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

August 8, 2022

Mr. David Rhoades
Senior Vice President
Constellation Energy Generation, LLC
Constellation Nuclear
4300 Winfield Road
Warrenville, IL 60555

SUBJECT: BYRON STATION – INTEGRATED INSPECTION REPORT 05000454/2022002 AND 05000455/2022002

Dear Mr. Rhoades:

On June 30, 2022, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Byron Station. On July 14, 2022, the NRC inspectors discussed the results of this inspection with Mr. H. Welt, Site Vice President, 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 involved a violation of NRC requirements. We are treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2 of the Enforcement Policy.

If you contest the violation or the significance or severity of the violation documented in this inspection report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region III; the Director, Office of Enforcement; and the NRC Resident Inspector at Byron Station.

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

Sincerely,

Signed by Peterson, Hironori
on 08/08/22

Hironori Peterson, Chief
Branch 3
Division of Reactor Projects

Docket Nos. 05000454 and 05000455
License Nos. NPF–37 and NPF–66

Enclosure:
As stated

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Letter to David Rhoades from Hironori Peterson dated August 8, 2022.

SUBJECT: BYRON STATION – INTEGRATED INSPECTION REPORT 05000454/2022002 AND 05000455/2022002

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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:	05000454/2022002 and 05000455/2022002
Enterprise Identifier:	I-2022-002-0045
Licensee:	Constellation Energy Generation, LLC
Facility:	Byron Station
Location:	Byron, IL
Inspection Dates:	April 1, 2022 to June 30, 2022
Inspectors:	D. Betancourt-Roldan, Senior Resident Inspector J. Bozga, Senior Reactor Inspector J. Cassidy, Senior Health Physicist M. Gangewere, Reactor Inspector D. Kimble, Senior Resident Inspector, Braidwood Station E. Sanchez Santiago, Project Engineer A. Shaikh, Senior Reactor Inspector M. Siddiqui, Reactor Inspector P. Smagacz, Resident Inspector, Braidwood Station C. Thompson, Illinois Emergency Management Agency J. Weigandt, Acting Senior Resident Inspector
Approved By:	Hironori Peterson, Chief Branch 3 Division of Reactor Projects

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting 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.

List of Findings and Violations

Failure to Have Appropriate Work Instructions Leads to Inoperability of the Unit 1 Diesel Driven Auxiliary Feedwater Pump			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000454/2022002-01 Open/Closed	None (NPP)	71111.15
A finding of very low safety significance (Green) and associated non-cited violation (NCV) of Title 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, Drawings," was self-revealed for the licensee's failure to have work instructions appropriate for the circumstances when replacing the 1B auxiliary feedwater (AF) pump jacket water braided hoses, an activity affecting quality. Specifically, Work Order (WO) 1888896, *"Diesel Driven Auxiliary Feedwater Pump Inspection per BMP 3203-1,"* and WO 4633348. "*Replace Hoses that were not Replaced During B1R21 During B1R22,"* did not provide appropriate instructions on the number of flex hoses that needed to be fabricated and replaced. This ultimately led to a hose in the 1B AF pump not being replaced as specified in the WOs and subsequently failing due to age related degradation, which caused the 1B AF pump to be declared inoperable until the hose was replaced.			

Additional Tracking Items

None.

PLANT STATUS

Unit 1 began the inspection period operating at full power. Apart from 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 approximately 90 percent power, in coast down for the planned refueling outage. On April 18, 2022, the unit began a refueling outage. The unit went critical again on May 11, 2022, and returned to full power on May 15, 2022. The unit has remained at or near full power.

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 activities described in IMC 2515, Appendix D, "Plant Status," observed risk significant activities, and completed on-site portions of IPs. 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 03.01) (1 Sample)

(1) The inspectors evaluated summer readiness of offsite and alternate alternating current (AC) power systems on June 10, 2022.

71111.04 - Equipment Alignment

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

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

(1) 2B Residual Heat Removal (RH) Train aligned for shutdown cooling on April 22, 2022.
(2) Spent Fuel Pool cooling while the core was offloaded on April 27, 2022
(3) Component Cooling Water (CC) System following several alignment changes on June 6, 2022

Complete Walkdown Sample (IP Section 03.02) (1 Sample)

(1) The inspectors evaluated system configurations during a complete walkdown of the Unit 2 Containment Spray (CS) System on April 26, 2022.

71111.05 - Fire Protection

Fire Area Walkdown and Inspection Sample (IP Section 03.01) (6 Samples)

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

(1) Fire Zone (FZ) 12.1-0; Fuel Handling Building, 401' -0" Elevation and 426' -0" Elevation on April 27, 2022
(2) FZ 1.3-2; Unit 2 Containment 426' -0" containment upper area on April 28, 2022
(3) Inner Missile Barrier Containment on April 28, 2022
(4) Turbine Deck on May 2, 2022
(5) FZs 11/5A-1, 11.5B-1, and 11.6-1; Unit 1 Auxiliary Building on June 10, 2022
(6) Auxiliary Building 426' Elevation, Division 11 and 12 ESF Switchgear rooms on June 28, 2022

71111.07T - Heat Exchanger/Sink Performance

Heat Exchanger (Service Water Cooled) (IP Section 03.02) (2 Samples)

The inspectors evaluated heat exchanger performance on the following:

(1) Motor Driven Auxiliary Feedwater Pump Oil Cooler (2AF01AA)
(2) CC Water Heat Exchanger (1CC01A)

Ultimate Heat Sink (IP Section 03.04) (1 Sample)

The inspectors evaluated the ultimate heat sink performance on the following:

(1) The ultimate heat sink, specifically Sections 03.04.b and 03.04.d were completed.

71111.08P - Inservice Inspection Activities (PWR)

PWR Inservice Inspection Activities Sample (IP Section 03.01) (1 Sample)

(1) The inspectors reviewed the licensee degradation monitoring and repair/replacement activities of the reactor coolant system boundary, steam generator tubes, reactor vessel internals, risk significant piping system boundaries, and containment boundary. Specifically, the inspectors reviewed the following activities from April 18 to May 3, 2022:

03.01.a - Nondestructive Examination and Welding Activities.

- Remote inservice ultrasonic examination of reactor vessel nozzle to safe end, nozzle to pipe, and safe end to pipe welds
- Liquid penetrant examination of residual heat removal system component 2RH-02-AA/RHES-01 (support skirt weld)
- Ultrasonic examination (UT-1) of feedwater (FW) system, component ID 2FW03DA-16/C23, pipe-elbow weld

- Ultrasonic examination (UT-1) of FW system, component ID 2FW03DA-16/C24, elbow-pipe weld
- Ultrasonic examination (UT-1) of FW system, component ID 2FW03DA-16/C25, pipe-elbow weld
- Ultrasonic examination (UT-1) of FW system, component ID 2FW03DD-16/C17, elbow-pipe weld
- Ultrasonic examination (UT-1) of FW system, component ID 2FW03DD-16/C18, pipe-elbow weld
- AR 04376383; Rejectable NDE Indication on 2FW009C Final Plug Weld
- AR 04376507; Rejectable NDE Indication on 2FW009C FW-5
- Pressure boundary excavation and field weld (four locations) of 2VA03SA (WO 1950332)

03.01.b - Pressurized-Water Reactor Vessel Upper Head Penetration Examination Activities.

- ASME Code Case N-729 ultrasonic examination of all head penetrations including leak path assessment
- ASME Code Case N-729 bare metal visual examination of upper head surface
- Reactor vessel upper head penetration # 75 flaw acceptance and operability review
- Bare metal visual (BMV) examination of the RPV upper head penetrations

03.01.c - Pressurized-Water Reactor Boric Acid Corrosion Control Activities.

- Boric Acid Leakage Evaluation on Component ID 2CV8401B (Issue Report 4377597)
- Boric Acid Leakage Evaluation on Component ID 2FE-0136 (Issue Report 4463896)
- Boric Acid Leakage Evaluation on Component ID 2FC04F (Issue Report 4328082)
- Boric Acid Leakage Evaluation on Component ID 2FC02F (Issue Report 4391135)

03.01.d - Pressurized-Water Reactor Steam Generator Tube Examination Activities.

