



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION I
2100 RENAISSANCE BOULEVARD, SUITE 100
KING OF PRUSSIA, PENNSYLVANIA 19406-2713

May 2, 2022

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

SUBJECT: CALVERT CLIFFS NUCLEAR POWER PLANT, UNITS 1 AND 2 –
INTEGRATED INSPECTION REPORT 05000317/2022001 AND
05000318/2022001

Dear Mr. Rhoades:

On March 31, 2022, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Calvert Cliffs Nuclear Power Plant, Units 1 and 2. On April 20, 2022, the NRC inspectors discussed the results of this inspection with Mr. Peter Moodie, Acting Site Vice President, and other members of your staff. The results of this inspection are documented in the enclosed report.

No findings or violations of more than minor significance were identified during this inspection.

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

Sincerely,

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 05000317/2022001 AND
 05000318/2022001 DATED MAY 2, 2022

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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: 05000317/2022001 and 05000318/2022001

Enterprise Identifier: I-2022-001-0044

Licensee: Constellation Energy Generation, LLC

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

Location: Lusby, MD

Inspection Dates: January 1, 2022 to March 31, 2022

Inspectors: R. Clagg, Senior Resident Inspector
E. Eve, Senior Reactor Inspector
P. Finney, Senior Project Engineer
M. Henrion, Health Physicist
S. Obadina, Resident 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

No findings or violations of more than minor significance were identified.

Additional Tracking Items

None.

PLANT STATUS

Unit 1 began the inspection period at rated thermal power and operated at or near full power until January 21, 2022, when the unit entered end-of-cycle coastdown. On February 6, 2022, operators commenced a unit shutdown, from 85 percent power, for a planned refueling outage. Operators commenced a unit startup on February 27, 2022, and returned the unit to 100 percent power on March 4, 2022. The unit remained at or near rated thermal power for the remainder of the inspection period.

Unit 2 began the inspection period at rated thermal power. On January 3, 2022, the unit tripped following a high pressurizer pressure condition due to a failure on the main turbine control circuitry. On January 5, 2022, operators commenced a unit startup. On January 6, 2022, the unit was returned to 100 percent power. 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," conducted routine reviews using IP 71152, "Problem Identification and Resolution," 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 thunderstorms and high winds on March 31, 2022.

71111.04 - Equipment Alignment

Partial Walkdown Sample (IP Section 03.01) (4 Samples)

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

- (1) Unit 1, 13 high pressure safety injection pump during 12 high pressure safety injection pump out of service for quarterly surveillance testing, January 21, 2022
- (2) Unit 1, 13 auxiliary feedwater pump during 12 auxiliary feedwater pump out of service for quarterly testing, January 28, 2021

- (3) Units 1 and 2, 11 and 12 spent fuel pool cooling trains during Unit 1 defueled window, February 15, 2022
- (4) Unit 1, 12 saltwater train during 11 saltwater train unavailable for maintenance, February 17, 2022

71111.05 - Fire Protection

Fire Area Walkdown and Inspection Sample (IP Section 03.01) (5 Samples)

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

- (1) Unit 2, cable spreading room and battery rooms, fire areas 17, 17A, and 17B, January 19, 2022
- (2) Unit 1, cable spreading room and battery rooms, fire areas 16, 16A, 16B, January 28, 2022
- (3) Unit 1, containment, fire area CNMT, February 14, 2022
- (4) Units 1 and 2, turbine building, fire area TB, February 17, 2022
- (5) Unit 2, 27' switchgear room, purge air room, 45' switchgear room, fire areas 18, 18A, and 25, March 1, 2022

71111.08P - Inservice Inspection Activities (PWR)

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

- (1) The inspectors verified that the reactor coolant system boundary, steam generator tubes, reactor vessel internals, risk-significant piping system boundaries, and containment boundary are appropriately monitored for degradation and that repairs and replacements were appropriately fabricated, examined and accepted by reviewing the following activities from February 14, 2022 to February 24, 2022:

