



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION III
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March 15, 2024

David Rhoades
Senior Vice President
Constellation Energy Generation, LLC
President and Chief Nuclear Officer (CNO)
Constellation Nuclear
4300 Winfield Road
Warrenville, IL 60555

**SUBJECT: BYRON STATION – COMPREHENSIVE ENGINEERING TEAM INSPECTION
REPORT 05000454/2024010 AND 05000455/2024010**

Dear David Rhoades:

On February 23, 2024, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Byron Station and discussed the results of this inspection with H. Welt, Site Vice President, and other members of your staff. The results of this inspection are documented in the enclosed report.

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

If you contest the violations or the significance or severity of the violations 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.

If you disagree with a cross-cutting aspect assignment 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 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 Stoedter, Karla
on 03/15/24

Karla K. Stoedter, Chief
Engineering Branch 1
Division of Operating Reactor Safety

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

Enclosure:
As stated

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Letter to David Rhoades from Karla Stoedter date March 15, 2024.

SUBJECT: BYRON STATION – COMPREHENSIVE ENGINEERING TEAM INSPECTION
REPORT 05000454/2024010 AND 05000455/2024010

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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: 05000454/2024010 and 05000455/2024010

Enterprise Identifier: I-2024-010-0017

Licensee: Constellation Energy Generation, LLC

Facility: Byron Station

Location: Byron, IL

Inspection Dates: January 22, 2024 to February 23, 2024

Inspectors: M. Domke, Reactor Inspector
K. Fay, Reactor Inspector
T. Hartman, Senior Project Engineer
S. Kobylarz, Contractor
E. Magnuson, Reactor Inspector
M. Siddiqui, Reactor Inspector
C. St. Peters, Resident Inspector

Approved By: Karla K. Stoedter, Chief
Engineering Branch 1
Division of Operating Reactor Safety

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting a Comprehensive Engineering Team 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 Perform Required Inservice Testing of 1(2)SX007 Valves in Accordance with Code Requirements			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000454,05000455/2024010-01 Open/Closed	None (NPP)	71111.21M
The inspectors identified a finding of very low safety significance (Green) and associated non-cited violation (NCV) of Title 10 of the <i>Code of Federal Regulations</i> (10 CFR) Part 50.55a(f)(4)(ii) for the licensee's failure to perform the required inservice testing (IST) to verify the operational readiness of valves whose functions are required for safety. Specifically, the licensee failed to perform the required inservice testing of two essential service water (SX) motor operated valves (MOVs) as a result of incorrectly classifying valves 1SX007 and 2SX007 as passive under the IST program.			

Failure to Follow Procedure to Maintain the Unit 2A Essential Service Water Pump and Motor Coupling within Specification			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000454,05000455/2024010-02 Open/Closed	[H.11] - Challenge the Unknown	71111.21M
The inspectors identified a finding of very low safety significance (Green) and associated non-cited violation (NCV) of Title 10 of the <i>Code of Federal Regulations</i> (10 CFR) Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," due to the licensee's failure to follow procedures for maintaining the Unit 2A essential service water pump and motor coupling design float parameters within associated limits. Specifically, on October 31, 2022, the licensee returned the Unit 2A essential service water pump and motor to service with the coupling design float 2.37 times beyond its specified design.			

Failure to Evaluate the Essential Service Water Pump Maximum Break Horsepower Requirement in the Protective Relay Settings for the Motor			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000454,05000455/2024010-03 Open/Closed	None (NPP)	71111.21M
The inspectors identified a finding of very low safety significance (Green) and an associated non-cited violation (NCV) of Title 10 of the <i>Code of Federal Regulations</i> (10 CFR) Part 50, Appendix B, Criterion III, "Design Control," when the licensee failed to verify the adequacy of			

the design for the motor phase overcurrent relay tap setting for the essential service water (SX) pumps. Specifically, the analysis used to calculate the motor phase overcurrent relay tap setting failed to identify and evaluate the SX pumps load break horsepower for the plant operating condition used to establish the pump motors maximum continuous load.

Failure to Translate Coupling Float Design Parameters into Maintenance Procedures			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000454,05000455/2024010-04 Open/Closed	[H.3] - Change Management	71111.21M
The inspectors identified a finding of very low safety significance (Green) and associated non-cited violation (NCV) of Title 10 of the <i>Code of Federal Regulations</i> (10 CFR) Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to correctly translate gear tooth coupling design parameters into procedures. Specifically, the licensee removed manufacturer specified gear toothed coupling design float parameters from procedure BMP 3229-1, "Preventative Maintenance of Miscellaneous Pump Couplings," such that the procedure no longer ensured the SX pump to motor couplings would be maintained in accordance with their design.			

Failure to Correctly Translate Essential Service Water Design Basis into Procedures			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000454,05000455/2024010-05 Open/Closed	[H.1] - Resources	71111.21M
The inspectors identified a finding of very low safety significance (Green) and associated non-cited violation (NCV) of Title 10 of the <i>Code of Federal Regulations</i> (10 CFR) Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to correctly translate the essential service water (SX) system design basis into operating procedures. Specifically, the licensee had not correctly translated the SX system design basis into procedures 1(2) BEP ES-1.3 and BOP CC-10 to ensure the SX pumps and their supplied loads would continue operating within the design flow rates following an initiating event and an active single failure.			

Additional Tracking Items

None.

INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at <http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html>. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

REACTOR SAFETY

71111.21M - Comprehensive Engineering Team Inspection

The inspectors evaluated the following components and listed applicable attributes, permanent modifications, and operating experience:

Structures, Systems, and Components (SSCs) (IP Section 03.01) (9 Samples)

For each component sample, the inspectors reviewed the licensing and design bases including: (1) the Updated Final Safety Analysis Report (UFSAR); (2) the Technical Specifications (TS); and (3) the Technical Requirements Manual (TRM). The inspectors reviewed a sample of operating procedures (including normal, abnormal, and emergency procedures) and overall system/component health (including condition reports and operability evaluations, if any). The inspectors performed visual inspections of the accessible components to identify potential hazards and/or signs of degradation. Additional component specific design attributes reviewed by the inspectors are listed below.

- (1) Unit 0: Component Cooling (CC) Heat Exchanger (HX) Essential Service Water (SX) Inlet Valve (0SX007)
 1. Mechanical design:
 - a. Required thrust (torque)
 - b. Closure/opening time
 - c. Maximum differential pressure
 2. Test/inspection procedures, acceptance criteria, and recent results:
 - a. Inservice testing (IST)

- (2) Unit 2: 125 Volt Direct Current (DC) Battery 211 (2DC01E) and Associated Charger (2DC03E)
 1. Maintenance Effectiveness
 2. Modifications
 3. Translation of vendor specifications
 4. Protection against external events:
 - a. Seismic
 5. Test/inspection procedures, acceptance criteria, and recent results:
 - a. TS surveillance
 - b. Discharge testing
 - c. Battery charger
 6. Electrical design calculations and considerations:

- a. Battery sizing
 - b. Battery loading
 - c. Breaker
 - d. Maximum allowed room temperature during normal and accident operations
 - e. Minimum voltage
 - f. Battery life
 - g. Ground protection
 - h. Charger sizing
 - i. Sizing of protective fuses/breakers/relays
 - j. Voltage drop calculations
 - k. Cable Ampacity
- (3) Unit 2: 4160 Volt Alternating Current (AC) Engineered Safety Feature (ESF) Bus 241 (2AP05E)
- 1. Maintenance Effectiveness
 - 2. Test/inspection procedures, acceptance criteria, and recent results:
 - a. TS surveillances
 - b. Relay calibration
 - 3. Electrical design calculations and considerations:
 - a. Loading calculations
 - b. Voltage regulation
 - c. Coordination calculations
 - d. Degraded voltage protection
 - e. Protective devices and trip set points
- (4) Unit 2: A Emergency Diesel Generator (EDG) (2DG01KA) - Electrical Features
- 1. Translation of vendor specifications
 - 2. Electrical design calculations and considerations:
 - a. Load voltage drop
 - b. Dynamic calculation (V, Hz, Amp, loading sequence)
 - c. DC field flashing circuit design
 - d. EDG relay coordination
 - e. Protective relay setpoint
 - f. Generator grounding scheme
 - g. Capability to start under degraded voltage conditions
- (5) Unit 2: A EDG (2DG01KA) - Mechanical Features
- 1. Protection against external events:
 - a. Seismic
 - 2. Mechanical design:
 - a. Jacket water cooler
 - b. Fuel oil volume consumption
 - c. Fuel oil available volume/level
 - 3. Test/inspection procedures, acceptance criteria, and recent results:
 - a. TS surveillances
 - b. Jacket water cooler
 - c. Fuel oil volume
- (6) Unit 2: A SX Pump (2SX01PA)
- 1. Maintenance Effectiveness