- Steam generators A, B, C, and D, eddy current (ET) examination

71111.11Q - Licensed Operator Requalification Program and Licensed Operator Performance

Licensed Operator Performance in the Actual Plant/Main Control Room (IP Section 03.01) (2 Samples)

(1) The inspectors observed and evaluated licensed operator performance in the Control Room during Unit 2 downpower in preparation for refueling outage on April 17, 2022, and Unit 2 reactor vessel drain down for head set and loop fill on May 3, 2022.
(2) The inspectors observed and evaluated licensed operator performance in the Control Room during Unit 2 reactor startup and power ascension on May 11, 2022.

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

(1) The inspectors observed and evaluated the performance of licensed plant operators in the simulator on June 14, 2022.

71111.12 - Maintenance Effectiveness

Maintenance Effectiveness (IP Section 03.01) (1 Sample)

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

(1) Unit 1 'A' CS system on April 8, 2022

Quality Control (IP Section 03.02) (1 Sample)

The inspectors evaluated the effectiveness of maintenance and quality control activities to ensure the following SSC remains capable of performing its intended function:

(1)
- Unit 1 'B' CS system, as documented in WOs 138757, 5110561, 5110562, and 1807588 on January 20, 2022

71111.13 - Maintenance Risk Assessments and Emergent Work Control

Risk Assessment and Management Sample (IP Section 03.01) (5 Samples)

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

(1) Technical Specification (TS) 3.0.4.b Evaluation; mode change with TS equipment out of service.
(2) Evaluation of the emergent work associated with 1CV131 Letdown Control Valve malfunction, as documented in Issue Report (IR) 4494392 on April 20, 2022.
(3) Evaluation of the risk management associated with shutdown cooling and Reactor Coolant System (RCS) drain down per 2BGP 100-6, Refueling Outage, Revision 56, on April 20, 2022.
(4) Risk management during the week of May 2, 2022.
(5) D6 Control Cabinet Power Supply trouble for 1PA34J power supply Train B failure, as documented in IR 4501672 on May 25, 2022.

71111.15 - Operability Determinations and Functionality Assessments

Operability Determination or Functionality Assessment (IP Section 03.01) (6 Samples)

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

(1) Evaluation of the operability of the 1A Emergency Diesel Generator (EDG) following identification of a low governor oil, as documented in IR 4490346 on April 5, 2022.
(2) Evaluation of the operability of the 1B AF pump following identification of a hose leak, as documented in IR 4492979 on April 14, 2022.
(3) Evaluation of the operability of the Unit 2 N-32 Source Range Nuclear Instrument, following observation of anomalous indications, as documented in IRs 4495778 and 4494520, during the week ending May 7, 2022.

(4) Evaluation of the operability of the 2B EDG following identification of degraded equipment, as documented in IRs 4500831, 4500836, and 4500843, on May 20, 2022.
(5) Foreign Material Exclusion evaluation of material lost in SG, as documented in IR 4496744.
(6) Evaluation of the operability for Penetration 75 indication, as documented in IR 4495098.

71111.18 - Plant Modifications

Temporary Modifications and/or Permanent Modifications (IP Section 03.01 and/or 03.02) (2 Samples)

The inspectors evaluated the following temporary or permanent modifications:

(1) Engineering Change (EC): 629149; 480V Substation Breaker Setting Change
(2) EC 627889: 25A-3" Pipe Replacement

71111.19 - Post-Maintenance Testing

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

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

(1) Functional and operational testing of the 2A Chemical and Volume Control pump following rotating element replacement, as documented in WO 4749380, on May 2, 2022.
(2) Functional and operational testing of the 2PS9356B following repairs, as documented in WO 5089242 on May 10, 2022.
(3) Functional and operational testing of the 2B AF pump following maintenance, as documented in multiple WOs on May 13, 2022.
(4) Functional and operational testing of the 1D Reactor Coolant Pump Seal following replacement, as documented in WO 5256214 on May 10, 2022.
(5) Functional and operational testing of post-refueling physics testing, as documented in WO 5091520 on May 16, 2022.
(6) Functional and operational testing of the Pressure Relief Tank Rupture Discs following replacement, as documented in WOs 5091495 and 5091498, on June 3, 2022.
(7) Functional and operational testing of the 2AF178 2B AF Suction Motor Operated Valve following troubleshooting and maintenance, as documented in WO 5089590 on June 3, 2022.

71111.20 - Refueling and Other Outage Activities

Refueling/Other Outage Sample (IP Section 03.01) (1 Sample)

(1) The inspectors evaluated refueling outage B2R23 activities from April 18 to May 10, 2022.

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance testing activities to verify system operability and/or functionality:

Surveillance Tests (other) (IP Section 03.01) (4 Samples)

(1) Main Steam Safety Valve Trevi-Testing, as documented in WOs 5085883, 4723440, 4724302, 4724303, 4724304, 4724305, 4724306, and 5206756 on April 12 and April 21, 2022.
(2) 2B AF testing, as documented in WO 5085881 on April 13, 2021.
(3) 1A EDG monthly testing, as documented in W 5248909 on May 6, 2022.
(4) 2BOSR 5.5.8CV6-3; Missed Surveillance and Post-Maintenance Deferral, as documented in IR 4497553 on May 5, 2022.

Inservice Testing (IP Section 03.01) (1 Sample)

(1) 2B EDG Endurance Run and Hot Restart Test, as documented in WO 4848734 on May 19, 2022.

Containment Isolation Valve Testing (IP Section 03.01) (1 Sample)

(1) 2BOSR 6.1.1-21; Leak Rate Test of 2WO006A, as documented in WO 5091371-01 on April 28, 2022.

RADIATION SAFETY

71124.01 - Radiological Hazard Assessment and Exposure Controls

Radiological Hazard Assessment (IP Section 03.01) (1 Sample)

(1) The inspectors evaluated how the licensee identifies the magnitude and extent of radiation levels and the concentrations and quantities of radioactive materials and how the licensee assesses radiological hazards.

Instructions to Workers (IP Section 03.02) (1 Sample)

(1) The inspectors evaluated how the licensee instructs workers on plant-related radiological hazards and the radiation protection requirements intended to protect workers from those hazards.

Contamination and Radioactive Material Control (IP Section 03.03) (2 Samples)

The inspectors observed/evaluated the following licensee processes for monitoring and controlling contamination and radioactive material:

(1) Licensee surveys of potentially contaminated material leaving the Radiologically Controlled Area and workers exiting the Radiologically Controlled Area at 401' Main Control Point during a refueling outage.

(2) Licensee surveys of potentially contaminated material leaving the Radiologically Controlled Area and workers exiting the Radiologically Controlled Area at Unit 2 Contractor Access Facility during a refueling outage.

Radiological Hazards Control and Work Coverage (IP Section 03.04) (4 Samples)

The inspectors evaluated the licensee's control of radiological hazards for the following radiological work:

(1) Manual Movement of Reactor Thimble from the Unit 2 Seal Table
(2) Steam Generator Eddy Current
(3) Reactor Vessel Head Penetration 75 (Preparation and Mock-up)
(4) Unit 2 Steam Generator Manway/Diaphragm Removal

High Radiation Area and Very High Radiation Area Controls (IP Section 03.05) (3 Samples)

The inspectors evaluated licensee controls of the following High Radiation Areas and Very High Radiation Areas:

(1) Unit 2 Incore Sump
(2) Unit 2 Steam Generator Manway Access
(3) Unit 2 377' Containment Inside Missile Barrier

Radiation Worker Performance and Radiation Protection Technician Proficiency (IP Section 03.06) (1 Sample)

(1) The inspectors evaluated radiation worker and radiation protection technician performance as it pertains to radiation protection requirements.

71124.03 - In-Plant Airborne Radioactivity Control and Mitigation

Temporary Ventilation Systems (IP Section 03.02) (2 Samples)

The inspectors evaluated the configuration of the following temporary ventilation systems:

(1) Temporary High Efficiency Particulate Air (HEPA) Ventilation under the Unit 2 Reactor Head
(2) Temporary High Efficiency Particulate Air (HEPA) Ventilation used for Steam Generator work

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

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

71124.07 - Radiological Environmental Monitoring Program

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

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

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

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

GPI Implementation (IP Section 03.03) (1 Sample)

(1) The inspectors evaluated the licensee's implementation of the Groundwater Protection Initiative program to identify incomplete or discontinued program elements.

