



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION I
475 ALLENDALE RD, STE 102
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

November 1, 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 05000317/2023003 AND
05000318/2023003**

Dear David Rhoades:

On September 30, 2023, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Calvert Cliffs Nuclear Power Plant, Units 1 and 2. On October 11, 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.

One Severity Level IV violation without an associated finding is documented in this report. We are treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2 of the Enforcement Policy.

No NRC-identified or self-revealing findings were identified during this inspection.

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.

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* (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

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SUBJECT: CALVERT CLIFFS NUCLEAR POWER PLANT, UNITS 1 AND 2 –
INTEGRATED INSPECTION REPORT 05000317/2023003 AND
05000318/2023003 DATED NOVEMBER 1, 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: 05000317/2023003 and 05000318/2023003

Enterprise Identifier: I-2023-003-0027

Licensee: Constellation Energy Generation, LLC

Facility: Calvert Cliffs Nuclear Power Plant, Units 1 and 2

Location: Lusby, MD

Inspection Dates: July 01, 2023 to September 30, 2023

Inspectors: G. Dipaolo, Senior Resident Inspector
A. Tran, Resident Inspector
C. Borman, Health Physicist
R. Clagg, Senior Project Engineer
L. Dumont, Senior Reactor Inspector
N. Eckhoff, Health Physicist
E. Eve, Senior Project Engineer
J. Lilliendahl, Senior Emergency Response Coord
K. Mangan, Senior Reactor Inspector
S. Mercurio, Emergency Preparedness Inspector

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

Unit 2 Pressurizer Safety Valve Inoperable for Greater than Technical Specification Allowed Time			
Cornerstone	Severity	Cross-Cutting Aspect	Report Section
Not Applicable	Severity Level IV NCV 05000318/2023003-01 Open/Closed	Not Applicable	71153
A self-revealed Severity Level IV non-cited violation of Technical Specification 3.4.10, "Pressurizer Safety Valves," was identified when the lift setpoint of the Unit 2 pressurizer safety valve, 2RV200, was found below the technical specification allowable value.			

Additional Tracking Items

Type	Issue Number	Title	Report Section	Status
LER	05000318/2022-003-00	LER 2022-003-00 for Calvert Cliffs Nuclear Power Plant, Unit No. 2, Pressurizer Safety Valve As-Found Settings (Low) Outside Technical Specification Limits Due to Setpoint Drift	71153	Closed

PLANT STATUS

Unit 1 began the inspection period at rated thermal power. On September 30, 2023, the unit was down powered to 13 percent power to facilitate containment entry to address increased unidentified reactor coolant system leakage. The unit ended the inspection period at approximately 70 percent power, with operators continuing to increase power to full rated thermal power.

Unit 2 operated at or near rated thermal power for the entire inspection period.

INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at <http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html>. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors performed 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

Impending Severe Weather Sample (IP Section 03.02) (1 Sample)

- (1) The inspectors evaluated the adequacy of the overall preparations to protect risk significant systems from impending severe weather due to a tornado watch being issued for Calvert County, Maryland on August 7, 2023.

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 2, 2B emergency diesel generator following scheduled work being delayed due to a leak on a fuel return line, August 17, 2023
- (2) Unit 2, 22 component cooling water heat exchanger train when the 21 train was inoperable due to planned maintenance, August 30, 2023
- (3) Unit 2, 22 and 23 component cooling water pump trains when the 21 component cooling water pump was unavailable due to planned maintenance, September 28, 2023

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) Units 1 and 2, auxiliary feedwater pump rooms, fire areas 42 and 43, July 3, 2023
- (2) Units 1 and 2, 1B, 2A, and 2B emergency diesel generator rooms, fire areas 28, 30, and 31, July 11, 2023
- (3) Unit 1, 11 and 12 emergency core cooling system pump rooms, fire areas 3 and 4, August 8, 2023
- (4) Units 1 and 2, intake structure, fire area IS, August 8, 2023
- (5) Units 1 and 2, outside yard area and buildings, fire area Yard, August 24, 2023

Fire Brigade Drill Performance Sample (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 Unit 2 turbine building on September 27, 2023.