2. Modifications
3. Translation of vendor specifications
4. Protection against external events:
 - a. Seismic
5. Mechanical design calculations and considerations:
 - a. Flow capacity
 - b. Flow balance
 - c. Minimum flow
 - d. Runout flow
 - e. Required submergence (NPSH, vortexing)
6. Test/inspection procedures, acceptance criteria, and recent results:
 - a. Pump comprehensive IST surveillances
 - b. Pump quarterly IST surveillances
 - c. Emergency water make-up
7. Electrical design calculations and considerations:
 - a. Pump motor voltage drop
 - b. Pump motor degraded voltage
 - c. Pump motor brake horsepower
 - d. Protective devices
 - e. Minimum voltage
 - f. Control logic

(7) Unit 2: A SX Pump Room Cooler (2VA01SA)

1. Maintenance Effectiveness
2. Modifications
3. Translation of vendor specifications
4. Equipment Qualification
5. Protection against external events:
 - a. Flooding, including sump pump
 - b. Seismic
 - c. High energy line break (HELB)
 - d. Fire
6. Design calculations and considerations:
 - a. Maximum cooling water flowrate
 - b. Maximum cooling water temperature
 - c. Minimum working fluid flowrate
 - d. Maximum working fluid temperature
 - e. Tube plugging limit
 - f. Heat transfer capacity
7. Test/inspection procedures, acceptance criteria, and recent results:
 - a. Flowrates
 - b. Inspection or thermal performance test
 - c. Eddy current

(8) Unit 2: CC HX (2CC01A)

1. Maintenance Effectiveness
2. Modifications
3. Translation of vendor specifications
4. Equipment Qualification
5. Protection against external events:
 - a. Flooding, including sump pump

- b. Seismic
 - c. HELB
 - d. Fire
 - 6. Design calculations and considerations:
 - a. Maximum cooling water flowrate
 - b. Maximum cooling water temperature
 - c. Minimum working fluid flowrate
 - d. Maximum working fluid temperature
 - e. Tube plugging limit
 - f. Heat transfer capacity
 - 7. Test/inspection procedures, acceptance criteria, and recent results:
 - a. Flowrates
 - b. Inspection or thermal performance test
 - c. Eddy current
- (9) Unit 2: CC HX Inlet Valve (2SX004)
- 1. Maintenance Effectiveness
 - 2. Translation of vendor specifications
 - 3. Design calculations and considerations:
 - a. Weak link analysis
 - b. Required thrust (torque)
 - c. Closure/Opening time
 - d. Maximum allowed leakage
 - 4. Test/inspection procedures, acceptance criteria, and recent results:
 - a. IST
 - b. TS required surveillance

Modifications (IP Section 03.02) (4 Samples)

- (1) Engineering Change (EC) 618133, Revision 4 - Upgrade Existing AVR with Digital ABB Unicontrol Model
- (2) EC 624835, Revision 0 - Install Vent Valve on 2A SX Strainer 2SX01FA
- (3) EC 632197, Revision 0 - Change Seat Material and Eliminate Filter on 1A EDG Non-Emergency Trip Header Check Valves
- (4) EC 636067, Revision 0 - 2PT-0408; Replace Obsolete Veritrak (TOBAR) Transmitter with Rosemount 1154 Transmitter

10 CFR 50.59 Evaluations/Screening (IP Section 03.03) (13 Samples)

- (1) Evaluation 6G-22-001 - Technical Requirements Manual (TRM) Change and Procedure Revisions for Change in TSR 3.1.b.4, Boration Flow
- (2) Evaluation 6G-22-004 - Updates to Byron Chapter 15 Dose Analyses
- (3) Evaluation 6G-23-003 - Unit 2 Turbine Load Reject Relay Time Delay
- (4) Screening 6D-22-001 - Diesel Driven Auxiliary Feedwater Pump B Startup
- (5) Screening 6E-18-050 - Install Vent Valve on 2A SX Strainer 2SX01FA
- (6) Screening 6E-20-005 - Replace Obsolete RH Pump Discharge Pressure Transmitter with New Fuji/Barton Smart Transmitter (1PT-0615)
- (7) Screening 6E-21-003 - Replace Obsolete 2LIT-0676 Transmitter (Unit 2 CC Surge Tank Level) with Fuji/Barton FCX-All V5 Series Smart Transmitter (FKCT-33V5-PLCYY-AA)
- (8) Screening 6D-21-004 - Update to Multiple Procedures to Clarify Operator Action

- (9) Screening 6E-21-012 - Reduce Small Bore Piping Socket and Butt Weld Volumetric Exam Sample Sizes
- (10) Screening 6E-21-013 - Revise ASTM A490 Bolting Volumetric Examination Requirements
- (11) Screening 6E-21-017 - Unit 1 Negative Sequence Current Monitoring
- (12) Screening 6E-20-004 - Lifting AR-VD62X Trip Contact for DG Room 1B Supply Fan 1VD01CB
- (13) Screening 6E-22-017 - Unit 1 and Unit 2 Ovation Auto Runback Upon Loss of Multiple Feedwater Pumps

Operating Experience Samples (IP Section 03.04) (2 Samples)

- (1) Information Notice 2019-01 Inadequate Evaluation of Temporary Alterations
- (2) Byron response, as documented in AR 4500637, to the Braidwood Design Basis Assurance Inspection non-cited violation, "Failure to Test Manual Valve Closure Function in Accordance with American Society of Mechanical Engineers Code," documented in NRC Inspection Report 2022-010

INSPECTION RESULTS

Failure to Perform Required Inservice Testing of 1(2)SX007 Valves in Accordance with Code Requirements			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000454,05000455/2024010-01 Open/Closed	None (NPP)	71111.21M
<p>The inspectors identified a finding of very low safety significance (Green) and associated non-cited violation (NCV) of Title 10 of the <i>Code of Federal Regulations</i> (10 CFR) Part 50.55a(f)(4)(ii) for the licensee’s failure to perform the required inservice testing (IST) to verify the operational readiness of valves whose functions are required for safety. Specifically, the licensee failed to perform the required inservice testing of two essential service water (SX) motor operated valves (MOVs) as a result of incorrectly classifying valves 1SX007 and 2SX007 as passive under the IST program.</p> <p><u>Description:</u></p> <p>The component cooling (CC) water heat exchanger (HX) outlet essential service water (SX) isolation valves, 1SX007 and 2SX007, at Byron Station are normally throttled butterfly valves and have a safety function to remain open to regulate flow from SX through the associated CC HXs.</p> <p>The licensee’s American Society of Mechanical Engineers (ASME) Code of Record for the “Operation and Maintenance of Nuclear Power Plants” (OM) is the 2004 Edition with Addenda through 2006. The OM Subsection ISTA-2000, “Definitions,” states the following:</p> <p style="padding-left: 40px;">valves, active: valves that are required to change obturator position to accomplish a specific function in shutting down a reactor to the safe shutdown condition, maintaining the safe shutdown condition, or mitigating the consequences of an accident.</p>			

valves, passive: valves that maintain obturator position and are not required to change obturator position to accomplish the required function(s) in shutting down a reactor to the safe shutdown condition, maintaining the safe shutdown condition, or mitigating the consequences of an accident.

The IST Basis Document for the 1(2)SX007 valves, IST-BYR-BDOC-V-SX, classifies the valves as passive and states, "Since the valve is not required to change positions to perform this function, it is considered passive in the open position."

The updated final safety analysis report (UFSAR) Section 9.2.2.3.5 (for the CC system) states, "...two heat exchangers... are normally provided for the unit undergoing post-LOCA recovery." Emergency Operating Procedure, 1(2)BEP ES-1.3 basis document, BD-EP ES-1.3, "Transfer to Cold Leg Recirculation," Rev. 300, states, "the RH heat exchangers are used for heat removal during the post-accident recirculation phase and this step [11] aligns the CC and SX systems to ensure the CC flow can adequately cool the RH heat exchangers." Emergency Operating Procedure 1(2)BEP ES-1.3, "Transfer to Cold Leg Recirculation," Rev. 305, Step 11.b, states,

Check SX to CC HX flow on Ovation Screen 6180, Essential Service Water Overview – GREATER THAN 7000 GPM.