03.01.a - Nondestructive Examination and Welding Activities

- Ultrasonic examination of 11B primary head to cold leg B nozzle, SG-11-W7, Summary No.: CCNP-1-103205 (WO C93788649-345)
- Ultrasonic examination of safety injection elbow to pipe weld, 12-SC-1004-3, Summary No.: CCNP-1-113250-RI (WO C93788650-355)
- Ultrasonic examination of chemical volume control pipe to elbow weld susceptible to thermal fatigue, 2-CV-1005-27, Summary No.: CCNP-1-130350-RI (WO C93788649-245)
- Encoded phased array ultrasonic examination of dissimilar metal weld 2-CV-1004-19, Summary No.: CCNP-1-128900-RI (WO C93788653-370)
- Visual examination (VT-3) of safety injection system support, 6-SI-1011-H-17, Summary No.: CCNP-1-708700 (WO C93788657-120)
- Visual examination (VT-3) of safety injection system support, 6-SI-1011-R-13, Summary No.: CCNP-1-708800 (WO C93788657-140)
- Visual examination (VT-1) of mechanical nozzle seal assemblies, MNSA SN B005-01, -02, -03, and -04, on the upper pressurizer, Summary Nos.: CCNP-1-139403, CCNP-1-139404, CCNP-1-139401, and CCNP-1-139402 (WO C938234411)

- General visual examination of containment leak chase channels, Summary No.: CCNP-1-A00000 (WO C93788645-120)

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

- Bare metal visual examination of reactor vessel head and nozzle partial penetration welds, Summary No.: CCNP-1-003280 (WO C93789253-360)
- Visual examination (VT-2) on general area of penetration #6, Report No.: 1R26ISI-VT-164

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

- Boric acid identified on 11A safety injection tank outlet motor operated valve, 1-MOV-614, IR 4476714
- Boric acid identified on chemical volume control system inlet to drain valve, 1-CVC-366, IR 4476907
- Boric acid corrosion evaluation of dried boric acid residue around flange/stem of 1-CV-652, IR 4477818
- Boric acid corrosion evaluation of staining identified on reactor vessel studs 48-54, IR 4477329

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

- No steam generator tube examination activities were performed during the Unit 1 refueling outage in accordance with Calvert Cliffs Unit 1 Technical Specifications 5.5.9, Steam Generator Program

71111.11Q - Licensed Operator Requalification Program and Licensed Operator Performance

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

- (1) The inspectors observed and evaluated licensed operator performance in the main control room during the restart of Unit 2 following an automatic reactor trip on January 5, 2022.
- (2) The inspectors observed and evaluated licensed operator performance in the main control room during the loss of 11 steam generator feed pump and downpower to approximately 87 percent on March 15, 2022.

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

- (1) The inspectors observed and evaluated operator training involving a loss of the 11 kilovolt bus, loss of shutdown cooling, and station blackout, resulting in a declaration of an Alert on January 13, 2022.

71111.13 - Maintenance Risk Assessments and Emergent Work Control

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

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

- (1) Unit 1, elevated risk condition due to 12B service water heat exchanger maintenance, January 18, 2022
- (2) Unit 1, Yellow risk condition due to lowered inventory condition for reactor pressure vessel head removal, February 9, 2022
- (3) Unit 1, Yellow risk condition due to reduced inventory condition for reactor coolant pump seal replacement, February 20, 2022
- (4) Unit 1, Yellow risk condition due to reduced inventory condition for reactor coolant system vacuum fill, February 28, 2022
- (5) Unit 2, elevated risk condition due to 22B service water heat exchanger maintenance, March 21, 2022

