

UNITED STATES NUCLEAR REGULATORY COMMISSION REGION I 475 ALLENDALE RD, STE 102 KING OF PRUSSIA, PENNSYLVANIA 19406-1415

August 6, 2024

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

SUBJECT: CALVERT CLIFFS NUCLEAR POWER PLANT, UNITS 1 AND 2 – INTEGRATED INSPECTION REPORT 05000317/2024002 AND 05000318/2024002

Dear David Rhoades:

On June 30, 2024, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Calvert Cliffs Nuclear Power Plant, Units 1 and 2. On July 29, 2024, the NRC inspectors discussed the results of this inspection with Peter Moodie, Plant Manager, 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 I; the Director, Office of Enforcement; and the NRC Resident Inspector at Calvert Cliffs Nuclear Power Plant, Units 1 and 2.

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 I; and the NRC Resident Inspector at Calvert Cliffs Nuclear Power Plant, Units 1 and 2.

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

Sincerely,

Brice A. Bickett, Chief Projects Branch 3 Division of Operating Reactor Safety

Docket Nos. 05000317 and 05000318 License Nos. DPR-53 and DPR-69

Enclosure: As stated

cc w/ encl: Distribution via ListServ

SUBJECT: CALVERT CLIFFS NUCLEAR POWER PLANT, UNITS 1 AND 2 – INTEGRATED INSPECTION REPORT 05000317/2024002 AND 05000318/2024002 DATED AUGUST 6, 2024

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OFFICE	RI/DORS	RI/DORS	RI/DORS			
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DATE	8/6/2024	8/6/2024	8/6/2024			

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U.S. NUCLEAR REGULATORY COMMISSION Inspection Report

Docket Numbers:	05000317 and 05000318
License Numbers:	DPR-53 and DPR-69
Report Numbers:	05000317/2024002 and 05000318/2024002
Enterprise Identifier:	I-2024-002-0031
Licensee:	Constellation Energy Generation, LLC
Facility:	Calvert Cliffs Nuclear Power Plant, Units 1 and 2
Location:	Lusby, MD
Inspection Dates:	April 01, 2024 to June 30, 2024
Inspectors:	 G. Dipaolo, Senior Resident Inspector A. Tran, Resident Inspector E. Allen, Resident Inspector C. Borman, Health Physicist L. Cline, Senior Reactor Inspector
Approved By:	Brice A. Bickett, Chief Projects Branch 3 Division of Operating Reactor Safety

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting an integrated inspection at Calvert Cliffs Nuclear Power Plant, Units 1 and 2, in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC's program for overseeing the safe operation of commercial nuclear power reactors. Refer to https://www.nrc.gov/reactors/operating/oversight.html for more information.

List of Findings and Violations

Failure to Meet American Society of Mechanical Engineers (ASME) Inservice Test					
Requirements for Auxiliary Feedwater (AFW) Pump Quarterly Testing					
Cornerstone	Significance	Cross-Cutting	Report		
		Aspect	Section		
Mitigating	Green	[H.11] -	71111.24		
Systems	NCV 05000317,05000318/2024002-01	Challenge the			
	Open/Closed	Unknown			
A Green NRC-identified finding and associated non-cited violation (NCV) of 10 CFR					
50.55a(f)(4), "Inservice Testing Standards Requirement for Operating Plants," was identified					
when Constellation used uncalibrated flow meters with inadequate accuracy for the collection					

of inservice testing acceptance data of Units 1 and 2 AFW pumps. Specifically, since at least 2014 until April 26, 2024, uncalibrated general use measurement and test equipment (M&TE) flow meters with inadequate accuracy were used to collect acceptance data for ASME Operation and Maintenance of Nuclear Power Plant (OM Code) ISTB-3200, "Inservice Testing."

Additional Tracking Items

None.

PLANT STATUS

Unit 1 began the inspection period at rated thermal power and operated at or near full power for the remainder of the inspection period.

