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

April 24, 2023

David P. Rhoades
Senior Vice President
Constellation Energy Generation, LLC
President & 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 05000317/2023001 AND 05000318/2023001

Dear David Rhoades:

On March 31, 2023, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Calvert Cliffs Nuclear Power Plant, Units 1 and 2. On April 13, 2023, the NRC inspectors discussed the results of this inspection with Patrick Navin, Site Vice President, and other members of your staff. The results of this inspection are documented in the enclosed report.

Three findings of very low safety significance (Green) are documented in this report. Two 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 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 or a finding not associated with a regulatory requirement in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region 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 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* (CFR) 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

Brice A. Bickett

Digitally signed by Brice A. Bickett
Date: 2023.04.24 12:49:24 -04'00'

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

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SUBJECT: CALVERT CLIFFS NUCLEAR POWER PLANT, UNITS 1 AND 2 – INTEGRATED INSPECTION REPORT 05000317/2023001 AND 05000318/2023001 DATED APRIL 24, 2023

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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:	05000317/2023001 and 05000318/2023001
Enterprise Identifier:	I-2023-001-0033
Licensee:	Constellation Energy Generation, LLC
Facility:	Calvert Cliffs Nuclear Power Plant
Location:	Lusby, MD
Inspection Dates:	January 1, 2023 to March 31, 2023
Inspectors:	G. Dipaolo, Senior Resident Inspector E. Eve, Senior Reactor Inspector P. Finney, Senior Project Engineer M. Henrion, Senior Health Physicist S. Obadina, Reactor Operations Engineer
Approved By:	Brice A. Bickett, Chief Projects Branch 3 Division of Operating Reactor Safety

Enclosure

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 Adhere to the Requirements of a Transient Combustible Exclusion Zone			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000317/2023001-01 Open/Closed	[H.9] - Training	71111.05
A Green NRC-identified finding and non-cited violation (NCV) of the Unit 1, Renewed Facility Operation License, Condition 2.E, was identified for failure to adhere to the requirements of a transient combustible exclusion zone in accordance with the transient combustible control procedure. Specifically, from January 3, 2023 to January 5, 2023, Constellation failed to identify the transient combustible and ensure it was constantly attended, placed in an approved storage location, or had a transient combustible permit generated.			

Failure to Follow Instrument Performance Trending Process			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green FIN 05000318,05000317/2023001-02 Open/Closed	[P.2] - Evaluation	71111.12
A Green NRC-identified finding was identified for Constellation's failure to determine and document whether as-found out-of-tolerance (OOT) instrument calibration data exceeded an "allowable value" (AV) in the associated action request (AR) per ER-AA-520, "Instrument Performance Trending." As a result, the determination of past operability, reportability, whether the failure constituted a maintenance rule functional failure, and whether other appropriate corrective actions (e.g., replacement, repair, change in calibration frequency, etc.) were warranted, were not considered.			

Failure to Include Instructions to Perform an Electrical Isolation Test in Work Order			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000317/2023001-03 Open/Closed	[H.5] - Work Management	71111.15
A Green NRC-identified finding and NCV of Technical Specification 5.4.1 was identified for Constellation's failure to provide adequate written instructions for the performance of maintenance. Specifically, the work order to repair a through-wall leak on the Unit 1 saltwater system did not provide a task or steps to perform an electrical isolation test as required by the applicable design drawing. This allowed dissimilar metal galvanic corrosion to go undetected and contributed to a through-wall leak on the same component on August 25, 2022.			

Additional Tracking Items

None.

PLANT STATUS

Unit 1 operated at or near rated thermal power for the entire inspection period.

Unit 2 began the inspection period at rated thermal power and operated at or near full power until February 10, 2023, when the unit entered an end-of-cycle power coastdown. On February 20, 2023, operators shutdown the unit, from 83 percent power, for a planned refueling outage. Operators commenced a unit startup on March 12, 2023, and returned the unit to 100 percent power on March 14, 2023. The unit remained at or near rated thermal 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

71111.04 - Equipment Alignment

Partial Walkdown (IP Section 03.01) (3 Samples)

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

(1) Unit 1, 11 emergency core cooling system air cooler train when 12 emergency core cooling system air cooler was out of service for maintenance, January 11, 2023
(2) Units 1 and 2, 11 and 12 spent fuel pool cooling trains during Unit 2 defueled window, February 28, 2023
(3) Unit 2, 22 auxiliary feedwater pump following restoration from testing in Mode 3, March 11, 2023

71111.05 - Fire Protection

Fire Area Walkdown and Inspection (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 1, switchgear and purge air rooms, fire areas 19, 19A, and 34, January 9, 2023
(2) Unit 2, service water pump room, fire area 40, January 10, 2023

(3) Unit 2, containment, fire area 2CNMT, March 1, 2023
(4) Unit 1, turbine building, fire area TB, March 3, 2023
(5) Unit 2, turbine building, fire area TB, March 3, 2023

Fire Brigade Drill Performance (IP Section 03.02) (1 Sample)

(1) The inspectors evaluated the on-site fire brigade training and performance during an unannounced fire drill in the south service building electric room on January 21, 2023.