- U-0 SX to CC HX Flow
- U-1 SX to CC HX Flow
- U-2 SX to CC HX Flow

If greater than 7000 GPM cannot be obtained, the Response Not Obtained column of Step 11.b states the following:

Locally Throttle SX flow control valve(s) as necessary per BOP SX-T4, "Essential Service Water System Pump Discharge Flow Rate Adjustment":

- 0SX007 (346 M16)
- 1SX007 (346 M16)
- 2SX007 (346 M20)

BOP SX-T4, Revision 2, states, "this procedure supports throttling open or closed the CC HX SX Outlet Isol Valves, 1SX007, 2SX007, or 0SX007 for an online CC HX. This will allow adjustment of SX System Pressure and/or CC System Temperature, as required for normal operations. BOP SX-T4, states "Throttle MOV-SX007, Unit CC HX Outlet Vlv, as required, while the NSO monitors SX and CC System parameters." The underlined blank is to allow the licensee to enter which valve/unit was manipulated.

Given the steps listed in procedures 1(2)BEP ES-1.3 and BOP SX-T4, the inspectors determined the 1(2)SX007 valves could be manipulated during a design basis accident to obtain the required SX flow rates through the CC HXs and should be classified as active components. However, the valves were considered passive under the licensee's IST program plan.

In response to the inspectors' questions regarding the valve classification, the licensee generated Action Request 4749899, "NRC CETI- Active vs. Passive Class of MOVs 1/2SX007," and plans to update the 1(2)SX007 valves as active under the IST program. The AR states, "due to having a step in the emergency operating procedures that could yield an action to operate the 1/2SX007s, the actions taken may result in operators changing the position of the throttle valves." The licensee has performed all the required testing of the

valves with the exception of the full stroke testing. The inspectors have no concerns whether the valves will be able to move if called upon during an event.

Corrective Actions: The licensee plans to change the classification of the valves to "Active" under the IST program, and to revise UFSAR Table 3.9-16 to classify the 1(2)SX007 valves as active. The licensee will also perform the remaining testing on the valves.

Corrective Action References: 4749899

Performance Assessment:

Performance Deficiency: The licensee's failure to perform testing to verify the operational readiness of the 1SX007 and 2SX007 valves, whose functions are required for safety, was a performance deficiency and contrary to 10 CFR 50.55a(f)(4)(ii). Specifically, the licensee failed to test the valves in accordance with the ASME OM Code requirements due to incorrectly classifying the valves as passive under the IST program.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, not performing all required testing of 1SX007 and 2SX007 could allow degraded valve performance to go undetected and challenge system operation during a design basis event.

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 determined that this finding is of very low safety significance (Green) because they answered "No" to all Exhibit 2, Section A, "Mitigating SSCs and PRA Functionality," screening questions.

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. Specifically, the current ten-year inservice testing program interval which incorrectly classified the 1(2)SX007 valves, was last updated on July 1, 2016, and was not representative of current licensee performance.

Enforcement:

Violation: Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50.55a(f)(4)(ii) requires, in part, "Inservice tests to verify operational readiness of pumps and valves, whose function is required for safety, conducted during successive 120-month intervals must comply with the requirements of the latest edition and addenda of the ASME OM Code incorporated by reference in paragraph (a)(1)(iv) of this section 18 months before the start of the 120-month interval."

The licensee's ASME Code of Record for "Operation and Maintenance of Nuclear Power Plants" is the 2004 Edition with Addenda through 2006.

The 2004 ASME OM Code, Paragraph ISTC-3500, "Valve Testing Requirements," states, active and passive valves in the categories defined in ISTC-1300 shall be tested in accordance with the paragraphs specified in Table ISTC-3500-1 and the applicable requirements of ISTC-5100 and ISTC-5200. For active, Category B valves,

Table ISTC-3500-1, requires exercise testing in accordance with Paragraph ISTC-3510 and position verification in accordance with Paragraph ISTC-3700. ISTC-3700 does not apply to these valves because they do not have remote position indication.

Contrary to the above, as of February 9, 2024, the licensee had not performed inservice tests to verify the operational readiness of valves, whose function is required for safety, at successive 120-month intervals which complied with the latest edition and addenda of the ASME OM Code incorporated by reference in paragraph (a)(1)(iv) of 10 CFR Part 50.55a. Specifically, the licensee failed to perform the required in service exercise testing of the 1(2)SX007 valves in accordance with 2004 ASME OM Code, Paragraph ISTC-3510.

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

Failure to Follow Procedure to Maintain the Unit 2A Essential Service Water Pump and Motor Coupling within Specification

Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000454,05000455/2024010-02 Open/Closed	[H.11] - Challenge the Unknown	71111.21M

The inspectors identified a finding of very low safety significance (Green) and associated non-cited violation (NCV) of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," due to the licensee's failure to follow procedures for maintaining the Unit 2A essential service water pump and motor coupling design float parameters within associated limits. Specifically, on October 31, 2022, the licensee returned the Unit 2A essential service water pump and motor to service with the coupling design float 2.37 times beyond its specified design.

Description:

On October 31, 2022, the licensee completed work activities associated with inspection and lubrication of a safety related coupling for the Unit 2A SX pump and motor under work order (WO) 5096392. This WO provides instruction on the inspection and lubrication of the Unit 2A SX pump and motor's Fast's Kop-Flex forged steel coupling and directs use of procedure BMP-3229-1, "Preventative Maintenance of Miscellaneous Pump Couplings." Procedure BMP 3229-1 specifically identifies verification of coupling float as "a must" and indicates "hydraulically bound couplings will produce increased vibration resulting in coupling failure."

BMP 3229-1, Step 4.4.3, required technicians to record the as-found float for the coupling. The inspectors noted the technicians performing the maintenance recorded 0.223 inches for the as-found float dimension. Step 4.4.3 also required the coupling design float to be recorded, but in the case of WO 5096392, the coupling design float was left blank. Additionally, Step 4.4.3 required technicians to compare the as-found float with the design float to assure the coupling is not hydraulically locked.

BMP 3229-1, Step 4.4.15, required the component maintenance optimization group to review and evaluate the "as-found" coupling inspection results and determine acceptability of the results. The technicians did not complete Step 4.4.15 in BMP 3229-1 for WO 5096392. The inspectors also found that Step 4.4.23, which required the coupling to be aligned to recommended values, was marked as not required. As a result, the "as-left" coupling float

was left as 0.223 inches as documented in Step 4.4.37 of BMP 3229-1 for WO 5096392.

The inspectors reviewed coupling manufacturer information and found the design float for Fast's Kop-Flex forged steel couplings was specified as 3/32 inches or 0.094 inches. Based upon this information, the inspectors concluded the Unit 2A SX pump and motor coupling was returned to service at 2.37 times beyond its specified design float, and was potentially susceptible to degradation, due to the failure to follow BMP 3229-1 as part of WO 5096392. The inspectors discussed this issue with the licensee and also reviewed vibration and thermography data for the Unit 2A SX pump and motor coupling. No indications of coupling degradation were present in the data reviewed.

Corrective Actions: The licensee plans to verify the actual coupling float and will restore it to within design specification, if needed.

Corrective Action References: 4736401, 4748050

Performance Assessment:

Performance Deficiency: The licensee's failure to follow procedures to ensure the as-left coupling float for the Unit 2A SX pump and motor coupling was within specification was contrary to 10 CFR 50 Appendix B, Criterion V, "Instructions, Procedures, and Drawings," and was a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, properly aligned coupling design float assures rotor shafts do not contact shaft shoulders and bearing ends and also enables the motor rotor to run at its magnetic center. The SX pump shaft has very limited axial movement due to the installed thrust bearing, but the associated motor rotor floats axially 0.5" total according to drawing 1663D96, Revision 8. If a motor rotor is not properly aligned to its magnetic center, then the rotor will constantly pull itself back to its magnetic center with the stator through axial thrusting. This misalignment and constant pull towards magnetic center strains the pump and motor coupling components and materials which jeopardizes the reliability of safety related SX pump operation.

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 determined that this finding is of very low safety significance (Green) because they answered "No" to all Exhibit 2, Section A, "Mitigating SSCs and PRA Functionality" screening questions.

Cross-Cutting Aspect: H.11 - Challenge the Unknown: Individuals stop when faced with uncertain conditions. Risks are evaluated and managed before proceeding. The licensee did not complete procedure steps to obtain design float for the Unit 2A SX pump and motor coupling and did not adequately understand coupling design before measuring and accepting coupling design float outside of specification.

Enforcement:

Violation: Title 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, that activities affecting quality be prescribed by documented procedures of a type appropriate to the circumstances and be accomplished in accordance with these procedures.