Unit 2 began the inspection period at rated thermal power and operated at or near full power for the remainder of the inspection period.

INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors performed 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 readiness for seasonal extreme weather conditions prior to the onset of seasonal high temperatures for the Units 1 and 2 emergency diesel generators (EDGs) and the intake structures on June 20, 2024.

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) Unit 1, 12 and 13 AFW pumps when the 11 AFW pump was out of service due to maintenance, May 6, 2024
- (2) Unit 2, 22 component cooling water train when the 21 component cooling heat exchanger was out of service due to inspection, May 23, 2024
- (3) Units 1 and 2, 0C diesel generator while the 1A EDG was out of service due to maintenance, June 20, 2024

71111.05 - Fire Protection

Fire Area Walkdown and Inspection Sample (IP Section 03.01) (5 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) Unit 2, cable spreading room and battery rooms, fire areas 17, 17A, and 17B, April 4, 2024
- (2) Unit 2, service water pump room, fire area 43, April 24, 2024
- (3) Unit 1, switchgear rooms and purge air supply room, fire areas 19, 19A, and 34, May 7, 2024
- (4) Unit 1, west electrical penetration room and east electrical penetration room, fire areas 32 and 33, May 8, 2024
- (5) Units 1 and 2, 0C diesel generator building, fire area DGB2, June 25, 2024

71111.06 - Flood Protection Measures

Flooding Sample (IP Section 03.01) (1 Sample)

(1) The inspectors evaluated internal flooding mitigation protections in the Common and Unit 1 electrical handholes/manholes, 1HH-25 and 1HH-26, associated with the 0C diesel generator and 1A EDG on June 20, 2024.

71111.07A - Heat Exchanger/Sink Performance

Annual Review (IP Section 03.01) (1 Sample)

The inspectors evaluated readiness and performance of:

(1) Unit 1, 11 component cooling water heat exchanger, May 28, 2024

71111.11Q - Licensed Operator Regualification Program and Licensed Operator Performance

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

(1) The inspectors observed and evaluated licensed operator performance in the main control room to remove and restore the 21A waterbox on May 30, 2024.

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

(1) The inspectors observed and evaluated a licensed operator simulator training scenario involving a technical specification instrument failure, balance of plant failures leading to a rapid power reduction and manual reactor trip, and a loss of all feedwater requiring primary feed and bleed cooling operations resulting in the declaration of a Site Area Emergency on April 30, 2024.

71111.12 - Maintenance Effectiveness

Maintenance Effectiveness (IP Section 03.01) (2 Samples)

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 2, AR 4735570, replacement of steam generator level instrument transmitters with Rosemount Model 3154 N series, June 24, 2024
- (2) Units 1 and 2, AR 4775750, battery resistance acceptance criteria, June 26, 2024

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) Units 1 and 2, elevated risk condition due to 2A EDG planned maintenance work, April 3, 2024
- (2) Unit 2, risk-informed completion time due to 2A EDG extended out of service time due to bearing failure during break-in run, April 9, 2024
- (3) Unit 1, elevated risk condition due to 12 battery modified discharge testing, May 21, 2024
- (4) Units 1 and 2, elevated risk condition due to 1A EDG maintenance window, June 18, 2024
- (5) Unit 1, online risk associated with placing turbine bypass controller in manual (AR 4774647), June 20, 2024

71111.15 - Operability Determinations and Functionality Assessments

Operability Determination or Functionality Assessment (IP Section 03.01) (5 Samples)

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

- (1) Units 1 and 2, AR 7460911, annual flex preventative maintenance pump testing needs evaluation, April 3, 2024
- (2) Unit 2, AR 4764224, 0-N2-270, safety injection tanks nitrogen supply containment isolation valve handwheel is stripped and spins freely, April 12, 2024
- (3) Unit 2, AR 4771443, 22 AFW pump main control room speed controller drift required setpoint change to achieve minimum required speed, May 29, 2024
- (4) Units 1 and 2, AR 4765036, halon bottles were not retested as required to determine adequate halon amount, May 29, 2024
- (5) Units 1 and 2, AR 4769839, Operability Evaluation 24-003, Revision 2, associated with degraded conditions of saltwater pumps due to corrosion, June 6, 2024