71111.06 - Flood Protection Measures

Flooding (IP Section 03.01) (1 Sample)

The inspectors evaluated internal flooding mitigation protections in the:

(1) Unit 1, electrical manholes 1MH9, 1MH10, 1MH22, and 1MH23 associated with the 1A emergency diesel generator, January 30, 2023

71111.08P - Inservice Inspection Activities (PWR)

PWR Inservice Inspection Activities - Nondestructive Examination and Welding Activities (IP Section 03.01) (1 Sample)

The inspectors verified that the following nondestructive examination and welding activities were performed appropriately:

(1)
- Remote observation of automated phased array ultrasonic testing of dissimilar metal weld, 2-CV-2021-34, work order (WO) C93819993-380
- Direct observation of manual ultrasonic testing of main steam line welds, 6-MS-2008-2 and 6-MS-2008-3, WO C93819980-140
- Document review of visual examination for leakage of pressurizer side instrument tap with mechanical seal assembly installed, WO C93819987-320
- Document review and independent walk down of general visual examination of the containment liner, WO 93732456-250

PWR Inservice Inspection Activities - Vessel Upper Head Penetration Inspection Activities (IP Section 03.02) (1 Sample)

The inspectors verified that the license conducted the following vessel upper head penetration inspections and addressed any identified defects appropriately:

(1)
- In-process observation of bare metal visual examination of the reactor pressure vessel head, WO C93819992-100

PWR Inservice Inspection Activities - Boric Acid Corrosion Control Inspection Activities (IP Section 03.03) (1 Sample)

The inspectors verified the licensee is managing the boric acid corrosion control program through a review of the following evaluations:

(1)
- Unit 2, AR 4557143, white residue identified at reactor vessel head azimuth 195
- Unit 2, AR 4557632, white residue identified at reactor vessel head penetration 22
- Unit 2, AR 4456195, dry boric acid identified at mechanical nozzle seal assembly, B-006-03

71111.11Q - Licensed Operator Requalification Program and Licensed Operator Performance

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

(1) The inspectors observed licensed operator performance in the control room during the shutdown of Unit 2 for the refueling outage on February 20, 2023.

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

(1) The inspectors observed licensed operator training involving shutdown and startup activities on January 27, 2023.

71111.12 - Maintenance Effectiveness

Maintenance Effectiveness (IP Section 03.01) (1 Sample)

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

(1) Unit 2, AR 4228235, instrument OOT report for 2019-2021 (Unit 2, Cycle 23), March 27, 2023

71111.13 - Maintenance Risk Assessments and Emergent Work Control

Risk Assessment and Management (IP Section 03.01) (4 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) Unit 1, elevated risk condition due to 11B service water heat exchanger cleaning, January 5, 2023
(2) Unit 1, elevated risk condition due to 12 emergency core cooling system pump room air cooler out of service for maintenance, January 12, 2023
(3) Unit 2, risk informed completion time implementation due to auxiliary feedwater actuation system channel ZF 21 steam generator low level inoperability, February 6, 2023
(4) Unit 2, shutdown safety plan risk management actions from pressurizer manway removal to refueling cavity flood up, March 13, 2023

71111.15 - Operability Determinations and Functionality Assessments

Operability Determination or Functionality Assessment (IP Section 03.01) (8 Samples)

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

(1) Unit 2, AR 4536413, 22A service water heat exchanger saltwater strainer flush piping (2-LJ1-2051) through-wall leak, January 10, 2023
(2) Units 1 and 2, emergency diesel generator operability during surveillance testing, February 2, 2023
(3) Unit 1, AR 4545306, 11 saltwater pump outboard horizontal vibration in alert range, February 16, 2023
(4) Unit 1, AR 4518745, 12B service water heat exchanger leak from flange on inlet piping, February 17, 2023
(5) Unit 2, AR 45595480, 'D' wide range nuclear instrument channel check reading low during pre-startup, March 14, 2023
(6) Unit 1, AR 4561840, pre-trip and trip setpoints for asymmetric steam generator transient function OOT, March 17, 2023
(7) Unit 2, AR 4557432 and 4557433, 2-AFW-4520-CV and 2-AFW-4521-CIV, auxiliary feedwater block valves, failed to open while performing PE-2-102-10-O-R, "Remote Shutdown Panel Operation Verification," March 28, 2023
(8) Unit 2, AR 4390389, 21 auxiliary feedwater pump operability evaluation associated with turbine driven pump speed control instrument found OOT, March 28, 2023

71111.20 - Refueling and Other Outage Activities

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

(1) The inspectors evaluated Unit 2 refueling outage activities from February 20, 2023 to March 12, 2023.