71111.07A - Heat Exchanger/Sink Performance

Annual Review (IP Section 03.01) (1 Sample)

The inspectors evaluated readiness and performance of:

- (1) Unit 2, 21 component cooling water heat exchanger thermal performance test, September 22, 2023

71111.11Q - Licensed Operator Requalification Program and Licensed Operator Performance

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

- (1) The inspectors observed and evaluated operator performance in the main control room following Unit 2 entry into Abnormal Operating Procedure 3G-2, "Malfunction of Feedwater System," due to 22 heater drain tank high level and normal level control valves failing closed resulting from a loss of instrument air on August 1, 2023.
- (2) The inspectors observed and evaluated licensed operator performance in the main control room during Unit 1 power maneuvers to/from 13 percent power to facilitate containment entry on September 30, 2023.

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

- (1) The inspectors observed and evaluated a licensed operator simulator examination involving secondary plant and electrical system failures causing reactor reactivity changes, secondary failures requiring a manual reactor scram, and grid instability that caused a station blackout resulting in the declaration of a General Emergency on August 1, 2023.

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 4693777, 2A emergency diesel generator received an automatic start blocked alarm while filling the jacket cooling water expansion tank, August 10, 2023
- (2) Unit 2, AR 4688144, excessive leak on 22 service water system causing header inoperability, September 9, 2023

71111.13 - Maintenance Risk Assessments and Emergent Work Control

Risk Assessment and Management Sample (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 2, elevated risk condition due to 21 auxiliary feedwater pump being inoperable because of isolation of 21 steam generator steam admission valve, 2-MS-4070, due to leakage, July 27, 2023
- (2) Unit 2, elevated risk condition due to 21 auxiliary feedwater pump being out of service for turbine overspeed maintenance and testing, August 28, 2023
- (3) Unit 2, elevated risk condition due to loss of SY01, 120-volt vital AC bus, and implementation of emergent risk-informed risk completion time, September 22, 2023
- (4) Units 1 and 2, elevated risk condition due to 500 kilovolt red bus outage maintenance window, September 22, 2023

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) Unit 1, AR 4688495, 1A emergency diesel generator, April 24, 2023, failure mode causal table open legs, July 20, 2023
- (2) Unit 2, AR 4683895, 21 component cooling heat exchanger outlet saltwater branch pipe through-wall leak and use of Title 10 of the Code of Federal Regulations (CFR) 50.69(d), "Alternative Treatment Requirements," August 11, 2023
- (3) Units 1 and 2, AR 4693044, 1A emergency diesel generator failure root cause extent of condition to the 0C emergency diesel generator functionality assessment, August 31, 2023
- (4) Unit 2, AR 4701476, long term trends indicate possible 22A reactor coolant pump seal degradation, September 18, 2023
- (5) Units 1 and 2, AR 4704844, diverse and flexible coping strategies (FLEX) auxiliary feedwater pump annual functional testing not performed in accordance with program requirements and preventative maintenance template, September 26, 2023

71111.18 - Plant Modifications

Temporary Modifications and/or Permanent Modifications (IP Section 03.01 and/or 03.02) (1 Sample)

The inspectors evaluated the following temporary or permanent modifications:

- (1) ECP-20-000608, "Formalize the Existing Technical Bases for TA-220 into One Technical Evaluation and 50.59 Screen," Revision 0, September 18, 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) (6 Samples)