71111.15 - Operability Determinations and Functionality Assessments

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

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

- (1) Unit 2, AR 04469629, 23 and 24 containment air coolers tripped during Unit 2 automatic reactor trip, January 6, 2022
- (2) Unit 2, AR 04469961, 23 switchgear heating, ventilation, and air conditioning degraded causing elevated switchgear room temperatures, January 11, 2022
- (3) Unit 2, AR 04481677, potential flood issue for Unit 2 service water pump room lower level, March 3, 2022
- (4) Unit 2, AR 04483159, Unit 2 emergency core cooling system pump room exhaust filter high differential pressure, March 8, 2022
- (5) Unit 1, AR 04484495, lower than expected pressure on 12 saltwater header, March 16, 2022
- (6) Unit 1, AR 04486949, 125 volt direct current ground detected on 11 direct current bus, March 24, 2022

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-21-000470, Unit 2, temporary change to substitute 2TE111Y, "Reactor Regulating System Resistance Temperature Detector," in place of 2TE112CA, "Reactor Coolant System Cold Leg 21A Resistance Temperature Detector," March 8, 2022

71111.19 - Post-Maintenance Testing

Post-Maintenance Test Sample (IP Section 03.01) (6 Samples)

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

- (1) Unit 1, WO C93756214, leak check, 1CKSI-4149, containment sump check valve, February 15, 2022
- (2) Unit 2, WO C93764181, 21 auxiliary feedwater pump maintenance and testing, February 23, 2022
- (3) Unit 1, WO C93824034, 1A emergency diesel generator repairs due to high crankcase pressure causing engine to trip, February 26, 2022
- (4) Unit 1, WO C93669850, auxiliary feedwater actuation system logic module replacement and testing, February 26, 2022
- (5) Unit 1, WO C9375577, 12 auxiliary feedwater governor replacement and testing, March 22, 2022
- (6) Unit 1, WO C93755824, 12 atmospheric dump valve diaphragm replacement and testing, March 31, 2022

71111.20 - Refueling and Other Outage Activities

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

- (1) The inspectors evaluated Unit 1 refueling outage activities from February 7, 2022 to February 27, 2022.

71111.22 - Surveillance Testing

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

Surveillance Tests (other) (IP Section 03.01) (5 Samples)

- (1) Unit 1, STP-O-5A12-1, "12 Auxiliary Feedwater Pump Quarterly Surveillance Test," Revision 8, January 25, 2022
- (2) Unit 1, STP-O-0731-1, "12 High Pressure Safety Injection Pump and Check Valve Quarterly Operability Test," Revision 11, January 28, 2022
- (3) Unit 1, STP-O-056D-1, "Engineered Safety Features Actuation System Equipment Response Times Modes 1 and 2," Revision 00700, February 1, 2022
- (4) Unit 2, STP-O-65H-2, "Pressurizer Power Operated Relief Block Valves Quarterly Operability Test," Revision 00502, March 25, 2022
- (5) Unit 1, STP-O-4B-1, "B Train Integrated Engineered Safety Featured Test," Revision 34, March 31, 2022

Inservice Testing (IP Section 03.01) (3 Samples)

- (1) Unit 1, STP-O-073A1-1, "A Train Saltwater Pump and Check Valve Quarterly Operability Test," Revision 4, January 27, 2022
- (2) Unit 1, STP-O-073G-1, "High Pressure Safety Injection Pump Large Flow Test," Revision 00802, February 10, 2022
- (3) Unit 1, STP-O-073L-1, "Low Pressure Safety Injection Pump Performance Test," Revision 01001, February 11, 2022

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

- (1) Unit 1, STP-O-108DC20C-1, "Containment Penetration 20C Local Leak Rate Tests," Revision 0, February 12, 2022

RADIATION SAFETY

71124.01 - Radiological Hazard Assessment and Exposure Controls

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

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

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

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

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

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

- (1) Observed worker protective clothing practices for Unit 1 containment entry and exit during Unit 1 refueling outage.
- (2) Observed surveying of potentially contaminated material leaving the radiological controlled area through small article monitors and frisking by hand.
- (3) Observed 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) (5 Samples)

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

- (1) Radiation Work Permit CC-1-22-00503
- (2) Radiation Work Permit CC-1-22-00505
- (3) Radiation Work Permit CC-1-22-00510
- (4) Radiation Work Permit CC-1-22-00600
- (5) Radiation Work Permit CC-1-22-00613

