calibration and Testing Program (Process & Effluent Monitors) (IP Section 02.02) (1 Sample)

The inspectors reviewed the following gaseous and liquid effluent monitor instrument calibrations and tests:

(1)
- 1RE-PR001; Containment Purge Effluent Monitor
- 1RE-PR028; Auxiliary Building Vent Effluent Monitor
- 1RE-PR030; Wide Range Auxiliary Building Vent Effluent Monitor
- 0RE-PR001; Liquid Radwaste Release Tank Release Monitor

Sampling and Analysis (IP Section 02.03) (1 Sample)

The inspectors reviewed the following:

(1) The inspectors reviewed the following radioactive effluent sampling and analysis activities:
- Waste Gas Decay Tank; July 10, 2019

The inspectors reviewed the following effluent discharges with inoperable effluent radiation monitors:
- None were available for review during this inspection.

Instrumentation and Equipment (IP Section 02.04) (1 Sample)

The inspectors reviewed the following radioactive effluent discharge system surveillance test results:

(1)
- Work Order 04735900 01; 0A Non-Accessible HEPA Filter Performance Test
- Work Order 01913060 01; 0B Non-Accessible HEPA Filter Performance Test

Dose Calculations (IP Section 02.05) (1 Sample)

The inspectors reviewed the following to asses public dose:

(1) The inspectors reviewed the following liquid and gaseous discharge permits to evaluate public dose calculations:
- Gaseous Release Permit; 2018519
- Gaseous Release Permit; 2019239
- Liquid Release Permit; 2019047

The inspectors reviewed the following annual land use census reports:
- 2018 Livestock Survey; completed on August 29, 2018
- 2018 Residential Survey; completed on August 29, 2018
- 2018 Milch Survey; completed on August 21, 2018

The inspectors also reviewed the following abnormal gaseous or liquid tank discharges:
- None were available for review during this inspection.

71124.07 - Radiological Environmental Monitoring Program

Site Inspection (IP Section 02.01) (1 Sample)

The inspectors evaluated the radiological environmental monitoring program implementation.

(1) Walkdowns, Calibrations, and Maintenance Record Review
- Environmental air sampling station location BY-01
- Environmental air sampling station location BY-06
- Environmental air sampling station location BY-21
- Environmental air sampling station location BY-22
- Environmental air sampling station location BY-24
- Environmental dosimeter location BY-210
- Environmental dosimeter location BY-301
- Environmental dosimeter location BY-06

Environmental Sample Collections and Preparation Observation
- Surface water location SW-12
- Surface water location SW-29
- Well water location WW-14
- Environmental air sampling location BY-06

Licensee Actions in Response to Missed Sample, Inoperable Sampler, Lost TLD or Anomalous Measurement

- Location BY-21; air sampler found damaged; 02/19/19
- Location BY-12; unable to obtain sediment sample; 10/31/18
- Location BY-08; replaced broken vacuum gauge; 05/01/18

Sampling Program for the Potential of Licensed Material Entering Groundwater

- U1/2 Refueling Water Storage Tanks
- Treated Runoff
- Circulating Water Blowdown System

Groundwater Protection Initiative (GPI) Implementation (IP Section 02.02) (1 Sample)

(1) The inspectors evaluated the licensee's voluntary groundwater protection initiative.

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

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

(1) Unit 1 (July 2018 - June 2019)
(2) Unit 2 (July 2018 - June 2019)

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

(1) Unit 1 (July 2018 - June 2019)
(2) Unit 2 (July 2018 - June 2019)

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

(1) Unit 1 (July 2018 - June 2019)
(2) Unit 2 (July 2018 - June 2019)

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

(1) Unit 1 (July 2018 - May 2019)
(2) Unit 2 (July 2018 - May 2019)

PR01: Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual Radiological Effluent Occurrences (RETS/ODCM) Radiological Effluent Occurrences Sample (IP Section 02.16) (1 Sample)

(1) July 2018 - June 2019

71152 - Problem Identification and Resolution

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

(1) The inspectors reviewed the licensee's corrective action program for potential adverse trends in area radiation and process radiation monitors that might be indicative of a more significant safety issue.

Annual Follow-up of Selected Issues (IP Section 02.03) (1 Partial)

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

(1) (Partial)
Missed fire watches in the lower cable spreading rooms with carbon dioxide suppression system secured (AR 04279777). At the end of the quarter, the licensee was still conducting reviews of the missed fire watches. Pending completion of this review the sample will remain open.

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

Event Report (IP Section 03.02) (1 Sample)

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

(1) LER 05000455/2019-001-00, Manual Actuation of Auxiliary Feedwater Due to High Inboard Motor Bearing Temperature on Startup Feedwater Pump (ADAMS accession: ML 19171A178). The circumstances surrounding this LER are documented in the Inspection Results Section.