- (1) Unit 1, WO C93847891, 12 saltwater pump replacement, July 7, 2023
- (2) Unit 1, WO C93913020, 1A emergency diesel generator post-maintenance test following fuel injector replacement, July 16, 2023
- (3) Unit 2, WO C93936673, 21 auxiliary feedwater pump steam supply valve from 21 steam generator, 2-MS-4070, post-maintenance test following repairs due to leakage, July 31, 2023
- (4) Unit 2, WO C93798835, 21 auxiliary feedwater pump post-maintenance testing following turbine overspeed maintenance, August 30, 2023
- (5) Unit 1, WO C93941333, 1A emergency diesel generator post-maintenance test monitoring per abnormal condition monitoring plan, September 25, 2023
- (6) Unit 2, WO C93866188, 21 component cooling water pump supply breaker, 2BK52-2106, inspection post-maintenance test, September 28, 2023

Surveillance Testing (IP Section 03.01) (4 Samples)

- (1) Unit 1, STP-O-5A11-1, "11 Auxiliary Feedwater Pump Quarterly Surveillance Test," Revision 11, July 10, 2023
- (2) Unit 2, STP-O-B2YR-2, "Biennial Test of 2B DG," Revision 4, July 18, 2023
- (3) Unit 2, STP-O-731-2, "High Pressure Safety Injection Pump and Check Valve Quarterly Test," Revision 13, on the 22 high pressure safety injection pump, August 9, 2023
- (4) Unit 1, STP-O-8A-1, "Test of 1A DG and 11 4 kilovolt Bus Undervoltage," Revision 37, August 18, 2023

Diverse and Flexible Coping Strategies (FLEX) Testing (IP Section 03.02) (1 Sample)

- (1) Units 1 and 2, WO C93856275, annual vendor maintenance of FLEX equipment located in robust building, September 22, 2023

71114.02 - Alert and Notification System Testing

Inspection Review (IP Section 02.01-02.04) (1 Sample)

- (1) As a result of the 2020 COVID-19 Public Health Emergency, the licensee requested and received an exemption to reschedule their biennial emergency preparedness exercise from 2020 to 2021. The inspectors performed the emergency preparedness program inspection scheduled for 2021 in its place, then performed emergency preparedness exercise inspections in 2021 and 2022.

The inspectors evaluated the licensee's maintenance and testing of the station alert and notification system on September 11 through September 14, 2023, for the period of August 2020 through August 2023.

71114.03 - Emergency Response Organization Staffing and Augmentation System

Inspection Review (IP Section 02.01-02.02) (1 Sample)

- (1) The inspectors evaluated the readiness of the licensee's Emergency Preparedness Organization on September 11 through September 14, 2023.

71114.04 - Emergency Action Level and Emergency Plan Changes

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

- (1) The inspectors evaluated the following submitted Emergency Action Level and Emergency Plan changes:
 - 23-07, EP-AA-112-200-F-14, Technical Service Center Radiation Protection Manager Checklist, Revision U/EP-AA-112-400-F-16; Emergency Operations Facility Radiation Protection Manager Checklist, Revision N
 - 22-68, EP-AA-120-F-06, Evacuation Time Estimate Review Checklist, Revision C

This evaluation does not constitute NRC approval.

71114.05 - Maintenance of Emergency Preparedness

Inspection Review (IP Section 02.01 - 02.11) (1 Sample)

- (1) The inspectors evaluated the maintenance of the emergency preparedness program on September 11 through September 14, 2023, for the period of August 2020 through August 2023.

71114.06 - Drill Evaluation

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

- (1) The conduct of an emergency response drill in the control room simulator and Technical Support Center involving failures that resulted in the declaration of a General Emergency on September 6, 2023.

RADIATION SAFETY

71124.08 - Radioactive Solid Waste Processing & Radioactive Material Handling, Storage, & Transportation

Radioactive Material Storage (IP Section 03.01) (2 Samples)

The inspectors evaluated the licensee's performance in controlling, labeling and securing the following radioactive materials:

- (1) Materials processing facility dry active waste storage areas
- (2) Lake Davies radioactive waste storage area

Radioactive Waste System Walkdown (IP Section 03.02) (2 Samples)

The inspectors walked down the following accessible portions of the solid radioactive waste systems and evaluated system configuration and functionality:

- (1) Waste gas decay tanks and pumps
- (2) Advanced liquid processing system radioactive waste processing system in auxiliary building

Waste Characterization and Classification (IP Section 03.03) (2 Samples)

The inspectors evaluated the following characterization and classification of radioactive waste:

- (1) Characterization of type B package #W23-004
- (2) 2022/2023 Part 61 dry active waste stream characterization and analysis

Shipment Preparation (IP Section 03.04) (1 Sample)

- (1) The inspectors observed the preparation of radioactive shipment U231328 on September 14, 2023

Shipping Records (IP Section 03.05) (4 Samples)

The inspectors evaluated the following non-excepted radioactive material shipments through a record review:

- (1) UN2916 Radioactive material, Type B package, Shipment number #W23-004
- (2) UN2916 Radioactive material, Type B package, Shipment number #W22-006
- (3) UN3321 Radioactive material, low specific activity (LSA-II), Shipment number #W22-005
- (4) UN2912 Radioactive material, low specific activity (LSA-I), Shipment number #W23-002

OTHER ACTIVITIES – BASELINE

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

IE01: Unplanned Scrams per 7000 Critical Hours Sample (IP Section 02.01) (2 Samples)

- (1) Unit 1, July 1, 2022 through June 30, 2023
- (2) Unit 2, July 1, 2022 through June 30, 2023

IE04: Unplanned Scrams with Complications (USwC) Sample (IP Section 02.03) (2 Samples)

- (1) Unit 1, July 1, 2022 through June 30, 2023
- (2) Unit 2, July 1, 2022 through June 30, 2023

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

- (1) Unit 1, October 1, 2022 through June 30, 2023
- (2) Unit 2, October 1, 2022 through June 30, 2023

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

- (1) September 1, 2022 through August 31, 2023

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

- (1) September 1, 2022 through August 31, 2023

EP01: Drill/Exercise Performance (DEP) Sample (IP Section 02.12) (1 Sample)

- (1) July 1, 2022 through June 30, 2023

EP02: Emergency Response Organization (ERO) Drill Participation (IP Section 02.13) (1 Sample)

- (1) July 1, 2022 through June 30, 2023

EP03: Alert And Notification System (ANS) Reliability Sample (IP Section 02.14) (1 Sample)

- (1) July 1, 2022 through June 30, 2023

71152A - Annual Follow-up Problem Identification and Resolution

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

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

- (1) AR 4524139, pressurizer safety relief valve RV 200 (S/N BV02950) test results below technical specification requirements

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

Event Report (IP Section 03.02) (1 Sample)

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

- (1) LER 05000318/2022-003-00, "Pressurizer Safety Valve As-Found Settings (Low) Outside Technical Specification Limits Due to Setpoint Drift," (Agencywide Documents Access and Management System (ADAMS) Accession No. ML22325A332). The inspectors determined that it was not reasonable to foresee or correct the cause discussed in the LER; therefore, no performance deficiency was identified. The inspection conclusions associated with this LER are documented in this report under the Inspection Results section, Severity Level IV NCV.

Personnel Performance (IP Section 03.03) (1 Sample)

- (1) The inspectors evaluated Unit 2, AR 4703527, loss of 120-volt vital AC instrument bus 2Y01 requiring entry into Abnormal Operating Procedure, 7J, "Loss of 120 Volt Vital AC or 125 Volt Vital DC Power," Revision 19, on September 19, 2023.