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) (5 Samples)

(1) Unit 1, C93893966, 11 saltwater pump troubleshoot and repair due to low developed differential pressure testing, February 28, 2023
(2) Unit 2, C93900450 and C93900467, troubleshoot and repair turbine driven auxiliary feedwater pump block valves to 21 steam generator testing, March 9, 2023
(3) Unit 2, C93801513, 22A service water heat exchanger flushing valve replacement and testing, March 8, 2023
(4) Unit 2, C93896621, auxiliary feedwater actuation system channel ZF module optical isolator replacement and testing, March 13, 2023
(5) Unit 2, C93797935, 22 auxiliary feedwater pump governor valve maintenance and testing, March 29, 2023

Surveillance Testing (IP Section 03.01) (4 Samples)

(1) Unit 1, STP-M-211-1, "Secondary CEA Position Display Out of Sequence, Deviation, and Power Dependent Insertion Limit Alarm Functional Check," Revision 02100, February 1, 2023
(2) Unit 2, STP-O-4B-2, "B Train Integrated Engineered Safety Features Test," Revision 35, March 7, 2023
(3) Unit 2, M-525AT-2, "Auxiliary Feedwater Actuation System Steam Generator Level Transmitter Calibration Checks/Calibration," Revision 00800, March 8, 2023
(4) Unit 2, STP-M-003A-0, "Online Main and Offsite Steam Safety Valve Testing," Revision 01100, March 31, 2023

Inservice Testing (IST) (IP Section 03.01) (2 Samples)

(1) Unit 2, STP-O73KB-2, "B Train Containment Spray Pump and Check Valve Quarterly Operability Test," Revision 0, January 20, 2023
(2) Unit 1, STP-O73A2-1, "B Train Saltwater Pump and Check Valve Quarterly Test," Revision 7, February 7, 2023

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

(1) Unit 2, STP-O-108D10-2, "Containment Penetration 10 Local Leak Rate," Revision 2, February 24, 2023

RADIATION SAFETY

71124.01 - Radiological Hazard Assessment and Exposure Controls

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

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

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

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

Contamination and Radioactive Material Control (IP Section 03.03) (3 Samples)

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

(1) Worker protective clothing practices for Unit 2 containment entry and exit during the Unit 2 refueling outage
(2) Surveying of potentially contaminated material leaving the radiological controlled area through small article monitors and frisking by hand
(3) Workers exiting the radiological controlled area checkpoint and technician response to the alarming of personnel contamination monitors

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

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

(1) RWP CC-2-23-00613
(2) RWP CC-2-23-00510
(3) RWP CC-2-23-00503
(4) RWP CC-2-23-00505

High Radiation Area and Very High Radiation Area Controls (IP Section 03.05) (4 Samples)

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

(1) Unit 2 containment: locked high radiation area on 45' elevation
(2) Unit 2 auxiliary building: boron meter enclosure
(3) Unit 2 auxiliary building: degasifier filter room
(4) Unit 1 auxiliary building: miscellaneous receiver tank room

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

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

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

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

(1) Unit 1, January 1, 2022 through December 31, 2022
(2) Unit 2, January 1, 2022 through December 31, 2022

BI02: RCS Leak Rate Sample (IP Section 02.11) (2 Samples)

(1) Unit 1, January 1, 2022 through December 31, 2022
(2) Unit 2, January 1, 2022 through December 31, 2022

71152A - Annual Follow-up Problem Identification and Resolution

Annual Follow-up of Selected Issues (Section 03.03) (2 Samples)

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

(1) Unit 2, September 2022 inadvertent safety injection actual signal (SIAS) actuation, during the week of March 27, 2023

(2) Corrective actions and extent-of-condition review resulting from boric acid leakage identified on four Unit 1 pressurizer mechanical nozzle seal assemblies during the spring 2022 refueling outage.

INSPECTION RESULTS

<table>
<tr><td colspan="4">Failure to Adhere to the Requirements of a Transient Combustible Exclusion Zone</td></tr>
<tr><td>Cornerstone</td><td>Significance</td><td>Cross-Cutting Aspect</td><td>Report Section</td></tr>
<tr><td>Mitigating Systems</td><td>Green
NCV 05000317/2023001-01
Open/Closed</td><td>[H.9] - Training</td><td>71111.05</td></tr>
<tr><td colspan="4">A Green NRC-identified finding and non-cited violation (NCV) of the Unit 1, Renewed Facility Operation License, Condition 2.E, was identified for failure to adhere to the requirements of a transient combustible exclusion zone in accordance with the transient combustible control procedure. Specifically, from January 3, 2023 to January 5, 2023, Constellation failed to identify the transient combustible and ensure it was constantly attended, placed in an approved storage location, or had a transient combustible permit generated.</td></tr>
<tr><td colspan="4">Description: On January 5, 2023, NRC inspectors performed a fire walkdown of the Unit 1 45’ switchgear room. During the walkdown, three sets of electrical safety personnel protective equipment (PPE) (i.e., arc flash coats and protective hoods with face shielding) were found on a coat hanger in the room. The inspectors notified operators because no transient combustible permit was identified in the room. The station generated AR 4546736 documenting the PPE as a minor transient combustible in accordance with OP-AA-201-009, “Control of Transient Combustible Material,” Revision 28. The inspectors also identified foreign material exclusion (FME) covers associated with the storage of spare breakers and racked out breakers. OP-AA-201-009 defines minor transient combustibles as ordinary combustible materials inherent to everyday work activities and include PPE, FME covers, buckets, etc. However, the switchgear rooms are classified as transient combustible exclusion zones.