The licensee established procedure BMP 3229-1, "Preventative Maintenance of Miscellaneous Pump Couplings," as the implementing procedure for performing inspections, lubrication, and replacement of essential service water pump couplings, an activity affecting quality.

Step 4.4.3 of BMP 3229-1 states, "Record "As Found" coupling float. If "As Found" coupling float is lesser than the coupling design float and that could be due to locked coupling, then verify" the "As Found" float, the Design float and whether the coupling is locked.

Step 4.4.15 of BMP 3229-1 states, "CMO to review and evaluate the "As Found" inspection results and coupling condition. Replace the coupling if unacceptable coupling degradation is found."

Contrary to the above, on October 31, 2022, activities affecting quality were not accomplished in accordance with documented procedures appropriate to the circumstance. Specifically, the licensee failed to follow Steps 4.4.3 and 4.4.15 of procedure BMP 3229-1 while performing maintenance on the Unit 2A essential service water pump which resulted in the pump to motor coupling float being left 2.37 times outside of its specified design limit.

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

Failure to Evaluate the Essential Service Water Pump Maximum Break Horsepower Requirement in the Protective Relay Settings for the Motor

Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000454,05000455/2024010-03 Open/Closed	None (NPP)	71111.21M

The inspectors identified a finding of very low safety significance (Green) and an associated non-cited violation (NCV) of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Appendix B, Criterion III, "Design Control," when the licensee failed to verify the adequacy of the design for the motor phase overcurrent relay tap setting for the essential service water (SX) pumps. Specifically, the analysis used to calculate the motor phase overcurrent relay tap setting failed to identify and evaluate the SX pumps load break horsepower for the plant operating condition used to establish the pump motors maximum continuous load.

Description:

The SX pump motors provide the motive power to operate the SX pumps during normal, transient, and accident conditions. The SX pumps provide cooling water to important safety related equipment, such as emergency diesel generators, safety related pump coolers, and the component cooling water system heat exchangers.

Licensee calculation 19-AN-7 established the criteria for selecting the motor phase overcurrent relay tap setting. This tap setting is used to trip the motor when a specific current condition is experienced by the motor. The Methodology and Acceptance Criteria provided in Calculation 19-AN-17 for motor feeder relays states, "If motors are to be operated above nameplate HP [horsepower], then the highest continuous HP rating should be used to determine full load current." While reviewing design documentation for the Unit 2A SX pump motor, the inspectors found that the maximum Unit 2A SX pump brake horsepower requirement was higher than the motor nameplate HP. However, the higher brake horsepower value was not used in the calculation that determined the motor phase overcurrent relay tap setting. Specifically, the inspectors identified the nameplate rated horsepower for the Unit 2A SX pump motor, 1250 HP, was used to select the motor phase overcurrent relay tap setting in calculation 19-AN-7. After the Unit 2A SX pump was replaced in 2010, the licensee performed an evaluation of pump load because the vendor that tested the new pump expected the pump to require more power to produce a given flow rate than specified by the vendor pump curve. The licensee's evaluation of pump load for the Unit 2A SX pump determined that during normal and loss of coolant accident (LOCA) conditions, the pump brake horsepower was 1265 HP and was 1329 HP during station blackout conditions. The inspectors determined that both of these pump load conditions exceeded the load that was evaluated for motor full load current in the relay setting calculation (1250 HP).

Although the Unit 2A SX pump brake horsepower results from the new evaluation were not referenced in the motor phase overcurrent relay tap setting calculation, the inspectors found that the results were referenced and evaluated in other licensee electrical design calculations such as Calculation 19-T-5, "Diesel Generator Loading During LOOP/LOCA – Byron Units 1 & 2." Additionally, in Calculation 19-T-5, Section 2.3.6.B, the inspectors noted that the Unit 2B SX pump brake horsepower during the post-LOCA operating condition (1370 HP), was higher than the new Unit 2A SX pump (1265 HP). Since the expected maximum pump load conditions were not considered and evaluated, the Unit 2B SX pump motor could be subject to an inadvertent trip during a LOCA. The licensee subsequently performed evaluations demonstrating the motor phase overcurrent relay would not trip for the worse-case design basis pump load conditions. The licensee's analysis for the Unit 2B SX pump determined the margin to the trip setting was reduced from approximately 21 percent to 7 percent. This was the most limiting of the SX pumps.

Corrective Actions: The licensee performed evaluations that demonstrated the motor phase overcurrent relay would not trip for the worse-case design basis pump load conditions. The licensee will review and update the 4160 Volt switchgear calculations as necessary.

Corrective Action References: 4748946

Performance Assessment:

Performance Deficiency: The licensee's failure to evaluate and verify the expected maximum SX pump operating horsepower requirements in the selection of the protective relay setting for the pump motor was contrary to 10 CFR Part 50, Appendix B, Criterion III "Design Control," and was a performance deficiency. Specifically, the licensee failed to evaluate the maximum pump load break horsepower for the plant operating condition that established the maximum continuous load on the pump motor in the protective relaying analysis.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Design Control attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability,

reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the analysis for the SX pump motor phase overcurrent relays did not consider the maximum pump break horsepower when determining the required relay setting which could result in a trip of the SX pumps during an event.

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 determined that this finding is of very low safety significance (Green) because they answered "No" to all Exhibit 2, Section A, "Mitigating SSCs and PRA Functionality" screening questions.

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. Specifically, Calculation 19-AN-7 was last revised in 2010 and is not representative of current performance.

Enforcement:

Violation: Title 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that the licensee provide for verifying or checking the adequacy of design, such as by the performance of design reviews, by the use of alternate or simplified calculational methods, or by the performance of a suitable testing program.

The Methodology and Acceptance Criteria Section of Design Basis Calculation 19-AN-7, "Protective Relay Settings for 4.16 KV ESF Switchgear," states, in part, "If motors are to be operated above nameplate horsepower, then the highest continuous horsepower rating should be used to determine full load current."

Contrary to the above, as of February 8, 2024, the licensee failed to verify or check the adequacy of the design for the 2A and B SX pump motor phase overcurrent relays through the use of design reviews or by the use of an alternate or simplified calculational method. Specifically, Calculation 19-AN-7 used the SX pump motor nameplate horsepower data when determining full load current of the 2A and B SX pump motors and the tap setting for the SX pump motor phase overcurrent relays instead of using highest continuous horsepower rating (the maximum expected pump break horsepower at design basis operating conditions).

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

Failure to Translate Coupling Float Design Parameters into Maintenance Procedures

Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000454,05000455/2024010-04 Open/Closed	[H.3] - Change Management	71111.21M

The inspectors identified a finding of very low safety significance (Green) and associated non-cited violation (NCV) of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to correctly translate gear tooth coupling design parameters into procedures. Specifically, the licensee removed manufacturer specified gear toothed coupling design float parameters from procedure BMP

3229-1, "Preventative Maintenance of Miscellaneous Pump Couplings," such that the procedure no longer ensured the SX pump to motor couplings would be maintained in accordance with their design.

Description:

On June 22, 2023, the licensee implemented procedure change request action (PCRA) 4670560-19 which removed the requirements to record the pump and motor coupling design float information as part of procedure BMP 3229-1, "Preventive Maintenance of Miscellaneous Pump Couplings." This procedure change concerned the inspectors because coupling float is a critical design parameter which supports reliable pump operation. As discussed in an earlier section of this report, the inspectors also identified technicians had previously returned the Unit 2A SX pump to service with a coupling float approximately three times greater than the design limit.

The inspectors learned the licensee had originally added the requirement to record coupling design float to BMP 3229-1 (as part of Revision 27) in response to action request (AR) 3984441. According to the evaluation in AR 3984441, hardening and discoloration of coupling grease and accelerated degradation of coupling gear teeth caused a failure of a gear tooth coupling on the reactor feed system. The reactor feed coupling was similar to the coupling installed on the SX pumps. To avoid repeated coupling gear tooth degradation and the subsequent equipment maintenance, the licensee added more specific guidance for coupling inspections to BMP 3229-1 including a requirement to record the coupling design float such that it could be compared with the as-found and as-left float to ensure the coupling remained within design parameters.

The licensee further evaluated gear tooth coupling issues in 2020, under AR 4342759, after finding a motor side coupling hub was difficult to remove during maintenance activities for the Unit 1B SX pump. AR 4342759 cited the manufacturer's design float of 0.094 inches for the SX pump shafts, and it explained the function of design float for limited end float couplings like the Kop-Flex FS 5 was to position the motor rotor to prevent contact between the bearing faces and the shaft shoulders.