INSPECTION RESULTS

Observation: Unit 2 Safety Relief Valve Leakage	71152A
<p>The inspectors reviewed the licensee's apparent cause evaluation performed to determine the reasons pressurizer safety valve, 2RV200, leaked during 2021-2022 operations and was subsequently found to have an as-found lift setpoint below the range required by the applicable technical specification surveillance. Operators shutdown Unit 2 in September 2022 to replace the valve due to increased valve seat leakage.</p> <p>The inspectors noted that the licensee staff had concluded the most likely cause of the valve leak was, in part, related to the removal of procedural steps in Operating Procedure (OP)-01-2, "Start Up from Cold Shutdown." The steps required operators to hold pressure for 3 hours at a reduced pressure/temperature and then slowly increase pressure to normal operating pressure during startups from cold conditions. The inspectors reviewed licensee corrective action program document, PDR 94068, and noted that it added the steps to OP-01-2 in 1996 as a corrective action to address pressurizer safety valve leakage. The inspectors noted that the hold and slow ascent to normal operating pressure were performed to allow the pressurizer and pressurizer safety valves to reach thermal equilibrium prior to increasing pressurizer temperatures as required to raise reactor coolant system pressure to normal operating pressure. The inspectors review of PDR94068 identified the steps were added to reduce thermal stresses on the pressurizer safety valve in order to minimize seat distortion and minimize the possibility of leakage past the pressurizer safety valve seat.</p> <p>The inspectors noted other causes were identified by licensee staff along with implementing corrective actions. These included actions taken to address valve deficiencies identified during the inspection of the valve at the test facility, actions to upgrade all pressurizer safety stems to Inconel (previously stainless steel), and changes to the valve test procedures</p>	

requiring a valve rebuild if the valves were cycled more than 15 times during as-left testing. These steps were taken to minimize the potential for stem distortions both during test and during operational transients that may cause or contribute to valve leakage. The inspectors determined that the actions taken by the licensee addressed the deficiencies identified.

The inspectors reviewed the circumstances involved with removing procedural steps from OP-01-2 to “thermally soak” the pressurizer safety valves on plant startup. The inspectors noted that while Unit 2 was being returned to operation from a refueling outage in March 2021, operations management requested licensee engineering staff to evaluate the removal of these steps. Licensee staff determined this was acceptable because the pressure hold was a legacy requirement from PDR94068 and there was not a required basis to continue to perform the hold.

The inspectors concluded the licensee’s change to OP-01-2 to remove thermally soaking the 2RV200 pressurizer safety valve missed an opportunity to address this operating experience in their review. The inspectors noted licensee's procedure to evaluate changes to procedures, AD-AA-101, "Processing of Procedures, T&RMs, and Forms," stated that for procedure revisions affecting plant equipment, the reviewer should consider operating experience from internal and external sources. The procedure stated in part, "whenever possible, do not limit the operating experience review to the station corrective action program data base, include other databases in the operating experience review." The inspectors reviewed Electric Power Research Institute Nuclear Maintenance Applications Center, "Safety and Relief Valve Testing and Maintenance Guide," 2015, and noted Section 6.14 suggested pressurized water reactor pressurization rates for plant heat up, provided guidance on pressure/temperature increases during plant startup, and specifically stated that rapid pressure/temperature increase rates can cause pressurizer safety valve leakage. The maintenance guide recommended several 2-hour hold times and pressure/temperature rate increase limits to minimize the possibility of valve leakage.

The inspectors considered that the Electric Power Research Institute document described operating experience applicable to pressurizer safety valves and plant startup best practices. The inspectors concluded the licensee’s change to OP-01-2 to remove thermally soaking the 2RV200 pressurizer safety valve missed an opportunity to address this operating experience in their review. Additionally, the inspectors observed that while the licensee's apparent cause evaluation identified these steps should be restored and took corrective action to do so, the evaluation did not address other aspects of operations and engineering staff performance that resulted in this decision. The licensee entered this issue into their corrective action program as AR 4692235. The inspectors determined no performance deficiency existed because the applicable procedure steps in AD-AA-101 involved guidance and there were other potential causes contributing to the 2RV200 pressurizer safety valve leak-by condition.

Unit 2 Pressurizer Safety Valve Inoperable for Greater than Technical Specification Allowed Time			
Cornerstone	Severity	Cross-Cutting Aspect	Report Section
Not Applicable	Severity Level IV NCV 05000318/2023003-01 Open/Closed	Not Applicable	71153

A self-revealed Severity Level IV non-cited violation of Technical Specification 3.4.10, "Pressurizer Safety Valves," was identified when the lift setpoint of the Unit 2 pressurizer safety valve, 2RV200, was found below the technical specification allowable value.