OP-AA-201-009 defines a transient combustible exclusion zone as an area in the plant in which transient combustible material is prohibited unless constantly attended. In addition, OP-AA-201-009 step 4.4.3 states that for those zones, all transient combustible material must be either constantly attended, contained in closed metal containers with closed metal lids/openings, or have a transient combustible permit. Constellation removed the PPE and entered the issue into the corrective action program as AR 4546736.

The inspectors reviewed Constellation's assessment and questioned how long the material had been in the room. Constellation stated that the PPE had been in the room since at least January 3, 2023. This provided multiple opportunities during operator rounds for Constellation personnel to identify and remove the material from the room.

The inspectors reviewed the Renewed Facility Operating License and noted that Condition 2.E, stated, in part, that Constellation Energy Generation, LLC shall implement and maintain in effect all provisions of the approved fire protection program that comply with 10 CFR 50.48(a) and 10 CFR 50.48(c), as specified in the license amendment request dated September 24, 2013; as supplemented by letter dated August 13, 2015, and as approved in the NRC safety evaluation dated August 30, 2016. On September 24, 2013, Constellation submitted a licensee amendment request to transition to 10 CFR 50.48(c) - NFPA 805</td></tr>
</table>

Performance Based Standard for Fire Protection. The NRC reviewed the submittal and provided requests for additional information including a letter dated July 15, 2015, (ADAMS Accession No. ML15183A016). The NRC's request stated that Constellation's submittal indicated that transient combustibles with heat release rates greater than that assumed by the fire probabilistic risk assessment may be present and left unattended. In addition, the request stated that if minor transient combustibles (which could be greater than the 142 kW heat release rate assumed in the probabilistic risk assessment) are brought into a switchgear room, then it would be subjected to a less stringent set of administrative controls that seem to only reduce the frequency of large fires by reducing the time the combustibles will be present. The letter requested clarification on how the administrative controls currently in-place supported a justification for selection of a screening heat release rate that was lower than 317 kW. In the letter dated August 13, 2015, Constellation provided a response that included an upgrade of the existing transient combustible controls in the switchgear rooms, by designating the switchgear rooms as transient combustible exclusion zones. In addition, minor amounts of transient combustibles were not excluded from the requirement. The licensee's response was reviewed and accepted, based, in part, on Constellation's implementation of strict controls on combustible material in the switchgear rooms, in NRC safety evaluation dated August 30, 2016.

Corrective Actions: Constellation's corrective actions included moving the PPE to a proper storage location and performing an extent-of-condition review to ensure the other switchgear rooms did not have the same issue. Constellation planned to remove the coat hangers from all of the switchgear rooms to prevent the issue from reoccurring. In response to the inspectors' questions about the FME covers, Constellation generated transient combustible permits to track and control the transient combustibles in accordance with their fire protection program. Also, additional FME covers in other transient combustible exclusion zones were identified by Constellation and transient combustible permits were generated.

Corrective Action References: AR 4546736

Performance Assessment:

Performance Deficiency: The inspectors determined that Constellation's failure to adhere to the requirements of a transient combustible exclusion zone in accordance with OP-AA-201-009 was a performance deficiency. Specifically, from January 3, 2023 to January 5, 2023, Constellation failed to identify the transient combustible and ensure it was constantly attended, placed in an approved storage location, or had a transient combustible permit generated in accordance with OP-AA-201-009. This resulted in a violation of the Renewed Facility Operating License as supplemented by letter dated August 13, 2015, and approved by NRC safety evaluation dated August 30, 2016.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Protection Against External Factors 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 identified transient combustibles were in excess of those permitted by an NRC safety evaluation report which formed the licensing basis for the plant. This issue is similar to IMC 0612, Appendix E, "Examples of Minor Issue," Example 4.j since the identified transient combustibles were in excess of those permitted by an NRC safety evaluation report which formed the licensing basis for the plant.

Significance: The inspectors assessed the significance of the finding using IMC 0609

Appendix F, “Fire Protection and Post - Fire Safe Shutdown SDP.” The finding screened to very low safety significance (Green) based on association with Fire Prevention and Administrative Controls and assignment of a Low degradation rating in accordance with Attachment 2.

Cross-Cutting Aspect: H.9 - Training: The organization provides training and ensures knowledge transfer to maintain a knowledgeable, technically competent workforce and instill nuclear safety values. Specifically, Constellation determined that there were operator knowledge gaps in the implementation of procedure OP-AA-201-009.

Enforcement:

Violation: Unit 1, Renewed Facility Operating License for Calvert Cliffs Nuclear Power Plant, Condition 2.E., requires, in part, that Constellation implement and maintain in effect all provisions of the approved fire protection program that comply with 10 CFR 50.48(a) and 10 CFR 50.48(c), as specified in the license amendment request dated September 24, 2013; as supplemented by letter dated August 13, 2015, and as approved in the NRC safety evaluation dated August 30, 2016. Specifically, in the NRC safety evaluation dated August 30, 2016, the NRC approved the use of a lower heat release rate in the fire probabilistic risk assessment based on the establishment of stricter controls for the Unit 1 45’ switchgear room. The controls included upgrading the switchgear room to a transient combustible exclusion zone and including minor transient combustibles in the controls.