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

MS05: Safety System Functional Failures (SSFFs) Sample (IP Section 02.04) (2 Samples)

(1) Unit 1 (April 1, 2021 - March 31, 2022)
(2) Unit 2 (April 1, 2021 - March 31, 2022)

MS06: Emergency AC Power Systems (IP Section 02.05) (2 Samples)

(1) Unit 1 (April 1, 2021 - March 31, 2022)
(2) Unit 2 (April 1, 2021 - March 31, 2022)

MS07: High Pressure Injection Systems (IP Section 02.06) (2 Samples)

(1) Unit 1 (April 1, 2021 - March 31, 2022)
(2) Unit 2 (April 1, 2021 - March 31, 2022)

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

(1) Unit 1 October 1, 2021 through May 31, 2022
(2) Unit 2 October 1, 2021 through May 31, 2022

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

(1) October 1, 2021 through May 31, 2022

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) October 1, 2021 through May 31, 2022

71152A - Annual Follow-up Problem Identification and Resolution

Annual Follow-up of Selected Issues (Section 03.03) (3 Samples)

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

(1) The inspectors performed a detailed review of IR 4496332; *B2R23 CRDM Thermal Sleeve Metrology Results.*
(2) The inspectors reviewed post-maintenance testing (PMT) IR 4474490, *Incomplete PMT for MCB Hand Switch Replacement*. As a result, the inspectors reviewed additional PMT work orders and IRs.
(3) Inconsistent Use of Test Instrument Selection Criteria when Testing CS Additive Tank Vacuum Relief.

71152S - Semiannual Trend Problem Identification and Resolution

Semiannual Trend Review (Section 03.02) (1 Sample)

(1) The inspectors reviewed the licensee's corrective action program for potential adverse trends fuses and fuse holders that might be indicative of a more significant safety issue.

INSPECTION RESULTS

<table>
<tr><td colspan="4">Failure to Have Appropriate Work Instructions Leads to Inoperability of the Unit 1 Diesel Driven Auxiliary Feedwater Pump</td></tr>
<tr><td>Cornerstone</td><td>Significance</td><td>Cross-Cutting Aspect</td><td>Report Section</td></tr>
<tr><td>Mitigating Systems</td><td>Green
NCV 05000454/2022002-01
Open/Closed</td><td>None (NPP)</td><td>71111.15</td></tr>
<tr><td colspan="4">A finding of very low safety significance (Green) and associated non-cited violation (NCV) of Title 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, Drawings*,"* was self-revealed for the licensee's failure to have work instructions appropriate for the circumstances when replacing the 1B auxiliary feedwater (AF) pump jacket water braided hoses, an activity affecting quality. Specifically, Work Order (WO) 1888896, *"Diesel Driven Auxiliary Feedwater Pump Inspection per BMP 3203-1,"* and WO 4633348. "*Replace Hoses that were not Replaced During B1R21 During B1R22,"* did not provide appropriate instructions on the number of flex hoses that needed to be fabricated and replaced. This ultimately led to a hose in the 1B AF pump not being replaced as specified in the WOs and subsequently failing due to age related degradation, which caused the 1B AF pump to be declared inoperable until the hose was replaced.</td></tr>
<tr><td colspan="4">Description:

On April 14, 2022, the 1B AF diesel driven pump was started to perform its scheduled monthly surveillance. Approximately 21 minutes into the run, local operators reported a jacket water leak and proceeded to secure the pump. Following evaluation of the leak by the operators and maintenance, the station determined that the leak was not able to be temporarily repaired and that it affected the operability of the pump. The licensee proceeded</td></tr>
</table>

to enter Condition A of Technical Specifications (TS) 3.7.5, "*Auxiliary Feedwater System*," which is a 72-hr action statement. The leaking hose was replaced, and the pump was returned to service after a successful post-maintenance run during night shift on April 14, 2022.

The affected hose was sent to Power Labs for failure analysis, where it was determined that the cause of the failure was age related degradation. The hose manufacturing stamp indicated it was manufactured in 2005, which meant the hose was 17 years old at the point when the failure occurred. In accordance with the station's preventive maintenance documents (PMID 103868-36 and 112168-36), the flexible hoses need to be replaced at a 12-year frequency. To meet the preventive maintenance the hoses for the 1B AF pump were scheduled to be replaced in 2017 and 2018 under WOs 1888896 and 4633348 (2018). The 2B AF pump hoses were replaced in 2018 under WO 1894388, "*Replace Flexible Hose*s." However, the WOs associated with the 1B AF pump did not provide appropriate instructions on the number of flex hoses that needed to be fabricated and replaced. This ultimately led to a hose in the 1B AF pump not being replaced, as was the purpose of the WOs, and subsequently failing due to age related degradation on April 14, 2022.

Corrective Actions: The affected jacket water braided hose was replaced and the 1B AF pump was returned to operable status on April 14, 2022. The licensee also plans to replace all flexible hoses on the 1B and 2B AF pumps as well as 0A and 0B essential service water diesel driven pumps with appropriate documentation to verify each flexible hose has been replaced with a new part.

Corrective Action References: AR 4492979

Performance Assessment:

Performance Deficiency: The inspectors determined that the licensee's failure to have work instructions appropriate for the circumstances to replace the 1B AF jacket water braided hoses, an activity affecting quality, was contrary to Title 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, Drawings," and was a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because if left uncorrected, it would have the potential to lead to a more significant safety concern. Specifically, not having appropriate work instructions led to a flexible hose not being replaced in accordance with the purpose of the WOs. That hose developed a leak due to age related degradation that affected the reliability and availability of the equipment.

Significance: The inspectors assessed the significance of the finding using IMC 0609 Appendix A, *"The Significance Determination Process (SDP) for Findings At-Power."* The inspectors screened this finding against the Mitigating Systems screening questions in Exhibit 2 and answered "NO" to all six screening questions. Therefore, the finding screened to very low safety significance (Green).

Cross-Cutting Aspect: Not Present Performance. No cross-cutting aspect was assigned to this finding because the inspectors determined the finding did not reflect present licensee performance.

Enforcement:

Violation: Title 10 CFR 50 Appendix B, Part V, "Instructions, Procedures, Drawings*,"* states, in part, that activities affecting quality shall be prescribed by documented instructions,

procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings.

Contrary to the above, on March 23, 2017, and September 25, 2018, technicians replaced flexible hoses on the 1B AF pump using WOs 1888896 and 4633348, an activity affecting quality, without appropriate work instructions for the work. Specifically, the WOs did not specify how many hoses needed to be replaced or how to install them. This ultimately led to one of the flexible hoses developing a leak due to age related degradation and affected the availability of the 1B AF pump, a safety related component.

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

Observation: Post-Maintenance Testing Inconsistencies with 1SX01PB and 2AF017B	71152A

Based on post-maintenance testing (PMT) issue report (IR) 4474490, from January 28th, 2022, inspectors reviewed PMT WOs and IRs to assess the corrective action program (CAP) performance attributes of completeness, accuracy, evaluation, and corrective actions.

On March 22nd, 2022, following a work window, PMT, and comprehensive testing of 1SX01PB, Unit 1 B Essential Service Water pump, NRC inspectors performed a PMT inspection of 1SX01PB. The inspectors identified that the pump was running with a lower-than-normal oil level. The oil sump level was at the bottom of the sight glass. Inspectors reviewed the associated WOs and noted that the associated PMT checks of oil level were already recorded as having been completed satisfactory. Operations staff was informed of the low oil condition and that the PMT oil level checks had been recorded as finished. Two gallons of oil were subsequently added to the running pump, and the issue was documented in the CAP as IR 4486869, *NRC ID: 1B SX Pp oil low in sight glass after work window*.