INSPECTION RESULTS

Licensee-Identified Non-Cited Violation	71124.03
This violation of very low safety significance was identified by the licensee and has been entered into the licensee corrective action program and is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.	
Violation: Title 10 CFR 20.1703(c)(4)(iii) requires the licensee to implement and maintain a respiratory protection program that includes written procedures regarding the fit testing of respirators. RP-AA-444, Controlled Negative Pressure (CNP) Fit Testing, Revision 8, provides the written procedures regarding the fit testing of respirators. Step 4.3 states that a daily calibration is to be performed when the instrument is being used. Step 4.7.2.3 directs the fit test protocol to be selected for testing a fit factor of 1000. Contrary to the above, from January 1, 2017 through January 11, 2018, the licensee failed to implement its respiratory protection program procedure RP-AA-444 regarding the fit testing of respirators. Specifically, on 26 occurrences, either the fit test protocol was not selected for testing a fit factor of 1000 or the daily calibration was not performed as required by procedure steps 4.3 and 4.7.2.3.	

Significance/Severity: Green. The significance was evaluated in accordance with IMC 609 Appendix C Occupational Radiation Safety Significance Determination Process. The inspectors determined that the finding was of very low safety significance (Green) because: (1) it did not involve as-low-as-reasonably-achievable planning or work controls, (2) there was no overexposure, (3) there was no substantial potential for an overexposure, and (4) the ability to assess dose was not compromised.

Corrective Action References: AR 04092760

Observation: Adverse Trend in Check Source Failures in Area Radiation and Process Radiation Monitors	71152

Inspectors performed a review of plant issues, particularly those entered into the licensee's Corrective Action Program (CAP), associated with check source failures in radiation monitors at the site. The radiation monitoring system provides a means to inform personnel of liquid and airborne radiation levels in the plant. This information allows operators to make decisions concerning operation and personnel deployment during normal and accident conditions. A check source failure in a radiation monitor prevents the monitor from performing as intended until the issue is resolved. Process and effluent radiological monitoring is described in the Updated Final Safety Analysis Report (UFSAR) Section 11.5. Area radiation monitoring is described in the UFSAR Section 12.3.4. Radiation monitors are governed by various requirements in either the station's Technical Specifications or the station's Technical Requirements Manual.

During their review, inspectors noted that since November of 2018, several condition reports were generated in the licensee's CAP identifying a trend in check source failures. Specifically,

- AR 04191050, Potential Trend Identified on Check Source Failures, dated November, 2, 2018
- AR 04215048, Trend on Check Source Failures, dated January 29, 2019
- AR 04216838, Ops-Focus - Radiological Monitor Issues, dated February 3, 2019
- AR 04266021, Trend IR - Check Source Failures, dated July 22, 2019

The inspectors also noted that of the completed actions generated from the condition reports written, none have had an appreciable effect on the overall trend in check source failures. Several other actions, such as reviewing the overall radiation monitor maintenance strategy or revising preventive maintenance work orders to proactively correct one common equipment deficiency known to cause a check source failure, have repeatedly been rescheduled due to competing site priorities. These actions are not scheduled for completion until November and December of 2019, respectively. As noted in AR 04216838, in addition to an overall reduced system reliability, the check source failures would pose a challenge to operators during a loss of coolant accident outside of containment where operators use these radiation monitors to aid in determining the leak location in a timely manner.

One aspect of the problem identification and resolution inspection procedure is for the inspectors to evaluate the effectiveness of the licensee CAP in identifying, prioritizing, evaluating, and correcting problems. The licensee CAP procedure states, in part, that the purpose of the CAP is to promote continuous improvement through organizational learning and provide direction on the resolution and documentation of undesirable conditions. The licensee has repeatedly identified and documented the issue with check source failures in the CAP; however, the organization continues to be challenged with reaching a resolution.

Additionally, the extension of due dates for various actions will have resulted in no meaningful action taken to address the issue in almost a year since the original trend was identified. The absence of action gives the appearance that the issue has stalled out in the CAP, while continuing to generate additional trending condition reports, ultimately undermining the stated purpose of the program.

The licensee captured the inspector's observation in AR 04280647.

Loss of Feedwater Flow in Mode 3 due to Securing Startup Feedwater Pump on High Inboard Bearing Temperature

Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Initiating Events	Green FIN 05000455/2019003-01 Open/Closed	None	71153

A self-revealed finding of very low safety significance (i.e., Green) was identified for the licensee's failure to implement an established change in work scope requirements as contained in MA-AA-716-010, Maintenance Planning, Revision 21. Specifically, plant personnel performed a startup feedwater (SUFW) pump coupling alignment using a work order that did not contain steps to perform the alignment or acceptance criteria for the alignment that was performed. This resulted in the pump being returned to service misaligned and ultimately led to a loss of feedwater in Mode 3 when the pump was secured on April 22, 2019, due to high bearing temperatures.

Description:

On April 22, 2019, while Unit 2 was in Mode 3 and heating up to normal operating pressure and temperature following the refueling outage (B2R21), the inboard motor bearing temperature for the SUFW experienced elevated temperatures that caused operators to manually secure the pump. In addition to the SUFW pump being secured, the motor driven feedwater pump had not been filled and vented, and therefore was not available to the operators. The resulting condition led to a loss of feedwater to the steam generators. With neither the SUFW pump or the motor driven feedwater pump available, operators started the motor driven auxiliary feedwater pump per procedure to restore feedwater.

The licensee conducted a Corrective Action Program Evaluation (CAPE) and through it determined that the apparent cause of the high inboard motor bearing temperature was pump misalignment. The last performed alignment on the pump occurred in December, 2013, under work order (WO) 01304318-01. The licensee's evaluation concluded that, although the pump was aligned using WO 01304318-01, the scope of the WO did not include steps to perform a pump alignment. Additionally, acceptance criteria for the pump alignment were not included in the WO.