Contrary to the above, from January 3, 2023 to January 5, 2023, Constellation failed to implement and maintain in effect all provisions of the approved fire protection program. Specifically, Constellation failed to maintain the Unit 1 45’ switchgear room as a transient combustible exclusion zone or properly control minor transient combustible in accordance with transient combustible material control procedures.

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 Instrument Performance Trending Process			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green FIN 05000318,05000317/2023001-02 Open/Closed	[P.2] - Evaluation	71111.12

A Green NRC-identified finding was identified for Constellation’s failure to determine and document whether as-found out-of-tolerance (OOT) instrument calibration data exceeded an “allowable value” (AV) in the associated action request (AR) per ER-AA-520, “Instrument Performance Trending.” As a result, the determination of past operability, reportability, whether the failure constituted a maintenance rule functional failure, and whether other appropriate corrective actions (e.g., replacement, repair, change in calibration frequency, etc.) were warranted, were not considered.

Description: Constellation performed instrument calibrations/checks within a setting tolerance (ST) over the range of the instrument’s span. The ST considered instrument accuracy, instrument drift and other uncertainties, such as the effect of ambient temperature variations, in order to assure that the AV is not exceeded during the calibration interval. ER-AA-520, “Instrument Performance Trending,” Revision 5, defines AV as the limiting value that the trip

setpoint may have when tested periodically, beyond which appropriate action shall be taken. The AV provides operability criteria for those setpoints or channels that have a limiting operating condition. This limiting condition is typically imposed by the Technical Specifications, but may also result from regulatory requirements, vendor requirements, design basis criteria or other operational limits.

The station utilized the condition report (i.e., AR) method to document as-found instrument calibration data OOTs. ER-AA-520, step 4.2.2, contained the requirements to follow when the AR trending method was used to report as-found instrument calibration OOTs. Per step 4.2.2.1, ARs written to solely document the trend code of an instrument's calibration should be able to be "closed to trending." ARs that document inoperability or exceeding Technical Specifications AVs shall not be closed to trending only. Step 4.2.2.1.C required that ARs document the degree of OOT and, specifically, whether the calibration data exceeded an AV. If at least one as-found data point exceeded the AV for the instrument, step 4.2.2.1.D required the Operations Shift Manager to be notified that the instrument was potentially inoperable and to recalibrate, repair, or replace the instrument.

The inspectors observed that Constellation personnel did not determine and document whether an instrument's as-found OOT calibration data exceeded the AV and the associated ARs were routinely "closed to trending" with no further actions taken. For example, AR 2601484 (12/17/2015), AR 4086130 (12/17/2017), AR 4304860 (12/18/2019), and AR 4541076 (5/25/2022) documented 2-I/P-3987A, 21 auxiliary feedwater pump main control room speed controller, as-found data outside its ST for the calibration checks completed on the dates indicated. The instrument was successfully recalibrated into specifications in all instances. The ARs determined the issues were not reportable and were "closed to trending" but did not document whether the calibration data exceeded an AV. Also, AR 4558594 (3/2/2023) and AR 4558596 (3/2/2023) documented Unit 2 2-LT-1114B and 2-LT-1114D, 21 steam generator wide range level instruments, as-found calibration data outside their STs. These instruments were successfully recalibrated into specifications, the issues were determined to be not reportable, and the ARs did not document whether the calibration data exceeded an AV. On March 3, 2023, the ARs were "closed to trending."

On December 8, 2022, the inspectors questioned why the failures of 2-I/P3987A to meet as-found ST during four consecutive calibration checks did not constitute an adverse trend and why no action had been taken to address the instrument's performance. In the past, the licensee noted instrument drift associated with the instrument make/model (Conoflow GT25CD1826 current-to-pressure transducer) and, in 2017, contracted the manufacturer to run a drift test. The manufacturer recommended calibration checks at six months or sooner to assure peak performance (versus the two-year calibration check). Per discussions with Engineering, no action was taken on the recommendation because no functional failures of the auxiliary feedwater system were experienced by the failed instrument calibration checks. The inspectors requested the instrument's established AV to determine if the instrument's historical drift effected the past operability/functionality of the 21 auxiliary feedwater pump. No AV was pre-established for the instrument.

On March 3, 2023, the inspectors questioned the appropriateness of closing ARs 4558594 and 4558596, associated with 2-LT-1114B and 2-LT-1114D, to trending. Besides indication, the instruments provide inputs to automatic initiation logic for two of the four channels for auxiliary feedwater actuation system associated with the 21 steam generator and are required to be operable in Modes 1, 2, and 3 per Technical Specification 3.3.4, "Engineered Safety Features Actuation System Instrumentation." If the instruments' as-found data was

outside of the Technical Specification AV, the issues could have been reportable as a condition prohibited by Technical Specification and would be considered a maintenance rule functional failure per ER-AA-320-1004, “Maintenance Rule 18-10 – Performance Monitoring and Dispositioning Between (a)(1) and (a)(2),” Revision 1. As a result of the inspectors’ questioning, Constellation added actions to ARs 4558594 and 4558596 on March 5, 2023, to complete additional reviews on the instruments’ as-found condition.