During another PMT review, inspectors noted inconsistencies with WO 5089590 2AF017B, Unit 2 B Auxiliary Feed Essential Service Water isolation motor operated valve. Inspectors found that task 4 (sway strut support removal and reinstallation) was completed, but its required engineering PMT, task 17, had not been completed. Inspectors also found that task 15, operations PMT, was closed to WO 04974921-01, which was completed in the previous year, May 11, 2021. Task 15 was the required PMT for completed work tasks 14, 19, and 20 (diagnostic testing, contactor replacement, and control relay and breaker handle replacement). The inspectors brought their concern to operations and maintenance management. The site documented the inspectors' concerns in the CAP as IR 4501960, *NRC Identified- Incorrect 2AF017B PMT closure* and 4508013, *NRC ID – PMT process not followed.* Following discussions with different levels of management at the site, the inspectors were provided information that demonstrated that although a formal PMT was not performed, different tasks in the WO included portions that met the intent of the PMT.

Breakdowns in following PMT process procedures can result in incomplete or inaccurate PMT. Without proper PMT, a latent problem could prevent systems, structures, or components from operating as expected when needed to perform their safety function. Consequently, PMT is especially important for the Auxiliary Feedwater system, which is not normally operated outside of testing. Inspectors reviewed the licensee's procedure

MA-AA-716-012, Post-Maintenance Testing (Rev. 27), in part, and saw the following steps:

- 4.2.4. stated, in part “Post-Maintenance Testing shall be performed following any corrective and some preventive maintenance activities on plant equipment that may have impacted the equipment’s ability to perform its intended function. These activities may include:
  - 1. Maintenance that affects the integrity or operation of a fluid or gas system or components within those systems...
  - 3. Maintenance that affects / disturbs electrical connections, control circuitry or electronic components."
- 4.2.7. stated “If it becomes necessary to deliberately deviate from established PMT, then the group responsible for performing the PMT shall OBTAIN and DOCUMENT justification for the deviation.”, and
- 4.3.3. stated “If the scope of the work expands beyond the original maintenance task, then that task / Work Package shall be revised and reviewed for possible changes to Post-Maintenance Testing.”

The inspector considered that the failure to follow MA-AA-716-012 was a performance deficiency and violation of *10 CFR 50, Appendix B, Criterion V, “Instructions, Procedures, Drawings”*. The performance deficiency was determined to be of minor significance. Although a formal PMT was not performed, other actions in the same work order accomplished the intent of the PMT prior to returning the equipment to service.

The review of the January PMT-related IR and subsequent related issues suggest there are opportunities to better use the CAP for evaluation of IRs and for more timely corrective actions to optimize development, execution, and oversight of subsequent PMT. There were no findings as a result of this review, and the observation was shared with the site, who is addressing this item as part of their planned corrective actions.

No findings or violations of NRC requirements of more than minor safety significance were identified in the course of this review.

Observation: Test Instrument Selection Criteria Not Being Used for Testing Containment Spray Additive Tank Vacuum Relief Valves	71152A

Inspectors evaluated the CAP to assess completeness, timeliness, and evaluation of an identified problem.

Based on some past challenges related to measurement and test equipment (M&TE), a maintenance effectiveness inspection was performed for Unit 1 Containment Spray (CS) vacuum breaker relief valve tests (WO 5110561 & 5110562). The testing is required by ASME OM code. In the event of a CS actuation, the safety related vacuum breaker relief valves open as vents for the spray additive tank to allow sodium hydroxide (NaOH) to be adducted from the tank into the discharge of the CS pumps. The safety function provides for a design flow of 55 gallons per minute of NaOH into containment to obtain pH = 7 in the containment sump. Accordingly, if the vacuum breaker relief valves don’t properly open, design flow may not be obtained.

In April, inspectors noted issues of concern related to the documentation of the test instrument used, force gauge serial no. 2906994. The work orders were performed in 2022, but the recorded calibration due date was February 22, 2021. Additionally, the force gauge that was used to check ounces of force to move the valve stem open was calibrated for a range above the test setpoint. Specifically, the recorded setpoints measured were between 1.32 oz to 3.32 oz (.0825 lbf to .277 lbf), while the calibrations recorded test range of 16 oz to 144 oz (1 lbf to 9 lbf). According to the work package instructions, Engineering Change Request (ECR) 163345, and ECR 167093, the acceptance criteria for unseating force is less than or equal to 7 oz (.4375 lbf).

On April 11th, 2022, inspectors discussed their concerns with Byron staff and questioned whether the calibration due date and instrument used were correct. The concern would be that an out of calibration instrument or incorrect instrument may provide invalid test results. Staff clarified that the listed calibration due date was mistakenly entered as the calibration date and noted that calibration was not overdue. To address the concern of the test force setpoint being below the calibration range, the licensee entered the condition into the CAP as IR 4500840, *NRC identified issue with vacuum breaker testing,* on May 19th, 2022, and conducted a post-test calibration check of the force gauge at 7 oz. The satisfactory post-test calibration check, certification no. 11394822, was provided to the NRC and demonstrated that test acceptance criteria was met.

Inspectors further checked if the work package included adequate instruction for proper test equipment selection. The instructions used by technicians appeared as a single step that stated, in part:

- "7.2.1. Using a calibrated force gauge, selected for oz., APPLY force linearly and directly up the stem of the valve…"

However, the work order also included BMP 3100-9 IST Bench Testing Safety/Relief Valves, Rev. 23, a Reference Use procedure, which did not appear to be used. The BMP listed more specific test instrument selection instructions as follows:

- "F.2.c.3) Pressure gauges (all tests), with range appropriate to valve being tested and to type of test using following criteria:

    1. Gauge must be calibrated.
    2. Gauge must be specific to test medium.
    3. Range of gauge should be approximately two times max. test pressure, BUT NOT less than 1 1/2 times OR greater than four times test pressure.
    4. Gauge used to determine set pressure MUST have, as a minimum, tolerance of plus 1% AND minus 1% of the relief/safety valve set pressure."

Inspectors noted that evaluation of the above criteria of BMP 3100-9, provided adequate instructions for test equipment selection. A historical review indicated that the issue of concern has been recurring for both units for beyond ten years. The station appeared to be using a similar gauge during this time, so the satisfactory calibration check at 7 oz demonstrated assurance of historical operability.

The inspectors determined that the failure to assure that adequate test instrumentation was available and used to test safety related equipment was a performance deficiency and

contrary to 10 CFR 50, Appendix B, Criterion XI. Per Inspection Manual Chapter 0612, Appendix B and example 5.d in Appendix E, the team determined that this performance deficiency was minor, because the licensee was able to show reasonable assurance that acceptance criteria was met.

Corrective actions planned by the licensee include measures to obtain the correct tools for future vacuum breaker tests. Inspectors briefed management on the use of CAP for performing comprehensive and timely documentation of longstanding test deficiencies.

No findings or violations of NRC requirements of more than minor safety significance were identified in the course of this review.

Observation: Thermal Sleeves	71152A

The inspectors performed a detailed review of IR 4496332; *B2R23 CRDM Thermal Sleeve Metrology Results.*

The sample selected was associated with a 10 CFR Part 21 notification to the NRC (Westinghouse LTR-NRC-19-79, dated December 12, 2019; ADAMS Accession No. ML19346H873) and additional information on the 10 CFR Part 21 in Nuclear Safety Advisory Letter (NSAL) NSAL-20-1, *Reactor Vessel Head Control Rod Drive Mechanism Penetration Thermal Sleeve Cross-Sectional Failure*, dated February 14, 2020 (ADAMS Accession No. ML20063J583). The specific issue was associated with mechanical fatigue and fracture that leads to flange separation of thermal sleeves in the control rod drive mechanism penetration tubes which could have a safety consequence that was not previously considered. In addition, the sample was associated with NSAL-18-1, *Thermal Sleeve Flange Wear Leads to Stuck Control Rod*, July 9, 2018 (ADAMS Accession No. ML18198A275). The specific issue was associated with thermal sleeve flange wear that leads to complete flange separation of the thermal sleeves which may prevent control rod insertion. PWROG-16003-P, "Evaluation of Potential Thermal Sleeve Flange Wear," Revision 2 provides acceptance criteria for evaluation of thermal sleeve flange wear associated with NSAL 18-1.