71111.24 - Testing and Maintenance of Equipment Important to Risk

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

Post-Maintenance Testing (PMT) (IP Section 03.01) (6 Samples)

- (1) WO C93957651, 2A EDG post-maintenance testing following periodic major overhaul, April 17, 2024
- (2) WO C93974057, 12 AFW post-maintenance testing following broken cable replacement, April 17, 2024
- (3) WO C93927594, 21 AFW pump post-maintenance testing following oil replacement, April 30, 2024
- (4) WO C93976190, 11 AFW pump post-maintenance testing following pump outboard bearing oil slinger ring repair, May 9, 2024
- (5) WO C93980446, 11 steam generator level channel 'A' (1PT1013A) post-maintenance testing following repairs due to causing reactor protection system pre-trips, June 27, 2024
- (6) WO C93900575, 1A EDG post-maintenance testing following biennial maintenance, June 28, 2024

Surveillance Testing (IP Section 03.01) (3 Samples)

- (1) Unit 1, STP-O-8B-1, "Test of 1B DG and 14 4KV Bus UV," Revision 37, May 14, 2024
- Unit 1, STP-M-350-1, "#12 Station Battery Quarterly Check," Revision 11, May 15, 2024
- (3) Unit 1, STP-M-550-1, "#12 Station Battery Modified Discharge Test," Revision 18, June 6, 2024

Inservice Testing (IST) (IP Section 03.01) (1 Sample)

(1) Unit 2, STP-O-05A22-22, "22 Auxiliary Feedwater Pump Quarterly Surveillance," Revision 9, May 10, 2024

RADIATION SAFETY

71124.03 - In-Plant Airborne Radioactivity Control and Mitigation

Permanent Ventilation Systems (IP Section 03.01) (2 Samples)

The inspectors evaluated the configuration of the following permanently installed ventilation systems:

- (1) Unit 1, main vent
- (2) Unit 2, main vent

Temporary Ventilation Systems (IP Section 03.02) (1 Sample)

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

(1) High-efficiency particulate air ventilation unit in the reactor coolant pump seal decontamination room

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

(1) The inspectors evaluated Constellation's use of respiratory protection devices.

Self-Contained Breathing Apparatus for Emergency Use (IP Section 03.04) (1 Sample)

(1) The inspectors evaluated Constellation's use and maintenance of self-contained breathing apparatuses.

71124.04 - Occupational Dose Assessment

Source Term Characterization (IP Section 03.01) (1 Sample)

(1) The inspectors evaluated licensee performance as it pertains to radioactive source term characterization.

External Dosimetry (IP Section 03.02) (1 Sample)

(1) The inspectors evaluated how the licensee processes, stores, and uses external dosimetry.

Internal Dosimetry (IP Section 03.03) (2 Samples)

The inspectors evaluated the following internal dose assessments:

- (1) Observed Whole Body Count, WBC#2024-06
- (2) Reviewed internal dose assessment of worker who received an intake AR 4557133

Special Dosimetric Situations (IP Section 03.04) (2 Samples)

The inspectors evaluated the following special dosimetric situations:

- (1) Licensee's implementation of requirements to manage radiation protection of three declared pregnant workers
- (2) Neutron dosimetry program and assessment

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, 2023 March 31, 2024
- (2) Unit 2, April 1, 2023 March 31, 2024

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

- (1) Unit 1, April 1, 2023 March 31, 2024
- (2) Unit 2, April 1, 2023 March 31, 2024

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

- (1) Unit 1, April 1, 2023 March 31, 2024
- (2) Unit 2, April 1, 2023 March 31, 2024

71152A - Annual Follow-Up Problem Identification and Resolution

Annual Follow-Up of Selected Issues (Section 03.03) (1 Sample)

 Evaluation and corrective actions to address NCV 05000317, 05000318/2022010-02, Failure to Evaluate Changes to the Halon Suppression System Tank Weight Verification Surveillance Procedure

71152S - Semiannual Trend Problem Identification and Resolution

Semiannual Trend Review (Section 03.02) (1 Sample)

(1) The inspectors reviewed Constellation's corrective action program for potential trends that might be indicative of a more significant safety issue.