The inspectors noted that, although the examples discussed above occurred on Unit 2, the issue was also applicable to Unit 1. For example, AR 4104179 (2/14/2018) and AR 4524836 (9/26/2022) documented 1-I/P-3987B, 11 auxiliary feedwater pump remote shutdown panel speed controller, as-found data outside its ST during calibration checks. In both cases the instrument was successfully recalibrated into specifications, the issues were determined to be not reportable, the ARs were “closed to trending” and the ARs did not determine or document whether the as-found calibration data exceeded an AV.

Corrective Actions: Constellation completed an evaluation that bounded the worst case as-found calibration data for the auxiliary feedwater pump speed controllers and determined that no as-found calibration data resulted in any loss of function or operability for any auxiliary feedwater pump. Constellation performed a review of the as-found calibration data for 2-LT-1114B and 2-LT-1114D (21 steam generator wide range level) and determined that the as-found calibration data had not exceeded their AV.

Corrective Action References: AR 4565186, 4543297, 4558594, and 4558596. Also, AR 4549112 was written to enter the adverse trend associated with Conoflow Model GT25CD1826 current-to-pressure transducers into the corrective action program.

Performance Assessment:

Performance Deficiency: The failure to determine and document whether as-found OOT instrument calibration data exceeded an AV in the associated AR per ER-AA-520, Step 4.2.2.1.C, was within the licensee’s ability to foresee and correct and was determined to be a performance deficiency. Examples included AR 4104179 and AR 4524836 for Unit 1 1-I/P-3987B, AR 2601484, AR 4086130, AR 4304860, and AR 4541076 for Unit 2 2-I/P-3987A, and AR 4558594 and AR 4558596 for Unit 2 2-LT-1114B and 2-LT-1114D, respectfully. As a result, the determination of past operability, reportability, whether the failure constituted a maintenance rule functional failure, and whether other appropriate corrective actions (e.g., replacement, repair, change in calibration frequency, etc.) were warranted, were not considered.

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, Constellation failed to determine whether as-found calibration data for multiple instruments exceeded an AV and, as a result, did not consider appropriate corrective actions to ensure the availability, reliability and capability of the instruments to fulfill their safety-related functions. This issue is also similar to IMC 0612, Appendix E, “Examples of Minor Issues,” Example 3.g, because, regardless of the conclusion of the operability or functionality determination, the as-found condition resulted in reasonable doubt with respect to the availability, reliability or capability of systems.

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 used Exhibit 2 and determined that the finding did not represent a loss of the probabilistic risk assessment function of one train of a multi-train Technical Specification system for greater than its Technical Specification allowed outage time. Therefore, the inspectors determined the finding to be of very low safety significance (Green).

Cross-Cutting Aspect: P.2 - Evaluation: The organization thoroughly evaluates issues to ensure that resolutions address causes and extent of conditions commensurate with their safety significance. Specifically, OOT instrument calibration data was not evaluated to determine if the AV was exceeded and, therefore, additional actions that may have been warranted were not considered.

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

Failure to Include Instructions to Perform an Electrical Isolation Test in Work Order			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000317/2023001-03 Open/Closed	[H.5] - Work Management	71111.15

A Green NRC-identified finding and NCV of Technical Specification 5.4.1 was identified for Constellation’s failure to provide adequate written instructions for the performance of maintenance. Specifically, the work order to repair a through-wall leak on the Unit 1 saltwater system did not provide a task or steps to perform an electrical isolation test as required by the applicable design drawing. This allowed dissimilar metal galvanic corrosion to go undetected and contributed to a through-wall leak on the same component on August 25, 2022.

Description: On August 25, 2022, Constellation was performing rounds and identified a saltwater system leak on an American Society of Mechanical Engineers Code Class III nipolet near a flange connection on the inlet piping for the 12B service water heat exchanger. A spray shield was installed to prevent spray from contacting the 11 service water pump. Constellation declared the 12 saltwater header inoperable and removed the 12B service water heat exchanger from service. Once the 12 service water heat exchanger was isolated, Constellation declared the 12 saltwater header operable. The isolation of the 12 service water heat exchanger required the 1B emergency diesel generator and the 13 containment air cooler to be declared inoperable per Technical Specifications.

The inspectors reviewed Constellation’s work group evaluation, documented in AR 4518745, and noted that the cause for the failure on August 25, 2022, was due to a coating flaw created when the nipolet was previously repaired on January 12, 2022, under WO C93806011. Constellation stated that the corrosion would not have occurred without a coating flaw, however, the high rate of degradation indicated galvanic corrosion driven by the combination of dissimilar metals electrically connected in saltwater with an unfavorable anode to cathode ratio. Following the repair in August 2022 under WO C93864931, Constellation performed an electrical isolation test. The test was unsatisfactory at 0.1 ohms, where the requirement was greater than 10,000 ohms. Constellation determined that insulating rubber associated with pipe hangers on the 12B service water header were degraded. Constellation replaced the degraded rubber, reperformed the electrical isolation test, and the test was satisfactory.