Description: The inspectors reviewed LER 2022-003-00 to determine if performance deficiencies and/or violations of NRC regulatory requirements had occurred. In July 2021, while Unit 2 was operating, pressurizer safety valve, 2RV200 (serial number BN02950), began leaking by the seat. Constellation implemented action to monitor the 2RV200 leakage. In September 2022, when leakage rates exceeded 20 gallons/hour, operators shutdown the unit. Constellation replaced the valve with a previously tested safety relief valve and operators restarted the plant. On September 21, 2022, Constellation had the valve tested at an offsite facility and found the relief setpoint to be lower than the technical specification allowable value (tested value of 2470 pounds per square inch atmospheric (PSIA) versus a technical specification lower limit of 2475 PSIA). The inspectors noted that the relief valve's analyzed lower technical specification setpoint was to minimize the possibility of an inadvertent lift of the relief valve and the analyzed high lift setpoint, 2575 PSIA, was to ensure reactor vessel pressure safety limits were not exceeded. As a result, Constellation operated Unit 2 in violation of Technical Specification 3.4.10 because the valve had been inoperable for a period greater than the allowed completion time specified in Technical Specification 3.4.10.

The inspectors noted that Constellation's apparent cause evaluation found that the lower setpoint lift was most likely caused by a combination of setpoint drift and valve leakage. The inspector's review noted that setpoint drift is a known cause for valves to lift at lower or higher setpoints, and valve leakage will lower lift setpoints but the magnitude of the effect involves uncertainty. The inspectors determined that there was no performance deficiency because it was not reasonable for Constellation to foresee and correct the pressurizer safety valve, 2RV200, being outside the technical specification limits while the valve was installed while the unit was in Mode 1 and 2.

Corrective Actions: Constellation staff replaced the valve with a previously tested safety relief valve and operators restarted the plant.

Corrective Action References: AR 4524139

Performance Assessment: The NRC determined this violation was not reasonably foreseeable and preventable by the licensee and therefore is not a performance deficiency.

Enforcement:

Severity: The Reactor Oversight Process's significance determination process does not specifically consider a violation of requirements with no performance deficiency in its assessment of licensee performance. Therefore, it is necessary to address this violation which does not include an identified performance deficiency using traditional enforcement rather than assign a color (e.g., Green).

Section 6.1.d of the NRC Enforcement Policy provides examples of Severity Level IV violations. Section 6.1.d.1 states, in part, that failure to comply with the allowances for limiting condition for operation and surveillance requirement applicabilities in Technical Specification, Section 3.0, is an example of a Severity Level IV violation."

Violation: Technical Specification 3.4.10, "Pressurizer Safety Valves," required two pressurizer safety valves to be operable during Modes 1 and 2, and in Mode 3 when all reactor coolant system cold leg temperatures are greater than 301°F. With one pressurizer

safety valve inoperable, Technical Specification 3.4.10, Condition A, required the inoperable valve to be restored within 15 minutes. If this was not completed or if two pressurizer safety valves were inoperable, then Technical Specification 3.4.10, Condition B, applied which required the unit to be in Mode 3 within 6 hours AND the unit to be cooled down to below 301°F within 12 hours.

Contrary to the above, for a period of time, between March 2021 to September 2022, the Unit 2 pressurizer safety valve, 2RV200, lift setpoint was below the technical specification allowable value causing it to be inoperable and the required actions of Technical Specification 3.4.10 were not performed within the required completion times.

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

EXIT MEETINGS AND DEBRIEFS

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

- On October 11, 2023, the inspectors presented the integrated inspection results to Patrick Navin, Site Vice President, and other members of the licensee staff.
- On September 14, 2023, the inspectors presented the radioactive solid waste processing and radioactive material handling, storage, and transportation inspection results to Pete Moodie, Plant Manager and other members of the licensee staff.
- On September 14, 2023, the inspectors presented the emergency preparedness program inspection results to Pete Moodie, Plant Manager, and other members of the licensee staff.