The inspectors reviewed MA-AA-716-010 and determined that in accordance with Attachment 1, Example of Work Package Revision Guidelines, the work order should have been revised to address the change in scope. Specifically, the procedure states, in part, that: "If the answer to any of the following is "Yes," then return work package to Maintenance Planning or planning qualified individual to process a major revision." "Step 9" of the list then states:

- "Do additions/deletions to changes affect work quality, increase work scope, affect specified tests, changes to Clearance Orders, or affect ASME Code items?"

The inspectors determined that performing a pump alignment under WO 01304318-01 resulted in an increase of work scope and, as such, the work order should have been revised prior to use to provide the applicable guidance for a proper pump alignment.

Licensee Event Report (LER) 0500455/2019-001-00 Manual Actuation of Auxiliary Feedwater Due to High Inboard Motor Bearing Temperature on Startup Feedwater Pump was submitted by the licensee for this event.

Corrective Actions: The immediate corrective active following the securing of the pump included realigning the pump. Additionally, the licensee revised the procedure for the pump to include generic criteria for acceptable coupling alignment.

Corrective Action References: AR 4242250, Manual Actuation of Auxiliary Feedwater Due to High Inboard Motor Bearing Temperature on Startup Feedwater Pump

Performance Assessment:

Performance Deficiency: The failure to execute established change in work scope requirements as prescribed by MA-AA-716-010, Maintenance Planning, was a performance deficiency. Specifically, step 9 of Attachment 1 required that in the case of an increase of work scope, the work package needed to be revised. The failure to update the work order led to a coupling alignment on the SUFW pump using a work order that did not contain steps to perform the alignment or acceptance criteria for the alignment that was performed.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Protection Against External Factors attribute of the Initiating Events cornerstone and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the misalignment in the SUFW pump led to it being secured on April 22, 2019 due to high bearing temperatures, this in conjunction with the motor driven feedwater pump not being available led to a loss of feedwater in Mode 3. Feedwater was restored upon the manual start of the motor driven auxiliary feedwater pump.

Significance: The inspectors assessed the significance of the finding using Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." The inspectors determined that the finding was of very low safety significance (i.e., Green) because the performance deficiency did not cause both a reactor trip and the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown.

Cross-Cutting Aspect: None because the performance deficiency occurred in 2013 and is therefore not reflective of current performance.

Enforcement:

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

EXIT MEETINGS AND DEBRIEFS

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

- On October 2, 2019, the inspectors presented the integrated inspection results to Mr. H. Welt, Plant Manager and other members of the licensee staff.

- On July 11, 2019, the inspectors presented the Triennial Heat Sink inspection results to Mr. M. Kanavos, Site Vice President and other members of the licensee staff.
- On July 12, 2019, the inspectors presented the Radiation Protection inspection results to Mr. M. Kanavos; Site Vice President, and other members of the licensee staff.
- On October 1, 2019, the inspectors presented the Radiation Protection Baseline Inspection inspection results to Mr. H. Welt; Plant Manager, and other members of the licensee staff.
- On October 3, 2019, the inspectors presented the Exit Meeting for EP Inspection per IP 71114, Attachment inspection results to Mr. L. Baker, EP Fleet Programs Manager and other members of the licensee staff.
- On October 24, 2019, the inspectors presented the High Radiation Area and Very High Radiation Area Controls inspection results to Mr. J. Reed, Radiation Protection Manager and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.01	Procedures	BAR 1-2-B2	Continuous Use	3
		BOP 199-XHT-1	Hot/Extreme Weather Operations	7
		BOP SX-T2	SX Tower Operation Guidelines	22
71111.04Q	Drawings	M-126	Diagram of Essential Service Water	03/23/2000
		M-126	Diagram of Essential Service Water	04/04/2000
		M-129	Diagram of Containment Spray	09/01/2000
		M-42: 1B	Diagram of Essential Service Water	01/22/1998
		M-42; 2B	Diagram of Essential Service Water	01/22/1998
		M-62	Diagram of Residual Heat Removal	12/16/1997
	Procedures	BOP AP-83	Restoring Unit 1 System AUX Transformer 142-1 or 142-2 While Unit is at Power	17
		BOP CS-M1B	Containment Spray System, Train "B", Valve Lineup	3
		BOP DG-1	Unit One/Two Diesel Generator Alignment to Standby Condition	20
		BOP DG-E1B	Diesel Generator Train "B" Electrical Lineup	3
		BOP DG-M1	Diesel Generator System Valve Lineup	23
	Work Orders	04939548	(NEIL) - LR-2SX01PB Comprehensive IST Req for SX Pump	09/16/2019
71111.05Q	Corrective Action Documents	AR 04269644	ETL Degraded on 1VD17YB	08/05/2019
	Fire Plans	Byron Pre-Fire Plan Layout #16	FZ 3.1-2, Auxiliary Building 414'-0" Elev. Unit 2 Cable Tunnel	2
		No. 47; FZ 5.4-1	Aux. Bldg. 451'-0" Elev. Division 12 Misc. Electrical Equipment and Battery Room	4
		No. 52; FZ 5.6-2	Aux. Bldg. 451'-0" Elev. Division 21 Misc. Electrical Equipment and Battery Room	3
		No. 88; FZ 9.1-1, FZ 9.4-1	Aux. Bldg, 401'-0" Elev. 8B Diesel Generator & Day Tank Room	2
		Pre-Fire Plan # 17	Auxiliary Building 426'0" Elev. Unit 2 Cable Riser Room	2
71111.06	Calculations	3C8-0787-001	Confirmation of Safe Shutdown Capability after Auxiliary Building Flooding	12/10/1997
71111.07T	Calculations	BYR03-115	Essential Service Water Pump Lube Oil Cooler Allowable	2