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

Event Follow-Up (IP Section 03.01) (2 Samples)

- (1) The inspectors evaluated AR 4772631, Common, fuel assembly movement error in spent fuel pool on May 7, 2024.
- (2) The inspectors evaluated AR 4774647, Unit 1, entered AOP-7K, "Overcooling Event in Mode One or Two," on May 16, 2024.

INSPECTION RESULTS

Failure to Meet American Society of Mechanical Engineers (ASME) Inservice Test Requirements for Auxiliary Feedwater (AFW) Pump Quarterly Testing					
Cornerstone	Significance	Cross-Cutting	Report		
		Aspect	Section		
Mitigating	Green	[H.11] -	71111.24		
Systems	NCV 05000317,05000318/2024002-01	Challenge the			
	Open/Closed	Unknown			
A Green NRC-identified finding and associated non-cited violation (NCV) of 10 CFR					

50.55a(f)(4), "Inservice Testing Standards Requirement for Operating Plants," was identified when Constellation used uncalibrated flow meters with inadequate accuracy for the collection of inservice testing acceptance data of Units 1 and 2 AFW pumps. Specifically, since at least 2014 until April 26, 2024, uncalibrated general use measurement and test equipment (M&TE) flow meters with inadequate accuracy were used to collect acceptance data for ASME Operation and Maintenance of Nuclear Power Plant (OM Code) ISTB-3200, "Inservice Testing."

<u>Description</u>: During the review of completed AFW pump quarterly surveillance tests, the inspectors noted that the calibration due dates for ultrasonic flow meters installed on the common recirculation lines were recorded as "N/A" or not applicable. The Units 1 and 2 AFW pumps (11, 12, 13, 21, 22, and 23) are tested quarterly using licensee procedure STP-O-

005A11-1, 5A12-1, 5A13-1, 5A21-2, 5A22-2, and 5A23-2, "Auxiliary Feedwater Pump Quarterly Surveillance Test," to meet the pump test requirements of the ASME OM Code. The inservice testing program code of record for Calvert Cliffs was the 2012 Edition of ASME OM Code.

The ultrasonic flow meter transducers were permanently installed on the Units 1 and 2 AFW common recirculation lines in the 2014-time frame for the purpose of collecting inservice testing flow data. During pump tests, a flow meter is connected to the installed transducer for the purpose of collecting pump flow data. Pump performance is determined by calculating total dynamic head which is a function of pump flow, speed, and differential pressure.

The inspectors noted that the ultrasonic flow meters (and transducers) were not in Constellation's M&TE program and not periodically calibrated. Based on the inspectors' questions, Constellation determined that the ultrasonic flow meters had an accuracy of +/-2-5% based on the manufacturer's literature. ASME OM Code, ISTB-3510, "Data Collection-General," required flow rate instrument accuracy of +/- 2% for inservice testing of pumps. ISTA-4200, "Calibration," required instruments and test equipment used in the testing program to be calibrated and controlled in accordance with the owner's administrative procedures. MA-AA-716-040, "Control of Portable Measurement and Test Equipment Program," Revision 16, required that general use M&TE is not certified, meaning not calibrated to a traceable national standard or physical constant, shall not be used for acceptance data or quality related measurements.

Corrective Actions: Constellation performed a review of AFW pump flow rate and total dynamic head over the past two years for pump inservice testing and concluded that there were no significant changes in pump performance and that the Units 1 and 2 AFW pumps remained operable. An extent-of-condition review determined that similar use of uncalibrated flow meters with an accuracy outside of the ASME OM Code requirements (+/- 2%) also applied to inservice testing of the Units 1 and 2 component cooling water, service water, and chemical and volume control charging pumps.