THIRD PARTY REVIEWS

Inspectors reviewed Institute of Nuclear Power Operations reports that were issued during the inspection period.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.01	Procedures	OP-CA-108-111-1001	Severe Weather Preparation	006
		OP-CA-108-3.0	Immediate Actions	009 00
		WC-AA-101	On-Line Work Control Process	32
71111.04	Procedures	OI-16-2	Component Cooling System	4000
71111.05	Corrective Action Documents Resulting from Inspection	AR 4695243	Fire Extinguisher Not Meeting Acceptance Criteria in Intake Structure	
	Procedures	FFSM-13	NFPA 805 Fire Area: 3, Unit 1, No. 12 ECCS Pump Room	1
		FFSM-14	NFPA 805 Fire Area: 4, Unit 1, No. 11 ECCS Pump Room	0
		FFSM-145	NFPA 805 Fire Area: COMP-TB/NSB/ACA	1
		OP-AA-201-003	Fire Drill Performance	21
71111.07A	Calculations	CA 06924	Evaluation of ET 01-004(5)R: Single Tube Thermal Performance Testing of 11(21) and 12(22) Component Cooling Water Heat Exchanger (2002-2006)	0
		M-93-041	Component Cooling Water Heat Exchangers	1
	Procedures	ER-AA-340-1001	GL 89-13 Program Implementation Instructional Guide	12
71111.11Q	Procedures	2C03-ALM	Condensate and Feedwater Control Alarm Manual	07100
		AOP-3G-2	Malfuction of Main Feedwater System	17
71111.12	Corrective Action Documents	AR 4688144	Excessive Leak on 22 SRW System Causing Header Inoperability	07/01/2023
	Drawings	63086, Sheet 0027	Schematic Diagram Diesel Generator 20 Engine Control	17
	Engineering Changes	ECP-16-000462	Update Fairbanks Morse Diesel Generators Trip Circuit Design 1A, 2A, and 2B Emergency Diesel Generators	000
		ECP-18-000339	Fairbanks Morse LS Circuit Seal-In Contact Modification	000
	Engineering Evaluations	4688144	22 SRW System Excessive Leak Past Operability Evaluation	07/01/2023
Miscellaneous		Fairbanks Morse Calvert Cliffs NPP-PO Report, Analysis and Recommendations-Speed Switch Problems	01/05/2016	
71111.13	Corrective Action	AR 4699761	Protected Boundary Not Encompassing Valve 2SW5208	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Documents Resulting from Inspection			
	Miscellaneous	Final RICT record 2Y01	Final RICT Record 2Y01	09/21/2023
	Procedures	CA-PRA-005.058	Reactor Protective System Notebook	1
		ER-CA-600-201	Calvert Cliff RICT System Guidelines	2
		OP-AA-108-118	Risk-Informed Completion Time	3
71111.15	Corrective Action Documents	AR 4701476	Long Term Trends Indicate Possible 22A RCP Seal Degredation	09/10/2023
	Corrective Action Documents Resulting from Inspection	AR 4687682	Incomplete 10 CFR 50.69 Alternate Treatment Application	
		AR 4687954	OP-AA-108-115, Attachment 6, Need Review and Revision Based on 10 CFR 50.69 Alternate Treatment Requirements	
	Engineering Evaluations	ECP-23-000237	Evaluation of Through-Wall Leak on Saltwater Pipe 2LJ-1-2011	2
	Miscellaneous	AT-23-0096	Saltwater RISC-3 2" Piping ASME XI Alternative Treatment	
	Operability Evaluations	23-005	1A EDG: April 24th Failure FMCT Open Legs	0
71111.18	Corrective Action Documents	AR 4700327	Transition to Max Tcold Required	09/02/2023
	Engineering Changes	ECP-20-000608	Formalize the Existing Tech Bases for TA-220 Into One Technical Evaluation and 50.59 Screen	0
	Procedures	TA-220	Temporary Removal of Degraded RPS Temperature Input	0300
71111.24	Corrective Action Documents Resulting from Inspection	AR 4690050	Errors in 12 Saltwater Pump In-Service Test Evaluation Following Pump Replacement	07/12/2023
		AR 4691428	Fuel Leak on 2B Emergency Diesel Generator 8N Fuel Injector Return Fitting	07/19/2023
		AR 4691553	Several Fuel Injector Return Line Fittings on 2B Emergency Diesel Generator are Cross-Threaded	07/20/2023
	Procedures	CC-AA-118	Diverse and Flexible Coping Strategies (FLEX), Spent Fuel Pool Instrumentation (SFPI), and Harden Containment Vent System (HCVS) Program Document	9
		I-069-2	Main Steam to Auxiliary Feedpump Air Regulator	00100