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			Tube Blockage	
	Corrective Action Documents	02648029	1AF01AB Failed GL 89-13 Acceptance Criteria	03/30/2016
		02730078	Revision of Work Order Needed for AF Cooler Flushing	10/19/2016
		04061768	B2R20 M3 GL89-13; 2SX01K Ceramalloy Degradation Identified	10/11/2017
		04068983	0F Essential Service Water Fan Low Oil Pressure Alarm in With Fan Running	10/31/2017
		04080244	0A Essential Service Water Makeup Pump Oil Temperature Gauge Indication Incorrect	12/02/2017
		04098363	2A Diesel Generator Upper Jacket Water Channel Heat Coating Degradation	01/29/2018
		04144355	Recurring Corrosion Build up on Battery Caps	06/05/2018
		04157786	Plants Growing in the Crossover of the Essential Service Water Basin	07/22/2018
		04166505	0E Essential Service Water Fan High Vibe Alarm in High Speed	08/23/2018
		04183642	Fuse Block Degraded (0G SX Hi-Speed Fan C/P)	10/15/2018
		04189826	0A Essential Service Water Makeup Pump Gear Oil Cooler Heat Exchanger Cover Plate Peeled Coating	10/31/2018
		04190008	01 SX M/U PP Battery Bank A has Dry Electrolyte on Vent Caps	10/31/2018
		04207219	New Replacement Battery Banks Build up on Flame Arrestors	01/01/2019
		04208553	New Replacement Battery Banks Build up on Flame Arrestors	01/07/2019
		04208555	New Replacement Battery Banks Build up on Flame Arrestors	01/07/2019
		04210369	0G Essential Service Water Tower Low Speed Fan Breaker Closed Light Socket Broken	01/12/2019
		04226521	0SX03CH 0H Essential Service Water Low Speed Fan Breaker Open Light Broke	03/05/2019
		04246027	1SX114A Stroke Issue	05/03/2019
		04253838	Revise WOS to Reflect DG JW HX West Side Chnl. Torque Values	06/03/2019

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		04255573	High Vibration Alarm on the "E" SX CLG Fan	06/09/2019
		04260770	Sight Glass Shows Oil Level High Near the Top	06/30/2019
		05622065	Nuts Vibrated Off of Bolts on Supports	02/04/2016
	Corrective Action Documents Resulting from Inspection	04262621	NRC Identified - Ultimate Heat Sink Potential Oil Leak on 0SX157B Handwheel	07/08/2019
		04263012	Need Permanent Scaffold Tag Placed for 1BA0170-SC	07/10/2019
		04263474	NRC ID - Inaccuracies in Calculation BYR03-115	07/11/2019
		04263479	Maintenance Procedure Change Needed	07/11/2019
	Drawings	CP-5000K	SXCT Replacement Fan Assembly	A
		M-42 Sheet Number 1B	Diagram of Essential Service Water	AT
		M-42 Sheet Number 2B	Diagram of Essential Service Water	BE
		M-42 Sheet Number 6	Diagram of Essential Service Water	BF
		RH-5	Large Bore Isometric Residual Heat Removal	15
		RH-6	Large Bore Isometric Residual Heat Removal	8
		RH-7	Large Bore Isometric Residual Heat Removal System	12
		SI-14	Safety Injection Large Bore Isometric	19
	Engineering Changes	350057	Addition of High Point Vent in "A" Train SX Supply to Facilitate Draining/Filling Activities During 1/2SX001A Replacement	1
		356417	Model APT-30K-11 SXCT Fan Blade Pitch Setting	3
		617320	Reportability Evaluation for 2A Essential Service Water Pump Oil Cooler Silting	0
	Miscellaneous		Byron Generating Station Hydrographic and Sidescan Survey	07/10/2018
		02-14-233.305	Screen House 0A Bay Inspection Report	03/10/2018
		02-14-233.322	0B Intake Bay, South Side of River Screen House Inspection	06/27/2018
		02-14-233.325	SXCT 0B South Cooling Tower Basin Inspection	11/18/2018
		02-14-233.349	SXCT 0A North Cooling Tower Basin Inspection Report	12/10/2018
		02-14-233.398	River Buoy Placement and River Screen House "A" and "B" Bar Rack Inspection Report	05/26/2019