The inspectors and the licensee discussed the Byron specific operating experience and the June 2023 procedure change to BMP 3229-1 which removed the requirement to record coupling float design information, including the coupling design float for the SX pumps. The licensee informed the inspectors that the June 2023 procedure change to BMP 3229-1 was improperly processed as an editorial change. As a result, the procedure change details did not undergo the additional reviews required for a non-editorial procedure change as specified in procedure AD-AA-101, "Processing of Procedures, T&RMs, and Forms." The licensee also concluded recording the SX pump design float information must be included in procedure BMP 3229-1 to ensure the SX pump to motor couplings were maintained within design parameters. The inspectors reviewed the circumstances which led to improperly processing the June 2023 change to procedure BMP 3229-1 as an editorial change and determined the failure to follow procedure AD-AA-101 constituted a minor violation of Technical Specification 5.4.1.

Corrective Actions: The licensee plans to return the coupling float parameters to the affected procedure prior to the next procedure performance.

Corrective Action References: 4736401

Performance Assessment:

Performance Deficiency: The licensee's failure to ensure design parameters for the essential service water pump and motor coupling float were included within procedure BMP 3229-1 is contrary to 10 CFR Part 50, Appendix B, Criterion III, "Design Control," 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, coupling design float is a critical parameter for proper shaft alignment activities which assures reliable pump and motor operation on the safety related SX system.

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 determined that this finding is of very low safety significance (Green) because they answered 'yes' to the question: "If the finding is a deficiency affecting the design or qualification of a mitigating SSC, does the SSC maintain its operability or PRA functionality. The inspectors determined the SX pumps and motors maintained their operability and PRA functionality since maintenance involving the coupling had not been performed since the June 2023 change to procedure BMP 3229-1.

Cross-Cutting Aspect: H.3 - Change Management: Leaders use a systematic process for evaluating and implementing change so that nuclear safety remains the overriding priority. Specifically, the licensee's failure to utilize the appropriate procedure change process led to removing a requirement to document coupling design float within procedure BMP 3229-1.

Enforcement:

Violation: 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that measures be established to assure that applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions.

Contrary to the above, as of June 22, 2023, the licensee failed to assure that applicable regulatory requirements and the design basis were correctly translated into specifications, drawings, procedures, and instructions. Specifically, essential service water pump and motor coupling design float was not correctly translated into procedure BMP 3229-1, "Preventive Maintenance of Miscellaneous Pump Couplings," following the completion of licensee procedure change request 4670560-19 which removed the coupling's critical design float parameter from the procedure.

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

Failure to Correctly Translate Essential Service Water Design Basis into Procedures

Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000454,05000455/2024010-05 Open/Closed	[H.1] - Resources	71111.21M

The inspectors identified a finding of very low safety significance (Green) and associated non-cited violation (NCV) of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50,

Appendix B, Criterion III, "Design Control," for the licensee's failure to correctly translate the essential service water (SX) system design basis into operating procedures. Specifically, the licensee had not correctly translated the SX system design basis into procedures 1(2) BEP ES-1.3 and BOP CC-10 to ensure the SX pumps and their supplied loads would continue operating within the design flow rates following an initiating event and an active single failure.

Description:

The SX system at Byron Station is divided into two redundant loops for each unit, and the system may be operated with the loops cross-tied or as two separate loops. UFSAR Section 9.2.1.2. states, "each full-capacity essential service water loop in each unit is supplied by a single pump rated at 24,000 gpm at 180 +/- 10 percent total developed head. Actual system flow varies with system lineup and conditions." The current alignment and operation allows the SX system loop cross-tie valves (1(2)SX033/SX034) to remain open during normal operations as well as during design basis accidents (e.g., LOOP/LOCA).

Each unit's Engineered Safety Features Actuation System (ESFAS) automatically starts the unit specific SX pumps upon receiving a safety injection signal or upon a loss of offsite power. When this occurs, operations personnel utilize Step 8 of Emergency Operating Procedure 1(2) BEP-0, "Reactor Trip or Safety Injection Unit 1(2), Rev. 306, Attachment B, to verify if both SX pumps are running on the unit that experienced the ESFAS signal (hereafter called the affected unit). If both SX pumps are not running, the response not obtained column of Step 8 has the operators try to manually start the SX pumps on the affected unit. If at least one SX pump can be manually started, the operators then move to Step 9 of 1(2) BEP-0, Attachment B. If neither SX pump on the affected unit can be manually started, the response not obtained column of Step 8 directs the operators to start the standby SX pump on the opposite unit and to open the SX unit cross-tie valves 1SX005 and 2SX005 to ensure essential service water is provided to safety related equipment on the affected unit.

Updated Final Safety Analysis Report (UFSAR) Section 3.1.2.4.15, states, "the component cooling and essential service water systems provide appropriate cooling capacity for structures, systems, and components important to safety, and are designed with appropriate redundancy. A single failure can be accommodated without impairing the safety functions of the systems." Additionally, Section 6.3.2.5, states, "the ECCS is designed to accept a single failure following its initiation without loss of its protective function. The system design will tolerate the failure of any single active component in the ECCS itself or in the necessary associated service systems at any time during the period required for system operation following the initiating event."

The inspectors also noted UFSAR Section 9.2.2.4.4, which discusses the shared function of the component cooling water system, states, "operation during the recirculation phase of the LOCA [loss of coolant accident] requires that two pumps and two heat exchangers be available to the unit which has experienced the accident. One pump and heat exchanger is sufficient to carry the required heat load during this time, however since the component cooling water system must be capable of accommodating an active or a passive failure under these conditions, two complete 'trains' of component cooling water system equipment (pump-heat exchanger-surge tank) must be available."

The inspectors reviewed licensee procedures BOP CC-10, "Alignment of the Unit 0 CC Pump and Unit 0 CC HX to a Unit," Rev. 36, and 1(2) BEP ES-1.3, "Transfer to Cold Leg Recirculation," Rev. 305, and noted the procedures had steps to align 7000 gpm of SX flow to the U-0 CC HX to ensure two CC pumps and two CC HXs were available to the affected unit.

However, neither procedure provided guidance regarding the number of SX pumps that needed to be in operation prior to aligning the 7,000 gpm of SX flow to the CC HXs. Specifically, Step F.4.5 of procedure BOP CC-10 states:

- a. Verify/Throttle 0SX007, MOV U-0 CC HX 0CC01A SX Outlet Isol Vlv, and 1SX007, MOV U-1 CC HX 1CC01A Outlet Isol Vlv, as follows, to establish at least 7000 gpm SX flow to each CC HX.

Emergency Operating Procedures 1(2) BEP ES-1.3, "Transfer to Cold Leg Recirculation," Step 11, states:

- b. Check SX to CC HX flow on Ovation Screen 6180, Essential Service Water Overview – GREATER THAN 7000 GPM
 - U-0 SX to CC HX Flow
 - U-1 SX to CC HX Flow
 - U-2 SX to CC HX Flow

The inspectors noted aligning 7,000 gpm of SX flow to each CC HX as directed by procedures BOP CC-10 and 1(2) BEP ES-1.3, without consideration of how many SX pumps were running, failed to ensure the SX system could accommodate a single failure as discussed in UFSAR Sections 3.1.2.4.15 and 6.3.2.5. The inspectors also determined that if one SX pump was running on each loop for the affected unit, 7,000 gpm of SX flow was established to each CC HX, and then a single failure of one of the running SX pumps occurred, the flow required by the remaining operating SX pump was beyond that pump's design capability and could cause the pump to fail due to operating near runout conditions. Specifically, the pump is designed to operate at 24,000 gpm at 180 +/- 10 percent total developed head while 31,000 gpm of SX flow would be required following a single failure of an SX pump.

The licensee provided Calculation ATD-0024, "SX System Alignment for a Single-Unit LOCA," Rev 0, which states "this open item concerns the ability of the SX system in its current configuration to provide enough flow to the accident unit CC HX while maintaining at least design flow to the other SX system components with only on[e] accident unit SX pump in operation." The inspectors reviewed the calculation and determined a single SX pump could provide the additional 7,000 gpm flow requirements, as written in the procedure. However, the increased 7,000 gpm flow rate to the U-0 CC HX would allow other SX loads to be operated with less than their design required flow rates.

The licensee generated AR 4748729, "NRC Identified Procedure Enhancement," and AR 4748941, "NRC CETI Concern with BOP CC-10." AR 4748729 states, "This procedure assumes that both SX pumps started from the safety injection signal. In order to provide flow to both U1(2) and U-0 CC heat exchangers two SX pumps have to be running on that unit to prevent runout of the SX pump."