The inspectors reviewed the WO C93864931 and requested information regarding when an electrical isolation test was required to be performed as well as the procedure that it was governed by. Constellation stated that the use of flange insulating kits and criteria for resistance checks are captured on plant drawings that are utilized during the planning of applicable work orders and are the driver for the incorporation of the resistance checks into work order job steps when determined to be applicable. The inspectors noted that WO C93864931 referenced drawing FSK-MP-0436SH001, "JE-2 Service Water Heat Exchanger No. 12A and 12B Salt Water Side Relief Valve Piping", Revision 14. FSK-MP-0436SH001 required resistance checks with an acceptance criterion of >10,000 ohms for dissimilar metal insulating kits. The tests were required to be performed after installation of the flange insulating kits. The inspectors also reviewed the work order for the repair on January 12, 2022 (WO C93806011) and noted that a task or steps for an electrical isolation test were not included. The work order only referenced the same design drawing, FSK-MP-0436SH001. Constellation generated AR 4549953 for not including a task or steps for the electrical isolation test.

The inspectors reviewed Constellation's procedures for planning work orders, MA-AA-716-010-1020, "Writer's Guide for Maintenance Work Order Instructions," Revision 2. Step 4.5.5.13 stated "describe testing that is performed in accordance with approved procedures or written instructions, or demonstrate equipment performs satisfactorily". In addition, the step stated, "include or reference requirements and acceptance criteria defined in appropriate design documents." The inspectors determined that the January work order did not include requirements based on FSK-MP-0436SH001, the applicable design document for dissimilar metal insulating kits, as stated by MA-AA-716-010-1020. The inspectors also determined that the unsatisfactory electrical isolation test in August 2022 indicated that the condition existed in January 2022. The galvanic corrosion also indicated that the dissimilar metals were not electrically isolated. The inspectors concluded that Constellation's failure to perform the electrical isolation test in January 2022 was a significant contributor to the leak that occurred in August 2022.

Corrective Actions: Constellation replaced the flanged connection and performed an electrical isolation test. The test was unsatisfactory because the insulating rubber associated with pipe hangers on the 12B service water header were degraded. Constellation replaced the degraded insulating rubber, reperformed the electrical isolation test, with satisfactory results.

Corrective Action References: AR 4518745 and AR 4549953

Performance Assessment:

Performance Deficiency: The inspectors determined that Constellation's failure to provide adequate written instructions for the performance of maintenance was a performance deficiency. Specifically, WO C93806011 did not provide a task or steps to perform an electrical isolation test as required by the design drawing, FSK-MP-0436SH001 Revision 14.

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, WO C93806011 performed on January 12, 2022, did not include a step to perform electrical isolation testing. Constellation's failure to perform the electrical isolation test allowed dissimilar metal galvanic corrosion to go undetected and contributed to a through-wall leak on the same component on August 25, 2022, as well as the inoperability

of the 12 saltwater header and the inoperability and unavailability of the 12 service water heat exchanger.

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 the finding was a deficiency affecting the design or qualification of a mitigating SSC and operability was not maintained. However, the degraded condition did not represent a loss of the probabilistic risk assessment function of a single train Technical Specification system for greater than its Technical Specification allowed outage time and did not represent a loss of the probabilistic risk assessment function of one train of a multi-train Technical Specification system for greater than its allowed outage time. Therefore, the inspectors determined the finding to be of very low safety significance (Green).

Cross-Cutting Aspect: H.5 - Work Management: The organization implements a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority. The work process includes the identification and management of risk commensurate to the work and the need for coordination with different groups or job activities. Specifically, the planning for WO C93806011 did not incorporate resistance checks after the installation of dissimilar metal insulating kits as required by the design.

Enforcement:

Violation: The Renewed Facility Operating License for Calvert Cliffs Nuclear Power Plant, Unit 1, TS 5.4.1 requires, in part, that written procedures shall be written, established, implemented, and maintained as covered in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Section 9.a specifies that maintenance that can affect the performance of safety-related equipment should be properly preplanned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances. FSK-MP-0436SH001, “JE-2 Service Water Heat Exchanger No. 12A and 12B Salt Water Side Relief Valve Piping,” Revision 14, required resistance checks with an acceptance criterion of >10,000 ohms for dissimilar metal insulating kits.

Contrary to the above, on January 12, 2022, Constellation failed to properly preplan maintenance. Specifically, the Constellation did not include an electrical isolation test in WO C93806011 as required by FSK-MP-0436SH001. As a result, a significant leak developed on August 25, 2022, due to accelerated undetected dissimilar metal galvanic corrosion, that required the inoperability of 12 saltwater header and the inoperability and unavailability of the 12 service water heat exchanger.