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		02-14-233.403	Screen House 0A / North Bay Inspection Report	06/06/2019
	Operability Evaluations	02707553	SXCT Fill Degradation - Cell G	08/23/2016
	Procedures	0BMSR z.7.a.5	Essential Service Water Cooling Tower (SXCT) Inspection	5
		0BOSR 5.5.8.SX.5-2c	Unit Zero Comprehensive Inservice Testing Requirements for Essential Service Water Makeup Pump 0B	14
		0BOSR 7.9.4-1	Essential Service Water Cooling Tower Fan Quarterly Surveillance	8
		0BOSR Z.7.a.2-1	Unit Common Deepwell Pump Operability Monthly Surveillance	13
		1BOA PRI-7	Essential Service Water Malfunction - Unit 1	110
		1BOSR 6.6.2-1	Unit One Reactor Containment Fan Cooler Surveillance	33
		2BOSR 5.5.8.SX.5-2c	Unit Two Comprehensive Inservice Testing Requirements for the Essential Service Water Pump 2SX01PB and Unit 2 Essential Service Water Pumps Discharge Check Valves	11
		BOP RH-5	Residual Heat Removal System Startup for Recirculation	24
		BOP RH-6	Operation of the Residual Heat Removal System in Shutdown Cooling	50
		ER-AA-340-1001	Generic Letter 89-13 Program Implementation Instructional Guide	11
		ER-AA-340-1002	Service Water Heat Exchanger Inspection Guide	8
		ER-AA-340-2001	Cooling Tower Performance Monitoring Program	2
	Self-Assessments	4136180	Generic Letter 89-13 Triennial Ultimate Heat Sink Inspection	02/07/2019
	Work Orders	00920795	SXCT Fan Assembly Replacement Engineering Change 356417 T40-010	05/23/2007
		00921203	SXCT Fan Assembly Replacement Engineering Change 356417 T40-010	10/17/2012
		01032901	Essential Service Water Cooling Tower Fan Stacks - Minor Concrete Repairs	06/18/2012
		01375272	SXCT E Cell Inspection per TRM	09/01/2011
		01674690	Preventive Maintenance - Motor Operated Valve Actuator Inspection, Diagnostic Testing - 1SX005	07/28/2015
		01719836	1RH01PB Comprehensive In-service Testing Required for Residual Heat Removal Pump	09/18/2015

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		01831740	2SX01AA - Heat Exchanger Inspection per Generic Letter 89-13	12/06/2016
		01851471	LR SXCT A Cell Fill Support Beams & Air-Inlet Framing Inspection	06/20/2016
		01852479	Deep Well Pumps Operability (Performed Between 5/31 - 9/1)	07/08/2016
		01860682	Motor Operated Valve Preventive Maintenance, Actuator Inspection, Diagnostic Testing	03/16/2017
		01863200	1RH01PB Comprehensive In-Service Testing for Residual Heat Removal Pump	03/03/2017
		01896171	LR SXCT A Cell Inspection	04/10/2018
		01896176	LR SXCT E Cell Inspection	11/31/2017
		01898109	U2 (SX-3-12) VT XI	09/15/2016
		01938288	Deep Well Pumps Operability (Performed Between 5/31 - 9/1)	06/09/2017
		01947974	U1 (CC-3-2) VT XI (1B CC Pump in Service	03/08/2018
		01965169	LR SXCT E Cell Fill Support Beams & Air-Inlet Framing Inspection	11/01/2017
		01966402	U1 (RH-2-2) VT XI (1B RH Pump ASME)	02/26/2018
		04606350	SXCT Fan Surveillance	04/06/2017
		04606765	LR-2SX01AA - Heat Exchanger Inspection per Generic Letter 89-13	12/12/2017
		04614320	1RH01PB Comprehensive In-service Testing Required for Residual Heat Removal Pump	09/13/2018
		04670321	SXCT Fan Surveillance	09/06/2017
		04676483	PIT for 1SX016A, 027A, 112A, 114A, 147A, 169A, 005	04/05/2019
		04693663	SXCT Fan Surveillance	11/02/2017
		04706865	EXTST for 1SX005 (WK J)	02/08/2018
		04707846	LR SXCT E Cell Fill Support Beams & Air-Inlet Framing Inspection	09/06/2018
		04726556	LR-Support Diver Insp/Cleaning SXCT North 01 Basin	12/05/2018
		04730613	2SX01AA Heat Exchanger Failed Generic Letter 89-13 Inspection	05/01/2018
		04738638	U1 Train A AF Valves Indication Test	04/11/2018