Constellation removed the uncalibrated flow meters/transducers from the Units 1 and 2 AFW common recirculation lines and sent them to Constellation PowerLabs to check their accuracy. PowerLabs determined that the accuracy of the flow meters was outside of +/- 2%; 5 of 6 flow points on the Unit 1 flow meter were outside of +/- 2% and 6 of 6 flow points on the Unit 2 flow meter were outside of +/- 2%.

Corrective Action References: ARs 4769842, 4770697, 4771568, 4773509, 4780832, 4780835, and 4780839

Performance Assessment:

Performance Deficiency: The inspectors determined that the failure to ensure that flow rate M&TE was calibrated and had the required instrument accuracy for the performance of pump inservice testing was a performance deficiency that was within Constellation's ability to foresee and correct and should have been prevented. Specifically, since at least 2014, flow rate measurements taken to support quarterly inservice testing of the Units 1 and 2 AFW pumps utilized flow rate instruments that were not calibrated and did not have the required instrument accuracy.

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, the failure to implement the ASME OM Code for inservice testing of pumps for test instrument calibration and accuracy requirements could affect the ability to assess pump operational readiness.

Significance: The inspectors assessed the significance of the finding using IMC 0609 Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." Using Exhibit 2, Section A, the inspectors determined the finding to be of very low safety significance, Green, because it did not represent a loss of the probabilistic risk assessment function of any of the trains of systems involved.

Cross-Cutting Aspect: H.11 - Challenge the Unknown: Individuals stop when faced with uncertain conditions. Risks are evaluated and managed before proceeding. Specifically, personnel involved in the performance and/or review of quarterly inservice tests (i.e., maintenance, operations, and engineering) did not question the use of M&TE with no calibration due dates for the collection of test acceptance data. Enforcement:

Violation: 10 CFR 50.55a(f)(4), "Inservice Testing Standards Requirement for Operating Plants," required "Throughout service life of a pressurized water-cooled nuclear power facility, pumps and valves that are within the scope of the ASME OM Code must meet the inservice test requirement set forth in the ASME OM Code." The current inservice testing program code of record for Calvert Cliffs is the 2012 Edition of the ASME OM Code. ASME OM Code (2012 Edition), ISTB-3510 required flow rate instrument accuracy of +/- 2% for inservice testing of pumps. ISTA-4200, "Calibration," required "All instruments and test equipment used in performing the examination and testing program shall be calibrated and controlled in accordance with the Owner's administrative procedures or a qualified assurance program approved by the Owner." MA-AA-716-040, "Control of Portable Measurement and Test Equipment (M&TE) Program," Revision 16, Section 2.5, required "General Use M&TE: General Use M&TE is not certified and shall not be used for acceptance data or quality related measurements."

Contrary to 10 CFR 50.55a(f)(4), since at least 2014 until April 26, 2024, when the issue was entered into the corrective action program and the pumps were assessed for operability, uncalibrated general use M&TE flow meters with inadequate accuracy were used to collect acceptance data for Units 1 and 2 AFW pumps.

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

Minor Performance Deficiency

71152A

Failure to Accurately Update the Halon Cylinder Data Book in February 2024

Minor Performance Deficiency: Technical Evaluation, ECP-23-00063, concluded that the new methodology used to determine the weight of halon in a cylinder based on level was considered equivalent to weighing the cylinder on a scale. The conclusion was based on testing that confirmed the accuracy of the new methodology and the implementation of procedure improvements discussed in the evaluation. As part of the review, the technical evaluation determined that Constellation did not have an adequate method to track halon

cylinder locations and weights. Between 2019 and 2022, some of the halon cylinders had been refilled by the vendor to a different fill weight and/or shifted to different plant locations without being accurately tracked. To ensure cylinder weights and location were accurately tracked, the technical evaluation stated that the "Halon Data Book and/or Cylinder Tracker" is to be updated after every STP-F-492-0, "Halon System Cylinder Checks," performance. Revision 13 of STP-F-492-0 required that the Halon Cylinder Data book is updated after completion of the testing.