High Radiation Area and Very High Radiation Area Controls (IP Section 03.05) (5 Samples)

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

- (1) Unit 1 Auxiliary Building: Letdown Heat Exchanger Room
- (2) Unit 1 Auxiliary Building: Degasifier Filter Room
- (3) Unit 1 Auxiliary Building: West Penetration Room
- (4) Unit 1 Containment: Reactor Annulus Personnel Hatch
- (5) Unit 2 Auxiliary Building: Volume Control 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, 2021 - December 31, 2021
- (2) Unit 2, January 1, 2021 - December 31, 2021

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

- (1) Unit 1, January 1, 2021 - December 31, 2021
- (2) Unit 2, January 1, 2021 - December 31, 2021

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) Units 1 and 2, review the evaluation and corrective actions associated with NCV 05000317/2021010-01, failure to follow scaffold construction requirements in close proximity to safety-related equipment (AR04428640), March 25, 2022

71153 - Follow Up of Events and Notices of Enforcement Discretion

Personnel Performance (IP Section 03.03) (1 Sample)

- (1) The inspectors evaluated an automatic reactor trip of Unit 2, following a high pressurizer pressure condition due to a failure on the main turbine control circuitry, and the licensee's performance on January 3, 2022.

INSPECTION RESULTS

| | |
|--|--------|
| Observation: Evaluation and Corrective Actions Associated with NCV 05000317/2021010-01, Failure to Follow Scaffold Construction Requirements in Close Proximity to Safety-Related Equipment (AR04428640) | 71152A |
| The inspectors reviewed the licensee's evaluation and corrective actions associated with the failure to follow scaffold construction requirements in close proximity to safety-related equipment. The inspectors noted that the licensee's corrective actions for this issue included reviewing all scaffolds in order to ensure they were built in accordance with MA-AA-796-024-F-01, "Scaffold/Vertical Barrier Inspection Check List," Revision 0. The licensee also | |

inspected scaffolding in the Unit 1 containment. In addition, the licensee revised MA-CA-796-024-1001, "Calvert Rigging and Scaffold Control," Revision 8, to provide a clear check list of the items to be inspected during the quarterly walkdown. The inspectors performed walkdowns of scaffolding during the Unit 1 outage as well as online for both units. The inspectors noted that any scaffolds that were within three inches of safety-related equipment had an evaluation performed. The inspectors did not identify any instances of scaffold in contact with safety-related equipment.

The inspectors determined that the licensee entered the issue into the corrective action program at an appropriately low threshold and that corrective actions were commensurate with the potential safety significance of the issue.

EXIT MEETINGS AND DEBRIEFS

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

- On April 20, 2022, the inspectors presented the integrated inspection results to Mr. Peter Moodie, Acting Site Vice President, and other members of the licensee staff.
- On February 24, 2022, the inspectors presented the inservice inspection activities inspection results to Mr. Sheldon Waiters, Engineering Programs Manager, and other members of the licensee staff.
- On February 11, 2022, the inspectors presented the radiological hazard assessment and exposure controls inspection results to Mr. Thomas Haaf, Site Vice President, and other members of the licensee staff.

DOCUMENTS REVIEWED

| Inspection Procedure | Type | Designation | Description or Title | Revision or Date |
|----------------------|---|-------------|--|------------------|
| 71111.08P | Corrective Action Documents | 4477483 | Dried boric acid residue identified on mechanical nozzle seal assemblies on upper pressurizer. | 02/11/2022 |
| | Corrective Action Documents Resulting from Inspection | 4478642 | Raised coating on containment liner at 69' level | 02/16/2022 |
| 71111.19 | Corrective Action Documents Resulting from Inspection | 4480305 | | |
| 71152A | Corrective Action Documents | AR 04466858 | 2021 Medical Drill Objectives L1 and L3 Not Demonstrated | |