Corrective Actions: The licensee issued a standing order to Operations to describe what should be done if the condition exists and is revising all affected procedures that allow operation of the SX system in this manner.

Corrective Action References: 4748729, 4748941

Performance Assessment:

Performance Deficiency: The licensee's failure to correctly translate the essential service water system design basis into normal and emergency operating procedures was a performance deficiency and contrary to 10 CFR 50, Appendix B, Criterion III, "Design Control."

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Procedure Quality attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the procedures direct the addition of 7,000 gpm flow to the SX system, which is beyond the design flow rate of a single SX pump and would result in SX loads being operated with less than their design required flow rates.

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 determined that this finding is of very low safety significance (Green) because they answered 'yes' to the question: "If the finding is a deficiency affecting the design or qualification of a mitigating SSC, does the SSC maintain its operability or PRA functionality." The inspectors determined the essential service water system maintained its operability or PRA functionality because there was no degradation of any SX system component, and some cooling would be provided to the SX supplied loads under the conditions described above.

Cross-Cutting Aspect: H.1 - Resources: Leaders ensure that personnel, equipment, procedures, and other resources are available and adequate to support nuclear safety. Specifically, the licensee failed to ensure that procedures 1(2) BEP ES-1.3 and BOP CC-10 could be performed as written and failed to ensure the procedures were adequate to support a design basis accident.

Enforcement:

Violation: Title 10, CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that measures be established to assure that applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions."

UFSAR Section 3.1.2.4.15, states, "the component cooling and essential service water systems provide appropriate cooling capacity for structures, systems, and components important to safety, and are designed with appropriate redundancy. A single failure can be accommodated without impairing the safety functions of the systems."

UFSAR Section 6.3.2.5, states, "the ECCS is designed to accept a single failure following its initiation without loss of its protective function. The system design will tolerate the failure of any single active component in the ECCS itself or in the necessary associated service systems at any time during the period required for system operation following the initiating event."

Contrary to the above, prior to February 23, 2024, the licensee failed to assure that applicable regulatory requirements and the design basis specified in UFSAR Sections 3.1.2.4.14 and 6.3.25 were correctly translated into specifications, drawings, procedures, and instructions. Specifically, Procedures 1(2) BEP ES-1.3 and BOP CC-10 would allow the

essential service water system to be operated outside the design flow rates for the essential service water pump and loads, given only one of the two essential service water pumps was available.

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

EXIT MEETINGS AND DEBRIEFS

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

- On February 23, 2024, the inspectors presented the Comprehensive Engineering Team Inspection results to H. Welt, Site Vice President, and other members of the licensee staff.
- On February 9, 2024, the inspectors presented the interim Comprehensive Engineering Team inspection results to H. Welt, Site Vice President, and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.21M	Calculations	002-M-068	Units 1&2 SX Differential Pressure Calc	0
		14Q4240-CAL-002	High-Confidence, Low Probability of Failure Evaluations of Equipment and Anchorage for Byron ESEP	1
		14Q4240-RPT-003	Validation of Expedited Seismic Equipment List	3
		14Q4240-RPT-004	Expedited Seismic Evaluation Process (ESEP) Report	1
		19-AN-7	Protective Relay Settings for 4.16 KV ESF Switchgear	12
		19-AQ-63	Division Specific Degraded Voltage Analysis	9
		19-T-5	Diesel Generator Loading During LOOP/LOCA	8
		7.16.11-BYR13-055	Evaluation of Service Water Strainer Foundation	0
		95-044	Thermal Endurance Evaluation of CV and SX Pumps	0
		ATD-0024	SX System Alignment Variations For a Single-Unit LOCA	0
		ATD-0391	Evaluation to Establish Byron CV and SX Pump Cubicle Cooler Electrical Cables are not Required for Safe Shutdown of the Reactor Under 10CFR50, Appendix R	0, 1
		BYR-0SX007	MIDACALC AC Motor Operated GL 96-05 Butterfly Valve	7
		BYR-1SX007	MIDACALC Results AC Motor Operated GL 96-05 Butterfly Valve	7
		BYR-2SX004	MIDACALC AC Motor Operated Non GL96-05 Butterfly Valve 2SX004	8
		BYR-97-226/BRW-97-0474-E	125 VDC System Short Circuit Calculation	4
		BYR01-068	Environmental Parameters of EQ Zones	3
		BYR08-110	Seismic Analysis of Check Valve SS-F90CHM4F4-BU-1	0
		BYR10-012	Air to Water Cubicle Cooler Heat Exchanger Tube Plugging Evaluation	3, 4, 5
		BYR11-211	Component Cooling System PIPE-FLO Analysis	0
		BYR15-098	Eval Aerofin DSGN RPT for Replacement Cubicle Cooler Coils in Essential Serv Water Pump Room Coolers	2, 3

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			1VA01SA 2VA01SA 1VA01SB 2VA01SB	
		BYR97-205	125 VDC Battery Charger Sizing Calculation	8
		BYR97-262	Seismic Qualification of 125 VDC Batteries	1A
		BYR97-467	Component Cooling Heat Exchanger Tube Plugging Evaluation	0, 3, 4
		BYR99-0010	Documentation of the Basis of the Emergency Operating Proc (EOP) Setpoints	0
		CN-CC24-010	Braidwood Unit 1 Cycle 24 Reload	0
		CQD-007299	Foundation Loads for Component Cooling Heat Exchanger	0
		DA 23156	Formal Pipe Stress Analysis Essential Service Water System Piping 1SX62/2SX62	2G
		DA 32662	Formal Pipe Stress Analysis Essential Service Water System Piping 1SX41	1G
		VA-100	ESF Pump Cubicle Energy Calculation	5
	Corrective Action Documents	217635	Document Suitability for Existing Tube Plug in 2CC HX	04/29/2004
		2472368	Station Confusion on SX Pump Operability Requirements	03/22/2015
		2616020	Coupling Shell Hard to Move	01/22/2016
		2663826	Min Wall Thickness <87.5% of Nom Wall for SX Piping	11/17/2016
		3984441	1FW01PC Turbine Side Coupling Hub Damage	03/13/2017
		4096336	Unconventional Test Switch Wiring on 2IPO6E Inverter Meters	01/23/2018
		4230952	NRC IN 2019-01: Inadequate Evaluation of Temp Alterations	03/19/2019
		4239402	Loose Nuts on East End of CC HX-2A Support	04/14/2019
		4284315	Error in B&B AST Dose Calcs Control Room Ventilation Model	10/02/2019
		4309107	2A EDG Pneumatic Check Valve Failures - Trend IR	01/09/2020
		4310359	Early Shutdown of the 1B DG due to Excessive Exhaust Leak	01/15/2020
		4320780	2A Jacket Water Temps Above Rounds Max	02/24/2020
		4342759	Motor Side Coupling Hard to Move 1B SX Pump	05/12/2020
		4368363	2A DG Potential Fuel Oil FME	09/10/2020
		4497848	NRC DBAI: AF005 Manual Handwheel Usage and Testing	05/05/2022
		4500637	Review of the Byron AF005 Valves by Braidwood IR	05/18/2022