The licensee performed an evaluation of the actual thermal sleeve wear measurements taken at thermal sleeve penetrations during the spring Unit 2 2022 outage, and the NSAL-20-1 acceptance criteria was met. In addition, the PWROG-16003-P, Revision 2 acceptance criteria was met.

No findings or violations were identified

Observation: Trend in Fuse Deficiencies	71152S

The inspectors performed a semiannual review of the licensee's CAP for adverse trends. An abnormally high number of fuse problems had been identified in the second quarter of 2022. The 18 issue reports (IRs) with month and day are as follows:

*4493936, Fuse holder broken during fuse removal, 4/18
*4493879, Fuse holder broken during fuse removal, 4/18
*4493880, Control power fuse holder broken during fuse removal, 4/18
*4494379, 2AP96E-B3 fuse holder broken, 4/20
*4494380, 2AP96E-B4 fuse holder broken, 4/20
*4494377, 2AP96E-E4 fuse holder broken, 4/20

*4494375, 2AP96E-C4 fuse block broken, 4/20
*4494336, Fuse holder broken during fuse removal, 4/20
4494301, Bus 257 AB Phase fuse open, 4/20
4494275, Fuse holder installed upside down, 4/20
*4494589, Broken fuse holder, 4/21
*4494659, MCC Fuse holder broken, 4/21
*4494993, Fuse holder detached from panel 2AP60E-F2-FU, 4/22
*4495221, Control Power Fuse Detached from panel 2AP60E-F1-FU, 4/24
4496383, 2AF017B Blown Fuse in MCC Bucket 232X3-CUB A5, 4/28
4496204, Fuses not installed and no EPN label present, 4/28
4498267, Bad fuse for 2AP60E-E3-FU (control power), 5/07
4498895, 2B FW Pump Fuse 12 N/P Blown, 5/10

*The licensee also identified a related trend, documenting 12 of the 18 deficiencies in their CAP as 4502316, Potential Trend identified in broken fuse holders, 5/27.

After reviewing the reports, the inspectors did not identify a performance deficiency. The inspectors determined the licensee appropriately followed the corrective action process and did not identify existence of a more safety significant concern.

No findings or violations of NRC requirements of more than minor safety significance were identified in the course of this review.

EXIT MEETINGS AND DEBRIEFS

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

- On July 14, 2022, the inspectors presented the integrated inspection results to Mr. H. Welt, Site Vice President, and other members of the licensee staff.
- On April 29, 2022, the inspectors presented the radiation protection inspection results to Mr. S. Leach, Radiation Protection Manager, and other members of the licensee staff.
- On May 4, 2022, the inspectors presented the inservice inspection results to Mr. J. Kowalski, Site Vice President, and other members of the licensee staff.
- On June 23, 2022, the inspectors presented the triennial heat sink inspection results to Mr. H. Welt, Site Vice President, and other members of the licensee staff.
- On June 24, 2022, the inspectors presented the radiation protection inspection results to Mr. H. Welt, Site Vice President, and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.01	Corrective Action Documents Resulting from Inspection	4504518	NRC ID: Piping Support Missing from 2A DG Fuel Supply Line	06/08/2022
		4504519	NRC ID: 231X Broken Cover Glass for Relay	06/08/2022
	Drawings	KSV-31-3	Fuel Transfer Pump	C
	Procedures	0BOSR XHT-A1	High Temperature Equipment Protection	27
		BOP 199-XHT-1	Hot/Extreme Weather Operations	7
71111.04	Corrective Action Documents Resulting from Inspection	4499160	NRC Identified: Breaker Open Light not Lit	05/11/2022
	Drawings	M-129 Sheet 1A	Diagram of Containment Spray Unit 2	AL
		M-129 Sheet 1B	Diagram of Containment Spray Unit 2	AM
		M-129 Sheet 1C	Diagram of Containment Spray Unit 2	AH
		M-136 Sheet 4	Diagram of Safety Injection Unit 2	AZ
		M-63-1A	Diagram of Fuel Pool Cooling and Clean-Up	BI
		M-63-1B	Diagram of Fuel Pool Cooling and Clean-Up	BC
		M-63-1C	Diagram of Fuel Pool Cooling and Clean-Up	AY
		M-66, Sheet 3B	Diagram of Component Cooling Critical Control Room Drawing	AP
	Miscellaneous	BOP FC-T2	Fuel Pool Cooling One Line Diagram	3
	Procedures	BOP CC-1	Component Cooling Water System Startup	12
		BOP CC-10	Alignment of the U-0 CC Pump and U-0 CC Hx to a Unit	35
		BOP CC-M2	Component Cooling System Valve Lineup	24
		BOP CS-E2	Containment Spray System Electrical Lineup (Unit 2)	3
		BOP CS-M2	Containment Spray System Valve Lineup	11
		BOP FC-E1	Fuel Pool Cooling System Electrical Lineup	2
		BOP FC-M1	Fuel Pool Cooling and Cleanup System Valve Lineup	17
		BOP RH-M2B	Train "B" Residual Heat Removal System Valve Lineup	10
71111.05	Drawings	FP-7,	Fire Barrier Location Plan Elev 426-0	F
	Fire Plans	FZ 1.3-2	Containment 426' 0" Elevation Unit 2, Containment Upper Area	3

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		FZ 12.1-0	Fuel Handling Building 426'-0" Elevation	3
		FZ 12.1-0	Fuel Handling Building 401'-0" Elevation	4
		PFP AB1 414 FZ 11.5A-1 11.5B-1	Pre-Fire Plan Auxiliary Building Unit 1 414-0 Elevation Electrical Penetration Area FZ 11.5A-1, 11.5B-1 PLAN #152	3
		PFP AB1 426-0 FZ 11.6-1	Pre-Fire Plan Auxiliary Building Unit 1 426-0 Elevation Division 12 Electrical Penetration Area FZ 11.6-1	2
		PFP AB1 426-0 FZ 5.1-1	Pre-Fire Plan Auxiliary Building Unit 1 426-0 Elevation Division 12 ESF Switchgear Room FZ 5.1-1 Plan #41	3
		PFP AB1 426-0 FZ 5.2-1	Pre-Fire Plan Auxiliary Building Unit 1 426-0 Elevation Division 11 ESF Switchgear Room FZ 5.2-1 Plan #43	4
71111.07T	Calculations	BYR97-034	Byron Essential Service Water Cooling Tower Basin Minimum Volume Versus Level and Minimum Usable Volume Calculation	0
		CC-MP-01	Verification of CC System Overpressure Protection	02/01/1988
	Corrective Action Documents	4162710	SX Piping Leaks Trend IR	01/08/2019
		4326273	1A SX Pump Oil Leak Outboard Pump	04/12/2020
		4326982	1A SX Pump Vent Valve Broken	04/15/2020
		4449689	Oil Leak on 1AF01PB Filter Housing	09/30/2021
		4505718	NRC ID: Inactive Oil Leak on 1A AF Pump	06/15/2022
	Corrective Action Documents Resulting from Inspection	4505244	NRC ID: Ops Surveillance missing "N/A" on open bullet steps.	06/13/2022
		4505468	NRC ID - Incorrect Date & Test ID on 2AF017B Report	06/14/2022
		4505468	NRC ID: Incorrect Date and Test ID on 2AF017B	06/14/2022
		4505517	NRC ID: Insulation Not Fully Secured	06/14/2022
		4505533	NRC ID: Small Pools of Oil Underneath 1AF01PB	06/14/2022
		4505717	NRC ID: Inactive Oil Leak on 2A AF Pump	06/15/2022
		4505756	NRC ID: Procedure Usage on WO 4785428 (HX Inspection Report)	06/15/2022
		4505757	NRC ID: Review 1/2BOSR 6.6.2-1 for Procedure Change	06/15/2022
		4505978	NRC ID: Gaps in Work Package Documentation	06/16/2022
		4506114	NRC ID: Gaps in Inspection Form Documentation	06/17/2022
		4506137	A Potential Trend in WO and Surveillance Paperwork Closeouts	06/17/2022
		4506178	NRC ID: Incorrect Data on WO 4785428 (HX Inspection	06/17/2022