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			Adjustments	
		OP-CA-108-106-0001	Calvert Cliffs Operability and Maintenance Testing	001
		STP-O-008A-1	Test of 1A Diesel Generator and 11 4 KV Bus Undervoltage	03700
		STP-O-5A21-2	21 Auxiliary Feedwater Pump Quarterly Surveillance Test	10
		STP-O-73APP-1	12 Saltwater Pump Replacement Preservice Test	2
		VALVE-02	Auxiliary Feedwater Steam Supply Valve Inspections	00900
	Work Orders	C93819722	STP-O-8B2YR-2 Biennial Test Of 2B DG	07/19/2023
		C93842991	STP-O-008A-1, 1A DG & 11 4KV Bus LOCI Sequencer Monthly Test	08/18/2023
		C93847891	Replace 12 Saltwater Pump and Inspect Couplings	06/27/2023
		C93848019	11 Auxiliary Feedwater Pump Quarterly Surveillance Test	07/10/2023
		C93856275	Sponsor Annual Vendor Maintenance of FLEX Equipment Located in Robust Building	09/15/2023
71114.02	Miscellaneous		Calvert Cliffs Nuclear Power Plant Alert and Notification System Design Report	2
71114.04	Procedures	EP-AA-120-1001	10 CFR 50.54(q) Change Evaluation	11
71114.05	Corrective Action Documents	AR 4702547		
		AR 4702575		
	Miscellaneous		KLD TR - 1278, Calvert Cliffs Nuclear Power Plant Development of Evacuation Time Estimates	09/07/2022
		EP-AA-1000	Exelon Nuclear Standardized Radiological Emergency Plan	33
EP-AA-1011	Exelon Nuclear Radiological Emergency Plan Annex for Calvert Cliffs Station	5		
71152A	Calculations	ECP-12-000124	CCNPP PSV Setpoint Tolerance	1
	Corrective Action Documents	3002005362	Nuclear Maintenance Application Center: Safety and Relief Valve Testing and Maintenance Guide	2015
		PDR 94068 AR 4524139		
	Corrective Action Documents Resulting from Inspection	AR 4692235		
	Miscellaneous		Traveler # 22-349 BV 02950	09/21/2022

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			Traveler # 18-68 BM 07952	09/26/2019
		50.59 Screen OP-01-2	Plant Startup from Cold Shutdown	03300
		LER 318-2022-003	Pressurizer Safety Valve As-found Settings (low) Outside Technical Specification Limits Due to Setpoint Drift	0
		ML15279A191	Calvert Cliffs Nuclear Power Plant, Units 1 and 2 License Amendment No. 315	12/30/2015
		PO 00543176	BV 02950	03/05/2015
		PO 00683031	BN02950 19-89	02/27/2019
		PO 00816876	BN04375 Traveler 21-59	06/06/2022
		PO 599874	BN04375 Traveler 17-44	01/31/2019
	Procedures	AD-AA-101	Processing of Procedures, T&RMs, and Forms	31