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		04753215	LR-Essential Service Water - Fire Protection Systems Semi	03/24/2019
		04772483	LR-SXCT A Cell Inspection per Technical Requirements Manual	06/05/2019
		04778799	STT for 1AF017A and 1AF006A (Week B)	10/08/2018
		04784488	LR-2SX01AA - Heat Exchanger Inspection per Generic Letter 89-13	05/06/2019
		04785812	LR SXCT A Cell Fill Support Beams & Air-Inlet Framing Inspection	06/11/2019
		04839311	(NEIL) - LR-2SX01PB Comprehensive In-serivce Testing Required for Essential Service Water Pump	12/18/2018
		04889682	0SX02PA Comprehensive In-service Testing Required for Essential Service Water Makeup Pump	05/30/2019
		04895111	STT 1SX112A, 114A, 147A, 169A (WK J)	05/30/2019
71111.11Q	Drawings	M-152	Manufacturers Supplemental Diagram of Feedwater Regulating Valve Digital Positioner Cabinet	12/21/2004
	Procedures	OP-AA-107-F-01	Risk Screening/Mitigation Plan	0
71111.12	Corrective Action Documents	AR 04242013	2D MSIV Fan Will Not Start	04/22/2019
		CR-04242013	2D MSIV Fan Will Not Start; CAP102 Report	04/22/2019
	Miscellaneous	Maintenance Rule System Basis Document	Unit 2, Auxiliary Power	07/15/2019
		MR Function Evaluation - AP-04	Unit 1, AP4, "480VAC Non-ESF Substation Loads"	06/28/2019
		MR Function Evaluation - AP-04	Unit 2, AP4, "480VAC Non-ESF Substation Loads"	06/28/2019
71111.13	Corrective Action Documents	AR 04268354	Blown Fuse on U-2 Mids Panel	07/31/2019
		AR 04269818	Unexpected Alarm: 2B RCP Upper Oil Reservoir Level low	08/06/2019
		AR 04270956	2MS001C EH Leak	08/10/2019
		AR 04270956	2MS001C EH Leak	08/10/2019
	Drawings	M-152	Manufacturer's Schematic Diagram for A/DV Self Contained Hydraulic Actuator	08/25/2005
	Engineering	629023	2MS001C Post Maintenance Test Waiver	0

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Changes			
	Miscellaneous	MSIVs 3.7.2	Main Steam Isolation Valves (MSIVs)	187
		MSIVs 3.7.2	Surveillance Requirements	197
	Procedures	OP-AA-101-113-1004	Attachment 2; Event/Issues Report Format, 2C MSIV Standby Actuation Train EH Fluid Leak	45
		OP-AA-108-111	Adverse Condition Monitoring and Contingency Plan	08/06/2019
		OP-BY-108-117-1000	Byron Protected Equipment Program	11
		OP-BY-108-117-1000	Attachment 2: Protected Equipment Worksheet	11
71111.15	Corrective Action Documents	AR 04017956	Small Leak From 2B AF PP Outboard Pump Seal	06/02/2017
		AR 04231706	2B AF Pump Outboard Seal is Leaking Water	03/21/2019
		AR 04256108	CRE D/P Testing Not Staggered at 18M Interval	06/11/2019
		AR 04263474	NRC ID - Inaccuracies in Calculation BYR03-115	07/11/2019
		AR 04270087	2A Emergency D/G Tripped During Start for Monthly Run	08/07/2019
		AR 04272125	Extent of Condition from IR 04263474	08/15/2019
		AR 04272211	2B AF Pump Outboard Seal Leak Getting Worse	08/15/2019
		AR 04272503	Notification of Code Nonconformance For Replacement SGS	08/16/2019
	Miscellaneous		BWXT letter; Rev. 1 re Document Non-Conformance Related to ASME Code Exam of Weld Buildup Nozzles	08/16/2019
			NRC letter re Amendments re Incorporation of TSTF-448, "Control Room Habitability	10/31/2007
			TRM - Control Room Envelope Habitability Program - 1.5 Program Implementation	58
			VC Filtration System - Bases/Surveillance Requirements SR 3.7.10.4	83
			Exelon/AmerGen letter to NRC re Application to Revise Technical Specs Regarding Control Room Envelope Habitability	02/12/2007
			SOC Daily MRC Report - AR 04256211 - Low Pressure Differential During CRE Surveillance	04/24/2019
			NRC Regulatory Guide 1.197 - Demonstrating Control Room Envelope Integrity at Nuclear Power Reactors	05/2003
		WO 01958961-01	Task Completion Processing - See Perform Obvsr 3.7.10.4-1	05/31/2019

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			(A-Train Tracer Gas Test	
		WO 01958961-02	Task Completion Processing - See Perform Obvsr 3.7.10.4-2 (B-Train Tracer Gas Test)	05/31/2019
	Procedures	MA-AA-716-010-1104	Mechanical Seal Leakage Evaluation and Reporting	0
	Work Orders	AR 04256211	Low Pressure Differential During CRE Surveillance	06/12/2019
71111.19	Corrective Action Documents	AR 04266454	2B RH ASME Surveillance Issues	07/23/2019
		AR 04270087	2A Emergency D/G Tripped during Start for Monthly Run	08/07/2019
		AR 04277240	2SI8923A Failed Its Stroke Time Test	09/06/2019
	Drawings	6E-2-4030DG34	Schematic Diagram-Diesel Generator 2A Starting Sequence Control (Description of Operation) 2DG01KA Part-4	01/31/2001
		M-152	Mfr's. Supplement Diagram of Diesel Generator Control Diagram Shutdown System	02/05/1998
	Procedures	2BOL 5.2	LCOAR ECCS Operating Tech Spec LCO #3.5.2	11
		2BOSR 8.6.1-2	125V DC ESF Battery Bank & Charger 212 Operability Monthly Surveillance	23
	Work Orders	04751093 03	PM Inspection, In-Service Diag Test, PIT	09/01/2019
		04760896 03	LR-2SI01SA - HX Inspection per Generic Letter 89-13	09/01/2019
		04761545 04	4KV Breaker Swap (Bus 241 Cub 20) - 2AP05E-V	09/01/2019
		04788626 03	MOV PM, Actuator Inspection, Diagnostic Testing	09/01/2019
		04856115 03	4KV SWGR Cubicle Inspection (Bus 241 Cub 20)	09/01/2019
		04927494-01	(NEIL) 2RH01PB Group A 1st Requirements for RH Pump	07/22/2019
		04927495-01	(NEIL) - 1RH01PB Group A IST Requirements for RH Pump	07/15/2019
		04935859 01	(NEIL) - 1CS01PA Comprehensive IST Rqmts for Containment Spray	09/10/2019
		04937706 01	(NEIL) - 2RH01PA Group A IST Requirements for RH Pump	09/10/2019
		WO 04669837-03	Replace Sensing/Current Limits, Amplifier & Firing	09/26/2019
		WO 04716347-04	480V Breaker Swap (Bus 232X Cub 4B) - 2AP12E-L	09/26/2019
71111.22	Corrective Action Documents	AR 04266304	Paragon Model Improvements	07/23/2019
	Procedures	0BOSR FX-A1	Flex Pump Annual Flow Surveillance	8
		2BOSR 5.2.5-1	ECCS Subsystem Automatic Valve Actuation Test	6
		ER-AA-425-1001	SSPS and Reactor Trip Breaker TADOT Surveillance Test	1