The inspectors reviewed the Halon Cylinder Data book in February 2024 after the most recent STP-F-492-0 performance and identified that the design weight and minimum halon weight for three cylinders previously installed in the cable spreading room had not been updated to reflect the current system configuration. This was determined to be a performance deficiency. As a result, the inspectors concluded that Constellation did not complete adequate corrective actions to address the inadequate cylinder tracking concern identified by the technical evaluation.

The inspectors confirmed that the Halon Cylinder Data book identified the cylinder weights as measured during the most recent January and February 2024 performance and that none of the recorded weights in the Halon Cylinder Data book were below the minimum required weight for the affected cylinders. Constellation entered this issue into the corrective action program as AR 4765036.

Screening: The inspectors determined the performance deficiency was minor. Surveillance procedure STP-F-492 identified the correct minimum weight for each cylinder and none of the recorded weights in the Halon Cylinder Data book were below the minimum required weight for the affected cylinders.

Minor Performance Deficiency

71152A

Failure to Repeat Weight Measurements for Halon Fire Suppression System Cylinders in Accordance with Surveillance Test Procedure

Minor Performance Deficiency: NCV 05000317,05000318/2022010-02 (ADAMS Accession No. ML22353A560) documented Constellation's failure to evaluate the impact of changes it had made to the method it used to determine the weight of halon contained in each cylinder used in the halon suppression system. To address the NCV, Constellation completed Technical Evaluation ECP-23-00063 which evaluated the functional equivalence of the alternative level measurement methodology used to determine the weight of the halon in each cylinder. The evaluation identified several factors that impacted the accuracy of Constellation's level measurement methodology and directed procedure revisions to minimize the impact of some of these factors on the accuracy of the test results. As part of the revisions, the evaluation stated the procedure would establish an expected level range for the cylinders and that any cylinder level determined to be outside that expected range was considered potentially inaccurate. In those instances, the procedure would direct the cylinder weight to be reconfirmed and if possible, the cylinder weighed.

In January and February 2024, the inspectors observed portions of the performance of the new level measurement methodology and reviewed the completed surveillance procedure, Work Order (WO) C93885256. STP-F-492-0, "Halon System Cylinder Checks," Revision 13, implemented the changes directed by ECP-23-00063. The revised procedure required that when the Portalevel calculated weight of halon in a cylinder was outside of +/- 5 lbs. from the

previously determined weight for the cylinder recorded in the Halon Cylinder Data book, the level measurement and calculation had to be repeated, or the cylinder weighed on a scale. The inspectors identified that in January and February 2024, the Portalevel calculated weights for 31 cylinders were outside of +/- 5 lbs. from the previously determined weights for the cylinders, but Constellation did not repeat the level measurement and weight calculation or weigh the affected cylinders using a scale. This was determined to be a performance deficiency.

For the January and February 2024 performance of STP-F-492-0, Constellation applied "N/A" to each step that directed repeating the level measurement and calculation or weighing the cylinder. The inspectors identified that procedure HU-AA-104-101, "Procedure Use and Adherence," stated that "N/A" could be used to document completion of a procedure step when: the condition is not applicable as described by the conditional step; the procedure specifically stated that "N/A" can be used; or the procedure was designated for partial performance. The inspectors identified that these conditions did not apply for the January and February 2024 performance of STP-F-492-0 and operators inappropriately used "N/A" to document completion of those steps. This was determined to be a performance deficiency. The inspectors noted that the Portalevel calculated weights for the affected 31 cylinders were all greater than the minimum design requirement of 95% of the cylinder design fill weight.