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			04497848	
		4528301	125VDC Battery 211 Cells Cracked Tops	10/10/2022
		4541763	Div 211 Batt Room Door 0DSD782 Broken	12/09/2022
		4670560	Maintenance Work Planning B1R25 LL	04/16/2023
		4686347	ESF Battery Bank 212 Pilot Cell Voltage High	06/22/2023
		4736697	12.84% Wall Loss on 2SX16BA-2	01/26/2024
		4739730	20% Wall Loss on 2SX17AC	01/31/2024
		4739809	14% Wall Loss on 2SX16BC	01/31/2024
		846686	Unit 2 CC Heat Exchanger Required Tube Plugging	11/18/2008
	Corrective Action Documents Resulting from Inspection	4734806	NRC ID CETI -2SX004 Test Documentation Discrepancy	01/23/2024
		4734936	NRC Identified: CETI - Housekeeping	01/23/2024
		4735089	NRC ID: CETI - Loose Flashing on 2SX93AA	01/24/2024
		4735549	NRC ID: CETI -Minor Coupling Grease Leak	01/24/2024
		4735608	NRC ID: CETI - Outboard Bearing Minor Oil Leak	01/24/2024
		4735816	NRC ID: CETI - Housekeeping Items Found during Walkdown	01/24/2024
		4735817	NRC ID: CETI - Sway Strut 1CC02009X Misalignment	01/24/2025
		4736374	NRC ID: CETI - 2VA01SA Cooler Outlet Piping	01/25/2024
		4736401	NRC CETI -2A SX Pump Coupling Outside of Tolerances	01/25/2024
		4736435	NRC ID: CETI - 211 Battery Room LL Velcro Straps	01/25/2024
		4736675	NRC ID CETI - 50.59 Documentation Discrepancy	01/26/2024
		4738566	NRC ID: CETI-Inactive Leak and Corrosion Deposits, U2 CC HX	01/29/2024
		4739318	NRC ID: CETI - 0SX007 Test Documentation Discrepancy	01/30/2024
		4739361	NRC ID CETI -Procedure Processing Error Identified	01/30/2024
		4741559	NRC CETI -Discrepancy in WO Documentation	02/02/2024
		4747942	NRC ID CETI: 2VI-DG137 Calibration Data Discrepancy	02/07/2024
		4748050	NRC ID CETI -Work Package Documentation Errors	02/07/2024
		4748729	NRC ID CETI: Identified Procedure Enhancement	02/08/2024
		4748841	NRC ID CETI -Acceptance Criteria Removed from Procedure	02/08/2024
		4748901	NRC CETI: Enhancement to CAP Processing	02/09/2024
	4748936	NRC ID: CETI - CCP - Drawing Discrepancy	02/09/2024	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		4748940	NRC ID: CETI- MOV 1/2SX007 Active/Passive Classification	02/09/2024
		4748941	NRC CETI Concern with BOP CC-10	02/09/2024
		4748946	NRC ID - 2024 CETI - 4.16 kV Relay Setting Calc 19-AN-7	02/09/2024
		4748988	NRC ID CETI: Inspection CAP Lesson Learned	02/09/2024
		4749899	NRC CETI ID-Active vs. Passive Class of MOVs 1/2SX007	02/13/2024
	Drawings	1663D96	AC Motor Frame 8009S55 Type LLD Horizontal Split Sleeve Bearings Drip Proof	8
		6E-0-3706	Lighting Fixture Mounting Details	AD
		6E-0-3706A	Lighting Fixture Details	R
		6E-0-4001	Station One Line Diagram	Y
		6E-1-4030VD09	Schematic Diagram Diesel Generator Room 1B HVAC System Ventilation	L
		6E-2-4002C	Single Line Diagram 4.16 KV Swgr. Bus 241 & 243 Diesel Gen. 2A & 480V Swgr.	P
		6E-2-4006A	Key Diagram 4160V ESF Swgr. Bus 241 (2AP05E)	E
		6E-2-4030SX01	Schematic Diagram Essential Service Water Pump 2A 2SX01PA	T
		CC-23	Component Cooling	1
		CD04101	General Assembly Plain Wafer per MSS-SP-68 & MSS-SP-44	D
	M-2066	P&ID/C&I Diagram Component Cooling System	P	
	Engineering Changes	13851	Review of Seismic Qualification Reports for Essential Service Water Strainers	0
		339308	Develop Tube Plugging Criteria for GL 89-13 Heat Exchangers	0
		345685	Provide Additional Justification for Use of Fouling Factor of 0.0014 for CC HX Allowable Tube Blockage	0
		346997	Evaluate Min Wall Criteria and Gasket Mating Surface Requirements for Component Cooling HX's	0
		351458	Provide Justification for Extending GL 89-13 Inspection of 0CC01A Heat Exchanger Past Its Critical Due Date of 9/22/04	0
		360252	Review of IST & UFSAR Table Active Valve List	0
		365231	Establish Tube Plugging Criteria for Eddy Current Testing for	0

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			1/2DG01KA/B, 1/2VP01AA/B/C/D, 0/1/2CC01A, 0WO0ICA/B, 1/2VA01/2/3/4/6SA/B and 1/2VA08S Heat Exchangers	
		378402	Single Use Eval for 1/2 of SX Cube CLR Not Available	01/29/2010
		379433	Calculate BHP Values for the 2A SX Pump Based on Field Test Data Gathered During B2R15	0
		392429	Operation of SX Pump with Single Cubicle Cooler	02/15/2023
		398091	SX Pump Operability with Single Cooler and Tubes Plugged	05/14/2014
		400153	2SX01PA SX Pump Cubicle Cooler Replacement 2VA01SA	0
		618133	Upgrade AVR with Digital ABB Unitrol Model	4
		624835	Install Vent Valve on 2A SX Strainer 2SX01FA	12/20/2018
		628627	Revise AST Source Term to Reflect Core Design Practice and Update Impacted AST Analyses (FHA, LOCA, CREA, LR, MSLB, SGTR)	0
		632197	Change Seat Material and Eliminate Filter on 1A EDG Non-Emergency Trip Header Check Valves	0
		632801	Block Feedwater Reg Valve 2FW540 "Closed" to Support Outage Activities MR90 Technical Evaluation	0
		634165	Lifting AR-VD25X Trip Contact for DG Room 1A Supply Fan 1VD01CA EPN -- 1VD01JA-AR-VD52X TCC	04/29/2021
		636067	2PT-0408: Replace Obsolete Veritrak (TOBAR) Transmitter with Rosemont 1154 Transmitter	0
		638500	Temporary Change to Power Feed for Ovation Drop 2 and 52	0
		640100	Temporary Change to Remove Disc from Inside of Gate Valve 2SX175	0
	Engineering Evaluations	CAW-10189	Emergency Boration Line	10/13/1986
		CAW-4812	Emergency Boration Flowrate	10/15/1982
		CCE-CVS-CN-MF-000001	Braidwood Unit 1 Cycle 24 BORDER Evaluation	0
		DRP 18-033/6E-20-015	Revise USAR Table 3.2-1 to Correct Safety Classification of CRDM Thermal Sleeves	0
		PIF B1998-00839	Fatigue Cracking and Bad Weld Lead to Small Leak in Safety Injection Line and Unplanned LCOAR Entry	05/27/1998

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Miscellaneous		Fleet Response to Generic Letter 89-13	01/29/1990
			Westinghouse IL 5500A, Instructions for Life Line D Horizontal Induction Motor Frames 8000, 9600 Type – Drip Proof, Weather Protected Type I, Weather Protected Type II, Externally Ventilated, Pipe Ventilated Split Sleeve Bearings	06/01/1986
		24-006 Standing Order	SX System Alignment	02/23/2024
		6D-21-004	Revisions to BAR 1PL07J-1, BAR 1PL08J-1, BAR 2PL07J-1, and BAR 2PL08J-1 procedures A1, A2, A3, A5, A6, A7, A8, B2, B3, B4, B5, B6, B7, B8, C1, C5, and C6	0
		6D-22-001	Diesel Driven AFW Pump B Startup	0
		6E-20-004	Lifting AR-VD62X Trip Contact for DG Room 1B Supply Fan	0
		6E-20-005	Replace Barton 753 (Analog) 1B RHR Pump Discharge Pressure Transmitter with FUJI FKGT04V5 (Digital)	0
		6E-21-003	2LIT-0676 Transmitter Obsolete	0
		6E-21-012	One Time Inspection of ASME Code Class 1 Small Bore Piping	0
		6E-21-013	Revise ASTM A490 Bolting Volumetric Exam Requirements	0
		6E-21-017	U1 Negative Sequence Current Monitoring	0
		6E-22-029	Control Room Ventilation (VC) Filtration Systems	0
		6G-22-001	TRM Change and Procedure Revisions for Change in TSR 3.1.b.4 Boration Flow	08/25/2022
		6G-22-004	Updates to B&B Chapter 15 Dose Analysis	0
		6G-23-003	Unit 2 Turbine Load Reject Relay Time Delay	0
		BB-PRA-005-05	Component Cooling Water System Notebook	7
		BB-PRA-005-10	Essential Service Water System Notebook	5
		BYR MOV Program Scope	Byron MOV Program Scope List Required Per GL 89-10 / GL96-05	5,6
		BYR-16829	Failure Analysis of a Poppet Type Check Valve	04/09/2020
		C127-0013	Standby Battery Vented Cell Installation and Operating Instructions	0
		CS14439	Battery Charger Technical Manual	02/08/1978
		IST-BYR-BDOC-V-SX	Byron Generating Station -Inservice Testing Basis Document (1SX007)	01/22/2024