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			Frequency	
	Work Orders	WO 04919898-01	(NEIL) -2SI01PA Group A IST Requirements for Safety Injection	07/02/2019
71114.04	Miscellaneous	Evaluation 18-45	Exelon Nuclear Standardized Radiological Emergency Plan, Revision 30	02/14/2019
71114.06	Corrective Action Documents	AR 04282723	Byron 2019 Pre-Exercise - NRC Observations	09/27/2019
	Drawings	A-703	Plumbing Auxiliary Building Flow Diagram	01/27/1999
	Miscellaneous	Byron Pre-Exercise	Byron Station 2019 Pre-Exercise Drill Manual	09/24/2019
		Byron Pre-Exercise	Byron Pre-Exercise Evaluation Report	09/26/2019
71124.02	ALARA Plans	BY-1-18-00646	B1R22 1RCP Motor Replacement ALARA Post Job Review	09/22/2018
		BY-2-19-00613	B2R21 Rx Disassembly/Reassembly Post Job Review	05/10/2019
		BY-2-19-00801	B2R21 Fuel Moves ALARA Post Job Review	05/10/2019
		RP-AA-401	Operational ALARA Planning and Controls	26
	Miscellaneous		B2R21 Radiation Protection Refueling Outage Report	
			B1R22 Radiation Protection Refueling Outage Report	
	Procedures	RP-AA-400	ALARA Program	17
71124.03	Calibration Records		MSA Firehawk Complete SCBA Tests	07/18/2019
	Corrective Action Documents	AR04092760	Respirator Fit Test Performance Gap Observed	01/11/2018
	Corrective Action Documents Resulting from Inspection	AR 04280578	NRC Audit Identified Issue with SCBA Compressor	09/19/2019
	Miscellaneous		Service Air and Self Containing Breathing Apparatus Air Quality Test	08/26/2019
			MSA Firehawk Air Mask Inspections	09/10/2019
			MSA Firehawk Air Mask Inspections	08/02/2019
			Service Air and Self Contained Breathing Apparatus Air Quality Tests	05/28/2019
			Service Air and Self Contained Breathing Apparatus Air	02/26/2019

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			Quality Tests	
	Procedures	RP-AA-444	Controlled Negative Pressure (CNP) Fit Testing	8
		RP-AA-444	Controlled Negative Pressure (CNP) Fit Testing	9
	Self-Assessments	AR03958839	Self-Assessment of Respiratory Protection	01/11/2018
71124.04	Corrective Action Documents	AR 04093178	No Neutron Digital Dosimetry Available Containment Entry	01/12/2018
		AR 04186428	RP Notified of Issue with Electronic Dosimeters	10/22/2018
		AR 04248829	Dosimetry Program Requirement Went Past Due	05/14/2019
	Miscellaneous		Personnel Exposure Investigation - DLR/SRD Discrepancy	05/21/2019
			Personnel Exposure Investigation - DLR/SRD Discrepancy	10/23/2018
			Removing SRD/DLR Bias Evaluation	07/15/2019
			NVLAP Certificate of Accreditation for Landauer Inc.	01/01/2019
	Procedures	RP-AA-203-1001	Personnel Exposure Investigations	10
		RP-AA-203-1003	Personnel Exposure Investigations	10
		RP-AA-210	Dosimetry Issue, Usage and Control	29
		RP-AA-222	Methods for Estimating Internal Exposure from In Vivo and in Vitro Bioassay Data	6
		RP-AA-270	Prenatal Radiation Exposure	8
71124.06	Corrective Action Documents	04262524	OPR041J Rad Monitor Exceeded LCO Time	07/05/2019
	Corrective Action Documents Resulting from Inspection	04263151	Walkdown of Rad Effluents	07/10/2019
		04263384	Xe-133 Missing from 3rd Quarter 2017 Interlabs	07/11/2019
		04263417	Enhancement to Waste Gas Sampling Procedure	07/11/2019
	Miscellaneous		Radioiodine Test Results; - 0A Non-Accessible Plenum 0VA5FA	05/18/2018
			Radioiodine Test Results; - 0A Non-Accessible Plenum 0VA5FB	05/04/2018
			Results of Radiochemistry Cross Check Program; 1st Quarter 2018	04/05/2018
			Results of Radiochemistry Cross Check Program; 2nd Quarter 2018	6/29/2018
			Results of Radiochemistry Cross Check Program; 3rd Quarter 2018	09/10/2018