Based on the inspector-identified discrepancies, Constellation reviewed the February 2024 performance of STP-F-492-0 and concluded that the first-time performance should have been designated a partial performance to allow the re-measurement steps to be N/A'd. Constellation's technical evaluation of the Portalevel method (ECP-23-00063) completed in June 2023 concluded that halon weights determined using the Portalevel were generally conservative but recommended that Portalevel results be compared to previous results to identify adverse performance trends using the new measurement method. To identify performance trends, Constellation concluded measurements should only be compared to previous results using the same method (Portalevel with the PortaSteele calculator or a scale). Therefore, the Portalevel measurements obtained under WO C93885256 will be compared to the next surveillance performance to identify any trending issues. Constellation issued AR 4765036 to track corrective actions for the performance issues associated with the identified performance deficiencies.

Screening: The inspectors determined the performance deficiency was minor. The inspectors determined that operators' failure to repeat halon cylinder level measurements and inappropriate use of "N/A" for procedure steps during the performance of STP-F-492-0 were performance deficiencies. The inspectors determined the performance deficiencies were minor because Constellation determined that the halon system would still meet the design requirement to extinguish a fire or keep the affected area tenable until the fire brigade arrived for final extinguishment.

Observation: Evaluation and Corrective Actions for Constellation's Failure to	71152A			
Evaluate Changes to the Halon Suppression System Tank Weight Verification				
Surveillance Procedure				
The inspectors reviewed Constellation's evaluation and corrective actions associated with				
NCV 05000317,05000318/2022010-02, "Failure to Evaluate Changes to the Halon				
Suppression System Tank Weight Verification Surveillance Procedure." The halon system				
provides fire suppression for fires affecting equipment located in the Units 1 and 2 cable				
spreading rooms, 27-foot and 45-foot switchgear rooms, data acquisition system co	omputer			

rooms, and cable chase 1C and 2C. The equipment in these areas is relied upon to achieve and maintain safe and stable conditions.

The inspectors reviewed the work group evaluation, the halon suppression system cylinder weight verification procedure change technical evaluation, and Constellation's identified corrective actions for AR 4537628. The review also included observation of the performance of the halon system tank weight verification in January and February 2024.

The licensee completed a technical evaluation of the halon suppression system cylinder weight verification procedure change in response to the NCV. The evaluation identified several factors that contributed to inaccuracies in halon cylinder weight measurements collected at CCNPP between 2019 and 2022.

- 1. Lack of training on the use of the Coltraco Portalevel instrument
- 2. Inconsistency in reading and recording data using the Coltraco Portalevel instrument
- 3. Inadequate method to track halon cylinders
- 4. Recording inaccurate cylinder temperatures during performance of the verification
- 5. Math errors during the level to weight conversion

The inspectors reviewed corrective actions completed to address these factors. Corrective actions to address the causes were completed or planned and appeared to be timely. However, the inspectors identified one minor violation and one minor performance deficiency documented above.

Observation: Semi-Annual Trend Review	71152S
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The inspectors performed a semi-annual review to identify trends that might indicate the existence of a more significant safety issue, including issues that may have been documented outside the corrective action program.

Inspectors identified an adverse trend associated with Operations' review and approval of completed documentation not identifying discrepancies or non-compliances that were within their ability to identify. Inspector-identified examples included:

- Engineering presented Operations with Operability Evaluation 24-004, Revisions 0 and 1, associated with degraded conditions of the Units 1 and 2 saltwater pumps due to corrosion. Operations' review and acceptance of Op Eval 24-004 did not identity that key assumptions used in the evaluation for the basis for the pumps' operability were inaccurate and unsubstantiated. The inspectors determined that some of these key assumptions, such as the structural soundness of bolts that were severely corroded, were within Operations' ability to identify. Additional details are documented in FIN 05000317, 05000318/2024010-01, "Technical and Engineering Assumptions Not Verified in Saltwater Pump Operability Evaluation."
- Operations' review of STP-F-492-0, "Halon System Cylinder Check," performed in January and February 2024, did not identify steps were marked "N/A" contrary to HU-AA-104-101, "Procedure Use and Adherence." Additional details are documented in Minor Violation, "Failure to Repeat Weight Measurements for Halon Fire Suppression System Cylinders in Accordance with Surveillance Test Procedure," in the Results Section of this report.
- Operations' review of completed quarterly inservice tests for the Units 1 and 2 AFW pumps did not question or identify the inappropriate use of M&TE with no calibration due date for the collection of test acceptance data which was contrary to site