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

Observation: Corrective Action Program Review of Inadvertent Safety Injection Actuation Signal Actuation	71152A

Inspectors reviewed the Corrective Action Program Evaluation (CAPE 4522477) associated with the September 2022 inadvertent Unit 2 SIAS actuation that occurred due to operator failure to comply with procedure use and adherence standards. The SIAS CAPE was used to determine causes not only associated with the actuation but with broader organizational events. Specifically, in October 2022, Constellation's Corporate Fleet Assessment escalated Calvert Cliffs in closing nuclear professional behavior gaps (AR 4527027). Inspectors shared the following observations with Constellation regarding documentation, objective evidence,

and procedure adherence:

1. Within the CAPE, there was a list of actions in an executive summary for the causes identified. Some were designated as formal corrective actions and the remainder designated as action items. While Constellation was procedurally enabled to identify those that correct a condition as corrective actions, the determination of how some in the list were determined to be action items rather than corrective actions was not apparent.
2. PI-AA-125, "CAP Procedure," Attachment 2, "Corrective Action Closure Guidance," establishes that objective evidence ensures the intent of a corrective action has been satisfied. Corrective action 4522477-29 lacked objective evidence of completing part of the directed task. Specifically, the corrective action required a meeting with operations staff to be "focused on risk perception behaviors" and "review what has been presented... as part of Nuclear Professionalism action plan." The corrective action documentation lacked evidence of having completed these specific requirements.
3. The nuclear professionalism training under corrective action 4522477-84 was to be “implemented one group at a time.” The corrective action designated the training to be completed in four groups (senior leadership, mid-level management, first-line supervisors, and staff) and called out group-specific training to be included in mid-level and first-line sessions. However, the station deviated and completed it within two groups (leadership and staff) without documentation for the deviation nor Management Review Committee approval as required by PI-AA-125, Step 4.7.1.2.

Constellation captured these observations in AR 4666477. The NRC inspectors did not identify any findings or violations of more than minor significance.

Observation: Annual Review of Corrective Actions and Extent-of-Condition Review Resulting from Boric Acid Leakage Identified on Four Unit 1 Pressurizer Mechanical Nozzle Seal Assemblies	71152A

The inspectors reviewed Constellation's evaluation and corrective actions associated with the boric acid leakage identified on four of the mechanical nozzle seal assemblies (clamps) located on the top of the pressurizer. Specifically, inspectors focused on the corrective actions associated with ARs 4477483, 4477621, 4477622, 4477643 and the evaluation documented in AR 4477766. The annual follow-up sample was selected to assess Constellation's conclusions regarding the cause of the boric acid leakage during the previous operating cycle.

The mechanical nozzle seal assemblies were pre-emptively installed on small bore instrument nozzles on the pressurizer in 2000 to prevent leakage due to primary water stress corrosion cracking of the susceptible weld material internal to the pressurizer. The clamps are visually inspected each refueling outage as required per American Society of Mechanical Engineers Code Case N-733, for signs of boric acid leakage. During the spring 2022 refueling outage, boric acid residue was identified on four mechanical nozzle seal assemblies while the licensee was performing visual inspections of the clamps.

Constellation disassembled the clamps, performed a visual inspection, and found the sealing material to be degraded. Constellation replaced the sealing material, reassembled the clamps, and conducted visual inspections prior to the end of the refueling outage. The inspectors noted that Constellation applied the corrective actions and inspection requirements as required by Code Case N-733.

Constellation determined that primary water stress corrosion cracking at the inside j-groove

weld of the instrument nozzle resulted in exposing the clamp seal material to pressurizer steam. The seal material was forced out of the gland area by steam erosion resulting in boric acid leakage on four instrument nozzles on the top of the pressurizer.

The inspectors did not identify any findings or violations.

EXIT MEETINGS AND DEBRIEFS

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

- On February 9, 2023, the inspectors presented the problem identification and resolution annual sample of corrective actions for boric acid leakage identified on Unit 1 pressurizer mechanical nozzle seal assemblies inspection results to Kurt Bodine, Manager Engineering Lead, and other members of the licensee staff.
- On March 1, 2023, the inspectors presented the inservice inspection activities inspection results to Patrick Navin, Site Vice President, and other members of the licensee staff.
- On March 3, 2023, the inspectors presented the radiological hazard assessment and exposure controls inspection results to Patrick Navin, Site Vice President, and other members of the licensee staff.
- On April 13, 2023, the inspectors presented the integrated inspection results to Patrick Navin, Site Vice President, and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.04	Procedures	OI-32A-2	Auxiliary Feedwater System	3800
71111.05	Corrective Action Documents	AR 4549676		
	Procedures	FFSM-64	NFPA 805 Fire Area: 2CNMT (Unit 2-Containment)	0
		OP-AA-201-003	Fire Drill Performance	20
71111.06	Miscellaneous	PBR 23-01-13	Plant Barrier Permit	01/24/2023
	Work Orders	C93813459		
71111.13	Procedures	ER-CA-600-2001	Calvert Cliffs RICT System Guidelines	2
		OP-AA-108-118	Risk Informed Completion Time	2
71111.15	NDE Reports	OpEval 21-002	Channel D Wide Range Nuclear Instrumentation	3
71111.20	Operability Evaluations	OP-5	Plant Shutdown from Hot Standby to Cold Shutdown	3200
	Procedures	OI-3B-2	Shutdown Cooling	3200
		OP-CA-114	Containment Closure	3
		OU-AA-103	Shutdown Safety Management Program	23
71111.24	Work Orders	C93818650		
71152A	Corrective Action Documents	4564689 4563702		