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		IST-BYR-Plan	IST Program Plan Byron Station Units 1 & 2, Fourth Interval	05/26/2023
		LTR Byron 2004-0035	Regulatory Commitment Change Summary Report	04/01/2004
		LTR-SEE-22-31	Braidwood Unit 1 Cycle 24 BORDER Evaluation Results & Byron Licensing Markups	1
		METCOM 6.24	Boron Design Requirements	90
		SDD-DG-01-BB	Diesel Generator System Design Description	0
		SDD-SX-01-BB	Essential Service Water System Design Description	0
		WCAP-12597	Commonwealth Edison Co. Byron/Braidwood Plants Chemical and Volume Control System Design Basis Document	0
	NDE Reports	16-UT-071	UT of 2SX16BA-2"	05/1/2016
		16-UT-072	UT of 2SX16BC-2"	05/01/2016
		16-UT-073	UT of 2SX17AA-2"	05/01/2016
		16-UT-074	UT of 2SX17AC-2"	05/01/2016
		2014-453	UT of 2SX17AA, 2SX16BA, 2SX17AC, 2SX16BC	11/04/2014
		2018-074	UT of 2SX16BC, 2SX16BA, 2SX17AC, 2SX17AA	05/04/2018
		2024-004	UT of 2SX16BA-2", 2SX17AA-2"	01/25/2024
	Procedures	1BCA-0.0	Loss of All AC Power Unit 1	306
		1BEP ES-1.3	Transfer to Cold Leg Recirculation Unit 1	304, 305
		1BEP-0	Reactor Trip or Safety Injection Unit 1	306
		1BEP-1	Loss of Reactor Coolant or Secondary Coolant Unit 1	302
		2BEP ES-1.2	Transfer to Cold Leg Recirculation Unit 2	305
		2BEP-0	Reactor Trip or Safety Injection Unit 2	305
		2BEP-1	Loss of Reactor or Secondary Coolant Unit 2	302
		2BOA ELEC-4	Loss of Offsite Power Unit 2	113
		AD-AA-101	Processing of Procedures, T&RMs, and Forms	31
		AD-AA-101-F-01	Document Site Approval Form	9
		AD-BY-101-1003	EOP MAINTENANCE PROGRAM GUIDELINE	3
		BAP 1310-10	HU-AA-104-101, Procedure Use and Adherence, Byron Addendum	22
		BD-EP ES-1.3	Transfer to Cold Leg Recirculation	300
BHC 1-2-A1	SX Pump Trip	0		

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		BMP 3229-1	Preventative Maintenance of Miscellaneous Pump Couplings	31
		BOP AF-7	Diesel Driven Auxiliary Feedwater Pump B Startup on Recirc	61, 62
		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	35,36
		BOP CC-4	Draining the Component Cooling System	5
		BOP SX-1	Essential Service Water System Startup	33
		BOP SX-T4	Essential Service Water System Pump Discharge Flow Rate Adjustment	2
		BOSR 8.1.11-2	Diesel Generator Sequencer Test	24
		BVP 800-30	Essential Service Water Fouling Monitoring Program (GL 89-13 Program Basis Document)	18
		CC-AA-112	Temporary Configuration Changes	32
		CC-AA-209 Attachment 1	Approved Fire Protection Program Configuration Change Impact Review	6
		ER-AA-302	Motor Operated Valve Program Engineering Procedure	9
		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	11
		ER-AA-5400-1001	Raw Water Piping Integrity Management Guide	12
		ER-AA-600-1015	FPIE PRA Model Update	20
		HU-AA-104-101	Procedure Use and Adherence	7
		LS-AA-128 Attachment 1	Fire Protection Change Regulatory Review (FPCRR)	3
		OP-AA-102-106	Operator Response Time Program	9
		OP-AA-102-106 Attachment 1	Operator Response Time Validation Sheet	4, 5, 7, 8
	Work Orders	1119414	Replace 2A SX Pump (SX System Scrub Item)	04/24/2010
		1340662-01	IM Perform Calibration of 2PSL-SX023	11/07/2011
		1467827	Test/Replace MCCB's 125V DC Battery Charger 211	05/14/2014
		1553311	MOV Actuator Inspection and Diagnostic Testing - 0SX007	04/29/2014
		1633819	1DC05E B11 DF1 Buss 111 Cross-tie Breaker to Bus 211	03/23/2014
		1737884-01	EWP IM Perform Calibration of 2PSL-SX023	05/01/2018

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		1786931	SX Pump Cubicle Cooler Replacement 2VA01SA	02/16/2016
		1792999	MOV PM -Actuator Grease Inspection	06/18/2017
		1808373	2VA01SA - HX Inspection per Generic Letter 89-13	04/29/2016
		1848033	2CC01A - HX Inspection per Generic Letter 89-13	08/26/2019
		1893885	Replace Coupling and Align as Required 1SX01PB	09/19/2021
		1921299	LR-2VA01SA - HX Inspection per Generic Letter 89-13	04/30/2018
		1924413	Change Grease in Coupling per BMP 32229-1 Section F.2	04/30/2018
		1960267	MM 6 Year PM on The 2/A DG	02/03/2018
		394057	0CC01A - HX Inspection per Generic Letter 89-13 / BVP 800-30	02/28/2005
		4660654	Water Leak at or Near 2SX004: EWP-MM -Adjust Valve Packing 2SX004	04/11/2018
		4664751	Install Vent Valve on 2A SX Strainer EC 624835	04/26/2021
		4805725	2A Diesel Gen Operability -Inspect and Engine Analysis, E:2DG01KA	03/17/2022
		4813556	Change Grease in Coupling per BMP 3229-1 Section F.2	05/12/2020
		4816466	Instrument Calibration (2A DG)	04/27/2020
		4855590-01	(18M) Battery Charger Surveillance (Bus 211)	09/09/2020
		4924077	OP (Sample) 2X01PA- Motor Bearings Inbrd and Outbrd	06/04/2020
		4945433	LR-2VA01SA - HX Inspection per Generic Letter 89-13	01/24/2024
		4971810	EWP MM 2DO020A IST Relief Valve Test	06/02/2021
		4980773	1B DG Exhaust Leak at 8R Manifold	01/24/2020
		4983462-01	IM Replace Transmitter to Satisfy EQ Requirements	05/01/2022
		5056668-01	OP (Sample) 2X01PA- Motor Bearings Inbrd and Outbrd	12/07/2021
		5062006	2A Diesel Generator Engine Analysis	03/17/2022
		5063612-01	EWP MM: Replace Check Valve	12/09/2020
		5070007	Change Grease in Coupling per BMP 3229-1 Section F.2	10/25/2022
		5096392	Change Grease in Coupling per BMP 3229-1 Section F.2	11/01/2022
		5096395-01	Perform Relay Routine (BUS 241 Cub 21) – 2AP05E-W 4KV Relay Routine Calibration (2A SX Pump)	11/01/2022
		5096637-01	Perform Static Baker Test MA-AA-723-330	11/29/2022
		5136993	0BOSR 0.5-3.SX.1-3, EXTST For 0SX007	04/18/2021
		5140374	(NEIL) -LR-1A Diesel Generator Operability Surveillance	04/29/2021

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		5187694-01	EWP EM Perform Dynamic Baker Testing 2SX01PA – M	05/24/2023
		5212017	2A DG Trip during Cooldown Cycle on High Crankcase Pressure	12/09/2021
		5229220-01	OP (Sample) 2X01PA- Motor Bearings Inbrd and Outbrd	05/22/2023
		5258034-01	EWP MM Obtain Sample and Change Motor Bearing Lubricant	11/01/2023
		5258034-02	OP PMT – Verify Proper SX Pump/Motor Oil Level	11/01/2023
		5278453	2A SX Cooler 2A and 2B Fans Not Running	07/22/2022
		5409093	LR-SX Water Flush Through Unit 0 CC HX	11/16/2023
		5428651	(NEIL)-LR-2A Diesel Generator Operability Surveillance	01/04/2024
		588752	Perform Eddy Inspection	05/06/2004
		596391-01	EWP IM Perform Calibration of 2PSLSX-023	05/01/2018
		598967	2CC01A - HX Inspection per Generic Letter 89-13	04/27/2004
		602187	Perform 15yr PM and Overhaul	04/26/2010
		970004650	Inspect and Clean as Necessary U1 CC HX	01/17/1997
		970028806	Open and Clean Heat Exchanger	06/13/1997
		980065027	Inspect and Clean as Necessary U2 CC HX	10/22/1998
		B75423	Disassemble/Clean/Inspect 0CC01A Heat Exchanger	03/31/1990
		B96588	Disassemble/Clean/Inspect 0CC01A Heat Exchanger	09/03/1992