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			Report)	
	Drawings	M-126	Diagram of Essential Service Water Sections D-F 6-8	04/04/2000
	Engineering Changes	339308	Acceptance Criteria for As-found Heat Exchanger Tube Blockage	0
		401538	Anode Removal of Stainless-Steel Coolers	09/02/2015
		634142	Through Wall Leak on Line 1SX68AB-1 1/2"	0
	Miscellaneous	02-14-233.410	0B Intake Bay - South Side of RSH River Screen House Inspection	08/20/2019
		AH-CC-654	Exchanger Specification Sheet Component Cooling HX	12/19/1974
		N-1661	Heat Transfer Division American-Standard Power & Controls Group: Heat Exchanger Specification Sheet	09/08/1977
		Sargent & Lundy Heat Exchanger Data Sheets, attached to 1/17/90 S&L letter S.C. Mehta to F. Lentine	1/2AF01AA Heat Exchanger Data Sheet	01/17/1990
	NDE Reports	2020-064	Ultrasonic Thickness Calibration Sheet	06/01/2020
	Operability Evaluations	1BOA PRI-7	Essential Service Water Malfunction Unit 1	110
	Procedures	0BOSR 5.5.8SX.5-1c	Unit Zero Comprehensive Inservice Testing (IST) Requirements for Essential Service Water Makeup Pump 0A	16
		1BOSR 5.5.8.SX.5-1c	Unit One Comprehensive Inservice Testing (OST) Requirements for the Essential Service Water (SX) Pump 1SX01PA and Unit 1 SX Pumps Discharge Check Valves	12
		2BOA PRI-7	Essential Service Water Malfunction Unit 2	111
		2BOSR 5.5.8.SX.5-1c	Unit Two Comprehensive Inservice Testing (IST) Requirements for the Essential Service Water (SX) Pump 2SX01PA and Unit 2 SX Pumps Discharge Check Valves	11
		BVP 800-30	Essential Service Water Fouling Monitoring Program (GL 89-13 Program Basis Document)	18
		CC-AA-404	Maintenance Specification: Application Selection, Evaluation and Control of Temporary Leak Repairs	10

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		CY-AA-120-400	Closed Cooling Water Chemistry	21
		CY-AA-120-4110-F-02	Byron Raw Water Treatment and Control	9
		CY-AP-120-1000-F-02	Byron Primary Strategic Water Chemistry Plan	2
		CY-AP-2000-F-02	Byron Secondary Strategic Water Chemistry	0
		ER-AA-335-1006	Heat Exchanger Electromagnetic Testing Methodology	6
		ER-AA-340	GL 89-13 Program Implementing Procedure	11
		ER-AA-340-1001	GL 89-13 Program Implementation Instructional Guide	12
		ER-AA-340-1002	Service Water Heat Exchanger Inspection Guide	7, 9, 11
		ER-AA-340-1003	GL 89-13 Program Performance Indicators	8
		ER-BY-450	Byron Structures Monitoring Program	2
		MA-AA-736-600	Torquing and Tightening of Bolted Connections	12
	Shipping Records	4949137	LR-Support Diver Inspection/Cleaning of RSH North 0A Intake Sed PM	10/02/2019
	Work Orders	1480642-01	Perform 2A Mtr Drv AF PP Oil Clr Eddy Current Testing	09/16/2013
		1653824-01	Perform Guided Wave Inspection of 2SX67AA-1.5 During B2R18	06/17/2014
		1838239	LR-OTI Auxiliary Feedwater System Inspection	04/10/2019
		1897106-02	Dive Inspection of 0B RSH Intake Bay per ER-AA-450	09/16/2020
		1908363-01, 04, 05	LR U2 Ultrasonic Thickness Examination of Selected Service Water	05/10/2016
		4767804	EWP IM Perform Calibration of Loop 0SX-065	09/20/2019
		4785428-03	LR-U2 Motor Driven AF Pump - Clean and Inspect Lube Oil Cooler	11/08/2018
		4856571	LR-Support Diver Inspection/Cleaning SXCT South 0B Basin	06/24/2020
		4864027	LR-Support Diver Inspection/Cleaning SXCT North 0A Basin	05/29/2020
		4876057	LR-Support Eddy Current Testing Concurrent with GL 89-13	08/26/2020
		487741	EWP IM Perform Calibration of 0SX-064	06/04/2020
		4889682	0SX02PA Comprehensive IST Req for SX Makeup Pump	05/30/2019
		4924503	LR-Support Diver Inspection/Cleaning RSH South IB Intake Sed PM ID	08/20/2019
		4924816	LR-RSH Center Bay Diver Inspection	05/21/2020

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		4932711	0SX02PA Comprehensive IST Req for SX Makeup Pump	08/01/2019
		4950925	0SX02PA Comprehensive IST Req for SX Makeup Pump	10/03/2019
		4964642	EWP IM Perform Calibration of Loop 0SX-065	05/11/2021
		5029921	Reactor Containment Fan Cooler Surveillance	06/24/2020
		5041533-03	LR-U2 Motor Driven AF Pump - Clean and Inspect Lube Oil Cooler	11/02/2021
		505039	EWP IM Perform Calibration of 0SX-064	10/28/2021
		5256027-01	LR-2A AF Pump SX Suction Line Flushing Surveillance	06/01/2022
71111.08P	Calculations	51-9131378-006	Technical Justification for Detection of Leak Path Indications in RPV Upper Head Penetrations	006
	Corrective Action Documents	04376383	Rejectable NDE Indication on 2FW009C Final Plug Weld	10/13/2020
		04376507	Rejectable NDE Indication on 2FW009C FW-5	10/14/2020
		04495098	U2 Reactor Head Indication at Pen-75	04/23/2022
		04496413	FME – Foreign Object Found in 2C SG Secondary Side	04/29/2022
		04496417	FME – Foreign Object Found in 2A SG Secondary Side	04/29/2022
		04496418	FME – Foreign Object Found in 2D SG Secondary Side	04/29/2022
		044964210	FME – Foreign Object Found in 2B SG Secondary Side	04/29/2022
		04496744	FME – Floating Tie Wrap lost in SG B (2RC01BB)	4/30/2022
		4328082	Active Leak Identified in 2FC04F Vault	03/20/2020
		4377597	WO 5084887 Failed PMT - 2CV8401B External Leakage	10/19/2020
		4391135	Standing Water in 2FC02F	12/18/2020
		4463896	2FE-0136 Inactive, Non-Minor Boric Acid Leakage from Bolting	11/30/2021
	Corrective Action Documents Resulting from Inspection	4494383	NRC ID: WO#1950332-01 Missing Work Package Instructions	04/20/2022
	Engineering Evaluations	EC 636638	Operability Evaluation Reactor Head Penetration 75	Rev 0
	NDE Reports	B2R23-VEN-006	2RC01R Reactor Top Head BMV	04/28/2022
		BR23-PT-001	Liquid Penetrant Examination of Component 2RH-02-AA/RHES-01 (Support Skirt)	04/24/2022
		BR23-UT-012	Ultrasonic Examination of Component 2AF02DA-4/C04	04/20/2022

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		BR23-UT-013	Ultrasonic Examination of Component 2AF02DA-4/C03	04/20/2022
		BR23-UT-014	Ultrasonic Examination of Component 2AF02EA-4/C01	04/20/2022
		BR23-UT-015	Ultrasonic Examination of Component 2AF02DE-4/C06	04/20/2022
		BR23-UT-016	Ultrasonic Examination of Component 2AF02EA-4/C03	04/20/2022
		BR23-UT-017	Ultrasonic Examination of Component 2AF02EA-4/C02	04/20/2022
		BR23-UT-018	Ultrasonic Examination of Component 2AF02EA-4/C04	04/20/2022
		BR23-UT-019	Ultrasonic Examination of Component 2AF02EA-4/C05	04/20/2022
	Procedures	54-ISI-604	Automated Ultrasonic Examination of Open Tube RPV Closure Head Penetrations	17
		ER-AA-335-002	Liquid Penetrant (PT) Examination	12
		ER-AA-335-018	Visual Examination of ASME IWE Class MC and Metallic Liners of Class CC Components,	15
		ER-AA-335-030	Ultrasonic (UT) Examination of Ferritic Piping Welds	5
		ER-AP-335-001	Bare Metal Visual Examination for Nickel Alloy Materials	8
		ER-AP-420-002	Byron/Braidwood Unit 2: Steam Generator Eddy Current Activities	17
		MRS-2.4.2 GEN-35	Eddy Current Inspection of Pre-Service and In-Service Heat Exchanger Tubing	19
		WDI-STD-1165	Remote Inservice Inspection of Reactor Vessel Nozzle to Safe End, Nozzle to Pipe and Safe End to Pipe Welds Using the Athena Phased Array System	3
	Work Orders	1950332	Repair Channel Head Based on Inspection Results	05/21/2021
71111.11Q	Procedures	2BGP 100-2A1	Reactor Startup	35
		BOP RC-4	Reactor Coolant System Drain	25
71111.12	Calibration Records	11293785	Certificate of Calibration	02/22/2021
		11363988	Certificate of Calibration	02/08/2022
	Corrective Action Documents	04484018	1CS01PA - Elevated Vibration	05/13/2022
	Corrective Action Documents Resulting from Inspection	4500840	NRC Identified Issue with Vacuum Breaker Testing	05/19/2022
	Procedures	ER-AA-320	Maintenance Rule Implementation per NEI 18-10	0