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			Results of Radiochemistry Cross Check Program; 4th Quarter 2018	12/12/2018
			Results of Radiochemistry Cross Check Program; 1st Quarter 2019	03/29/2019
			Results of Radiochemistry Cross Check Program; 2nd Quarter 2019	06/03/2019
			2017 Annual Radioactive Effluent Release Report	04/20/2018
			2018 Annual Radioactive Effluent Release Report	04/18/2019
			Results of Radiochemistry Cross Check Program; 3rd Quarter 2017	10/25/2017
			Results of Radiochemistry Cross Check Program; 4th Quarter 2017	12/22/2017
		Gaseous Release Permit - 2018519	Unit 2 Stack	12/04/2018
		Gaseous Release Permit - 2019239	Unit 1 Stack	06/03/2019
		Liquid Release Permit - 2019047	Liquid Release Tank	07/15/2019
	Procedures	CY-AA-170-1100	Quality Assurance for Radiological Monitoring Programs	4
		CY-AA-170-200	Radioactive Effluent Controls Program	2
		CY-AA-170-210	Potentially Contaminated System Controls Program	1
		CY-AA-170-2300	Determination of Carbon-14 in Gaseous Effluents	0
		CY-AA-170-301	Offsite Dose Calculation Manual for Byron Units 1 & 2	15
	Self-Assessments	04140820	2019 RETS/REMP 71124.06 & 71124.07	05/02/2019
	Work Orders	01842953 01	Perform Calibration of 1RE-PR030 - Wide Range Auxiliary Building Vent Effluent Monitor	03/07/2017
		01891341 01	Perform Calibration of 1RE-PR001 - Containment Purge Effluent Monitor	10/27/2017
		01913060 01	0B Non-Accessible HEPA Filter Performance Test	01/18/2018
		04687959 01	Perform Calibration of 0RE-PR001 - Liquid Radwaste Release Tank Release Monitor	05/06/2019
		04726551 01	Perform Calibration of 1RE-PR028 - Auxiliary Building Vent Effluent Monitor	06/11/2019
		04735900 01	0A Non-Accessible HEPA Filter Performance Test	06/04/2019

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71124.07	Calibration Records		Meteorological Tower Calibration	01/17/2019
			Meteorological Tower Calibration	05/07/2019
	Corrective Action Documents	04022654	REMP BY-12 1st Quarter 2017 2017 Composite Tritium Result	06/16/2017
		04211815	MET Tower 30' WD and Y4000 Failed System Response Checks	01/17/2019
	Corrective Action Documents Resulting from Inspection	04263655	NRC REMP/RETS Inspection Open Item	07/11/2019
	Miscellaneous	SR-2019-14	Exelon Audit Report of Teledyne Brown	05/09/2019
	Procedures	EN-BY-408-4160	Radiological Groundwater Protection Program Scheduling and Notification	14
	Self-Assessments	04127301	RGPP Five Year Internal Assessment	12/14/2018
71151	Calculations		Reactor Coolant System Dose Equivalent Iodine Determinations - Third Quarter 2018 through Second Quarter 2019	
	Miscellaneous	LS-AA-20150 Attachment 1	Monthly Data Elements for NRC RETS/ODCM Radiological Effluent Occurrences and Supporting Documentation	July 2018 through June 2019
	Procedures	CY-AA-120-3010	Dose Equivalent Iodine Determination	6
	Radiation Surveys		U2 Reactor Coolant Loop Gamma Spectroscopy Analysis	07/09/2019
71152	Corrective Action Documents	04266021	Trend IR - Check Source Failures	07/22/2019
		AR 04191050	Potential Trend Identified on Check Source Failures	11/02/2018
		AR 04215048	Trend on Check Source Failures	01/29/2019
		AR 04216838	OPS Focus - Radiological Monitor Issues	02/03/2019
		AR 04280647	Aggregate Review of Rad Monitor Failures	09/19/2019
	Work Orders	04945824 01	(NEIL) LR-2B Diesel Generator Operability Surveillance	08/16/2019
71153	Corrective Action Documents	4242250	Manual Actuation of Auxiliary Feedwater Due to High Inboard Motor bearing Temperature on Startup Feedwater Pump	04/22/2019
	Procedures	BMP 3229-1	Preventive Maintenance of Miscellaneous Pump Couplings	28
		BMP 3300-15	Equipment Alignment Documentation	8

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		MA-AA-716-010	Maintenance Planning	28
		MA-AA-716-010	Maintenance Planning - Information Use Procedure	21
		MA-AA-716-011	Work Execution & Close Out	24
	Work Orders	WO 01304318-01	Change Grease in Coupling per BMP 3229-1 Section 5.2	09/28/2013
		WO 01638867-01	U2 Start-up FW Pump Outboard Seal Leak	05/03/2013