procedure, MA-AA-716-040, "Control of Portable Measurement and Test Equipment Program." Additional details are documented in NCV 05000317, 0500318/2024002-01, "Failure to Meet American Society of Mechanical Engineers Inservice Test Requirements for Auxiliary Feedwater Pump Quarterly Testing," in the Results Section of this report.

Constellation acknowledged the adverse trend, identified additional similar examples, and entered the trend into the corrective action program as AR 4786540. Constellation planned to evaluate the adverse trend to determine the cause and implement corrective actions. Each of the above issues were entered into the corrective action program as documented in referenced report section or NCVs. The inspectors independently evaluated the adverse trend in accordance with IMC 0612, Appendix B and Appendix E guidance, and did not identify any findings or violations of more than minor significance.

EXIT MEETINGS AND DEBRIEFS

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

- On July 29, 2024, the inspectors presented the integrated inspection results to Peter Moodie, Plant Manager, and other members of the licensee staff.
- On May 9, 2024, the inspectors presented the in-plant airborne radioactivity control and the mitigation and occupational dose assessment inspection results to Heath Crockett, Director of Organizational Performance and Regulatory, and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection	Туре	Designation	Description or Title	Revision or
Procedure	-			Date
71111.01	Corrective Action	AR 04781984	NRC ID Door 547 Will Not Close on its Own	06/20/2024
	Documents	AR 04785647	NRC ID: Discrepancy Between FCMS and FBM EDG Room	07/08/2024
	Resulting from		Temperature Alarms	
	Inspection			
	Procedures	OI-21B-1	1B Diesel Generator	03000
71111.04	Procedures	OI-21C	0C Diesel Generator	03301
		OI-32A-1	Auxiliary Feedwater System	04600
71111.05	Corrective Action	AR 4772809	NRC-Identified: Fire Safe Shutdown Ladder Not Staged at	05/08/2024
	Documents		Fire Brigade Locker	
	Resulting from			
	Inspection			
71111.07A	Corrective Action	AR 4771592	11 Component Cooling Water Heat Exchanger Blisters on	05/02/2024
	Documents		Rubber Lining	
	Procedures	CC-02	Component Cooling Water Heat Exchanger Tube Cleaning	00600
		ER-AAA-340-	Service Water Heat Exchanger Inspection Guide	11
		1002		
71111.13	Procedures	WC-AA-101	On-Line Work Control Process	32
		WC-AA-101-1006	On-Line Risk Management and Assessment	4
71111.15	Corrective Action	AR 4770887	NRC-Identified: Revision to OPDC Evaluation of AR	04/30/2024
	Documents		4717188	
	Resulting from			
	Inspection			
71111.24	Corrective Action	AR 4771443	22 Auxiliary Feedwater Pump Speed Low	05/02/2024
	Documents	AR 4773336	11 Auxiliary Feedwater Pump Outboard Bearing Oil Level	05/10/2024
			Modification	
	Corrective Action	AR 4769842	NRC-Identified: Ultrasonic Flow Meter for Auxiliary	04/26/2024
	Documents		Feedwater Not Calibrated	
	Resulting from	AR 4775750	STP-M-550-1 Acceptance Criteria Needs to be Changed	05/22/2024
	Inspection			<u> </u>
71151	Corrective Action	AR 4772868	NRC ID: IRIS Indicator Data Forms Lack SFAM Approval	<u> </u>
	Documents	AR 4772874	NRC ID: MSPI Action Not Generated Per Procedure	05/08/2024
	Resulting from			

Inspection Procedure	Туре	Designation	Description or Title	Revision or Date
	Inspection			