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.13	Corrective Action Documents	4418373	1AF-012 TRP Update	04/22/2021
		4494392	1CV131 Failed to Respond	04/20/2022
		4501672	1PA34J Power Supply Trouble Card C12-335	05/24/2022
	Corrective Action Documents Resulting from Inspection	4502395	Response to NRC Question on 1AF-012 Test Report Status	05/27/2022
	Drawings	6E-1-4031AF02	Loop Schematic Diagram Aux. Feedwater Steam Gen. 1A Flow Control System ESF-12 Pnl. 1PA34J	O
	Miscellaneous	OU-AP-104 Attachment 1	Shutdown Safety Equipment Status Checklist - MODE 6 399', Vented	29
	Procedures	1BOA PRI-15	CVCS Abnormalities Unit 1	4
		2BGP 100-6	Refueling Outage	56
		BAR 1-4-D6	Cont Cab Pwr Sup Trouble	8
		BAR 1-8-A5	Ltdwn HX Outlt Flow High	53
		BHC 1-LD	Letdown Malfunction	000
		BOP CV-15	Excess Letdown Operations	19
		TRP 1AF-012	Auxiliary Feedwater to Steam Generator 1A Flow Control Loop (AF) (Train B)	9
	Work Orders	5145422	1FI-AF012A/B Reading 7.5 GPM in MCR & RSP, should be 0 GPM	10/28/2021
		5262089	1PA34J Power Supply Trouble Card C12-335	05/24/2022
71111.15	Corrective Action Documents	04492979	Jacket Water Leak on 1B Auxiliary Water Pump	04/14/2022
		04496008	Extent of Condition for 2B Auxiliary Feedwater Pump	04/27/2022
		4490436	1A EDG Mechanical Governor Oil Level Adjustment	04/05/2022
		4494520	Unexpected Rise in Source Range Counts - N32	04/21/2022
		4495098	U2 Reactor Head Indication at Pen-75	04/23/2022
		4495778	2NY-NR8039 Showing Abnormal Reading	04/26/2022
		4496744	FME - Floating Tie Wrap lost in SG B (2RC01BB)	04/30/2022
		4500836	2B DG Brg Temp Hi Trip Press Sw 2PS-DG105B OOT	05/19/2022
		4500836	2B DG Brg Temp Hi Trip Press Sw 2PS-DG105B OOT	05/19/2022
		4500843	2B DG Crankcase Oil Level Low in Band	05/19/2022
	NDE Reports	INR-B2R23-UT-	Penetration 75, Reportable Indication Notification Report	04/22/2022

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		75		
	Procedures	1BOSR 8.1.2-1	Unit One 1A Diesel Generator Operability Surveillance	36
		BAP 370-1	Station Lubrication Program	12
		ER-AA-321-1007	Inservice Testing (IST) Program Corporate Technical Positions	3
		MA-AA-716-006	Control of Lubricants Program	16
		OP-BY-101-0002	Byron Operations Expectations Philosophy Handbook	31
	Work Orders	1888896	Diesel Driven Auxiliary Feedwater Pump Inspection per BMP 3203-1	03/23/2017
		1894388	Replace Flexible Hoses	10/12/2017
		4633348	Replace Hoses that were not Replaced During B1R21 During B1R22	09/25/2018
71111.18	Engineering Changes	EC 627884	2SXE5A-3" SX Pipe Replacement with Stainless-Steel	
		EC 629149	480 Volt Substation Breaker Setting Change	0
71111.19	Corrective Action Documents	4495080	2PS9356B Failed LLRT at 56.4 SCFH @ 40 PSIG Test Pressure	04/23/2022
		4495217	2RY16AB - PRT Rupture Disc as Found	04/24/2022
		4495218	2RY16AA - PRT Rupture Disc as Found	04/24/2022
		4495500	Failed PMT- 2PS9356B Failed PMT STT	04/25/2022
		4495518	B2R23 2PS9356B Failed as Left LLRT	04/25/2022
		4497789	Dual Indication on 2PS9356B with Valve in Closed Position	05/05/2022
		4497834	Entered 2BOA RCP-1, Reactor Coolant Pump Seal Failure Unit 2	05/05/2022
	Corrective Action Documents Resulting from Inspection	4497746	NRC Concern with Troubleshooting Activity	05/04/2022
		4498278	Discretionary Near Miss/Working at Height/2B AF Pump Room	05/07/2022
		4501960	NRC Identified - Incorrect 2AF017B PMT Closure.	05/25/2022
	Engineering Evaluations	ECR 454558	Request Engineering to Evaluate Proper Torque Valve for Rupture Discs.	05/03/2022
	Miscellaneous	UFSAR 5.4.11	Pressurizer Relief Discharge System	9
	Procedures	ER-AA-200	Preventive Maintenance Program	6
	Work Orders	4498740	2AF024 Not Indicating Open During 2BOSR 0.5-3.AF.3-2	05/10/2022
		4698389	Rebuild Actuator, Regulators/Replace Elastomers	05/10/2022
		4699260	PM Inspection, In-Service Diag. Test, PIT	05/03/2022

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		4749380	OPS Perform 2BOSR 5.C.2-1 CV System Flow Balance	05/02/2022
		4910712	Replace Time Delay Relay 2AF01J-K4	05/11/2022
		4955752	Replace AF PP/Gearbox Lube Oil System Relief Valve	05/11/2022
		4955906	Replace AF PP/Gearbox Lube Oil System Relief Valve	05/11/2022
		4965733	EOC Inspection on 2AF01PB	05/11/2022
		5008479	Replacement of the Synchro Start Speed Pickup	05/11/2022
		5089242	2PS9356B Doesn't Stroke Fully Open Following Maintenance	05/06/2022
		5089590	2AF017B - Minor Degradation Identified During Diagnostic Testing	05/11/2022
		5091168	2AP05EQ Relay #AF1AX for 2AF01PA	05/01/2022
		5091392	2AF01J Relay #K2 for Bus 2AF01PB	05/09/2022
		5091394	2AF01J Relay #K4 for Bus 2AF01PB	05/11/2022
		5091452	Calibrate K11 TDR	05/11/2022
		5091479	2AF053A IST Relief Valve Test	05/10/2022
		5091489	Inspect Coupling 2AF01PA-L	05/01/2022
		5091495	EWP MM 2RY16AB Replace and Test Rupture	05/01/2022
		5091498	EWP MM 2RY16AA Replace and Test Rupture Disk	05/01/2022
		5091520-01	OP RE - NF-BY-510, Low Power Physics Testing Program	05/11/2022
		5091560	2SX174 IST Maintenance DIS/INSP	05/11/2022
		5091593	2AF001A IST Disassembly and Inspection	05/07/2022
		5092341	2AF014B IST Disassembly and Inspection	05/07/2022
		5093954	LR-2AF02A - HX Inspection per Generic Letter 89-13	05/11/2022
		5168425	Diesel Driven AF PP Insp to Support 2BVSR Z.7.A.1	05/11/2022
		5237933	Request Inspect/Replace L2X Relay - 2B AF Pump	05/11/2022
		5256214-02	OPS PMT - 2D RCP Seal Flow	
		5256214-17	MS - PMT Check/Monitor Vibration Levels	
		5257808	2AF015B Leaking by When Valve Shut	05/11/2022
71111.20	Corrective Action Documents	04498444	Unexpected 2A Auxiliary Feedwater Pump Start	05/08/2022
		04498497	2B Auxiliary Feedwater Pump Oil Leak	05/09/2022
		4497253	Fatigue Assessment/Waiver	05/02/2022
		4498320	2D RCP No. 1 Seal Degradation	05/07/2022
		4498888	U2 Rod Drive Group 1AC Rods Not Moving	05/10/2022
		4498901	U2 Rod Drive Power Cabinet SCDE Rods Not Moving	05/10/2022

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		4499196	Unplanned entry into 2BOA ROD-2	05/11/2022
		4499220	U2 Turbine Trip After Syncing	05/12/2022
	Corrective Action Documents Resulting from Inspection	4494234	Oil leak - 2SI8808B	04/19/2022
		4494283	Unit-2 Cnmt Oil Leakage on Charcoal Filtration Housing.	04/20/2022
	Miscellaneous		B2R23 Shutdown Safety Process Overview	0
	Procedures	2BOSR Z,5.b.1-1	Unit Two Containment Loose Debris Inspection	18
		ER-AA-200-1001	Equipment Classification	6
		OP-AA-111-1001	Operations Standards and Expectations	30
		OU-AP-104	Shutdown Safety Management Program Byron/Braidwood Annex	29
		OU-AP-200	Administrative Controls During Fuel Handling Activities for Byron and Braidwood	24
		OU-AP-204	Fuel Movement in the Spent Fuel Pool for Byron and Braidwood	16
		OU-AP-205	Fuel Movement in Containment for Byron and Braidwood	14
		OU-AP-4001	PWR Fuel and Core Component Handling Practices	18
71111.22	Corrective Action Documents	04492638	2MS016D Lifted in Unacceptable Range During Testing	04/12/2022
		04497533	2BOSR 5.5.8.CV.6-3 Cannot be Performed as Scheduled	05/04/2022
	Miscellaneous		B2R23 MSSV Trevi-Testing Plan	04/12/2022
		PMC-22-135071	Change Frequency of 1/2CV8368 Check Valves	05/12/2022
	Work Orders	4723440	2MS013A IST Set Point Verification	04/13/2022
		4724302	2MS014A IST Set Point Verification	04/13/2022
		4724303	2MS014D IST Set Point Verification	04/13/2022
		4724304	2MS016A IST Set Point Verification	04/13/2022
		4724305	2MS016D IST SET Point Verification	04/13/2022
		4724306	2MS017B IST Set Point Verification	04/13/2022
		4848734	2B Diesel Generator 24 Hr Endurance Run and Hot Restart	05/19/2022
		5085881-01	OPS - 2BOSR 5.5.8.AF.5-2C Comprehensive IST Requirements 2AF01PB	04/14/2022
		5085883	Main Steam Safety Valves Operability Test (<94% RX PWR)	04/13/2022
		5091371	LLRT for P-6 and P-10 - 2WO006A/B, 2WO007A/B	05/05/2022

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		5091371-01	As Found LLRT for P-6 and P-10 - 2WO006A/B, 2WO007A/B	04/28/2022
		5206756	2MS017D IST Trevi-Test	04/13/2022
		5848909	(NEIL)-LR-1A Diesel Generator Operability Surveillance	05/06/2022
71124.01	Corrective Action Documents	AR 04494811	B2R23 Lessons Learned - Loop Drain	04/22/2022
	Corrective Action Documents Resulting from Inspection	AR 04496343	NRC ID: EC Stickers not added to S/G HEPA Units	04/28/2022
	Miscellaneous	RP-AA-302 Attachment 3	Alpha Area Level Assessment	04/15/2021
		RP-AA-302 Attachment 3	Alpha Area Level Assessment	04/13/2022
	Procedures	NISP-RP-004	Radiological Posting and Labeling	1
		RP-AA-300-1002	Electron Capture Isotope Control	7
		RP-AA-302	Determination of Alpha Levels and Monitoring	12
	Radiation Surveys	RP-AA-460	Controls for High and Locked High Radiation Areas	39
	Radiation Work Permits (RWPs)	BY-0-22-00705	S/G Eddy Current Testing and Tube Repairs	00
		BY-2-22-00654	Seal Table Activities	00
		BY-2-22-00683	Thimble Tube Removal / Replacement	00
		BY-2-22-00710 Task	S/G Diaphragms	00
		BY-2-22-00710 Task 1	S/G Manways	00
71124.07	Miscellaneous		Annual Radiological Environmental Operating Report Byron Generating Station Units 1 and 2	04/30/2022
			Monthly Report on the Meteorological Monitoring Program at the Byron Nuclear Generating Station	02/04/2020
			Monthly Report on the Meteorological Monitoring Program at the Byron Nuclear Generating Station	05/04/2020
			Annual Report on the Meteorological Monitoring Program at the Byron Nuclear Generating Station 2019	03/23/2020
			Annual Site Survey - Exelon Meteorological Monitoring Sites	08/28/2020
			Teledyne Brown Engineering Environmental Services Quality	02/04/2022

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			Assurance Report	
			Radiologic Groundwater Protection Program Results for 2019	01/21/2020
			2021 Annual RGPP Monitoring Report Summary of Results and Conclusions Byron Generating Station	02/11/2021
			2020 Annual RGPP Monitoring Report Summary of Results and Conclusions Byron Generating Station	02/17/2021
			Teledyne Brown Engineering Environmental Services Quality Assurance Report	02/22/2021
		11102547 Report 2	Hydrogeologic Investigation Report	01/31/2020
	Procedures	CY-AA-170-1001	Environmental Dosimetry - Performance Specifications, Testing, and Analysis	1
		CY-BY-170-301	Offsite Dose Calculation Manual for Byron Station Units 1 and 2	17
	Self-Assessments	NUPIC Audit Number 24879	Supplier Audit Report for ATI Environmental, Inc. Northbrook, IL	02/18/2020
71151	Miscellaneous	1Q22 BYR U1 ROP PI Summary	Mitigating Systems Performance Indicators	06/18/2022
		LS-AA-2090 Attachment 1	Monthly Data Elements for NRC ROP Indicator - Reactor Coolant System (RCS) Specific Activity	10/01/2021 - 05/31/2022
		LS-AA-2140 Attachment 1	Monthly Data Elements for NRC ROP Indicator - Occupational Exposure Control Effectiveness	10/01/2021 - 05/31/2022
		LS-AA-2150 Attachment 1	Monthly Data Elements for NRC ROP Indicator - RETS/ODCM Radiological Effluent Occurrences	10/01/2021 - 05/31/2022
	Procedures	ER-AA-2008	Mitigating Systems Performance Index (MSPI) Monitoring and Margin Evaluation	4
		LS-AA-2200	Mitigating System Performance Index Data Acquisition and Reporting	7
		LS-AA-2200	Mitigating System Performance Index Data Acquisition & Reporting	7
71152A	Corrective Action Documents	4474490	Incomplete PMT for MCB Hand Switch Replacement	01/28/2022
		4496332	B2R23 CRDM Thermal Sleeve Metrology Results	04/28/2022

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Corrective Action Documents Resulting from Inspection	4486869	NRC ID: 1B SX Pp Oil Low in Sight Glass After Work Window	03/23/2022
		4490884	Security Equipment Security Door Anti Pick Plate Loose.	04/06/2022
		4508013	NRC ID - PMT Process Not Followed	06/29/2022
		4508013	NRC ID - PMT Process Not Followed	06/28/2022
	Miscellaneous	Document No. 142-9348016-000	Byron 2 CRDM Thermal Sleeve As-Found Dimensional Report 2022	04/25/2022
		UFSAR 06.5z Attachment A	Iodine Removal Effectiveness Evaluation of Containment Spray System	
71152S	Corrective Action Documents	4502316	Potential Trend Identified in Broken Fuse Holders	05/27/2022