



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

January 24, 2022

Mr. David P. Rhoades  
Senior Vice President  
Exelon Generation Company, LLC  
President and Chief Nuclear Officer  
Exelon Nuclear  
4300 Winfield Road  
Warrenville, IL 60555

SUBJECT: CALVERT CLIFFS NUCLEAR POWER PLANT, UNITS 1 AND 2 – REISSUED  
INTEGRATED INSPECTION REPORT 05000317/2021001 AND  
05000318/2021001

Dear Mr. Rhoades:

The U.S. Nuclear Regulatory Commission (NRC) identified errors in the documentation of a radiation protection inspection sample in NRC Integrated Inspection Report 05000317/2021001 and 05000318/2021001, dated May 4, 2021 (ADAMS Accession No. ML21124A037).

In the Radiation Safety section under Inspection Procedure 71124.01, IP Section 03.03, incorrect information was inadvertently entered for another inspection effort. This was replaced with descriptions of the correct work activities that were observed for that area of inspection. As a result, the NRC has reissued the report in its entirety to correct the error.

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 – REISSUED  
 INTEGRATED INSPECTION REPORT 05000317/2021001 AND  
 05000318/2021001 DATED JANUARY 24, 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: 05000317/2021001 and 05000318/2021001

Enterprise Identifier: I-2021-001-0101

Licensee: Exelon Generation Company, LLC

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

Location: Lusby, MD

Inspection Dates: January 1, 2021 to March 31, 2021

Inspectors: H. Anagnostopoulos, Senior Health Physicist  
D. Beacon, Resident Inspector  
R. Clagg, Senior Resident Inspector  
L. Cline, Senior Project Engineer  
N. Floyd, Senior Reactor Inspector  
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. A licensee-identified non-cited violation is documented in report section: 71152.

### **List of Findings and Violations**

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

### **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 was operated at or near full power until February 28 when the unit was shut down for a planned refueling outage. Following refueling, Unit 2 was restarted and began power ascension on March 20. On March 21 during power ascension, the unit was tripped from 38 percent power due to a steam generator feedwater regulating valve mechanical failure. Following completion of valve repairs, Unit 2 was restarted on March 23 and operated at or near full power through the end 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 plant status activities described in IMC 2515, Appendix D, "Plant Status," and conducted routine reviews using IP 71152, "Problem Identification and Resolution." 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. Starting March 20, 2020, in response to the National Emergency declared by the President of the United States on the public health risks of the coronavirus (COVID-19), resident and regional inspectors were directed to begin telework and to remotely access licensee information using available technology. During this time the resident inspectors performed periodic site visits each week, increasing the amount of time on site as local COVID-19 conditions permitted. As part of their onsite activities, resident inspectors conducted plant status activities as described in IMC 2515, Appendix D; observed risk significant activities; and completed on site portions of IPS. In addition, resident and regional baseline inspections were evaluated to determine if all or portion of the objectives and requirements stated in the IP could be performed remotely. If the inspections could be performed remotely, they were conducted per the applicable IP. In some cases, portion of an IP were completed remotely and on site. The inspections documented below met the objections and requirements for completion of the IP.

## REACTOR SAFETY

### 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 auxiliary feedwater pump during 12 auxiliary feedwater pump out of service for quarterly surveillance testing, January 22, 2021
- (2) Unit 2, 2B emergency diesel generator while 21 saltwater header is out of service for maintenance, January 26, 2021

- (3) Unit 2, 22 saltwater header while the 21 saltwater header is out of service for maintenance, March 9, 2021
- (4) Unit 2, spent fuel pool cooling during fuel shuffle, March 11, 2021

#### 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 1, cable spreading room and battery rooms, fire areas 16, 16A, and 16B, January 8, 2021
- (2) Unit 2, cable spreading room and battery rooms, fire areas 17, 17A, and 17B, January 15, 2021
- (3) Unit 2, turbine building, fire area TB, March 6, 2021
- (4) Unit 2, containment, fire area CNMT, March 10, 2021
- (5) Unit 1, turbine building, fire area TB, March 16, 2021

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

- (1) The inspectors evaluated the onsite fire brigade training and performance during an unannounced drill on March 1, 2021.

#### 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 March 1 to March 23, 2021:

###### 03.01.a - Nondestructive Examination and Welding Activities

- Manual ultrasonic testing of the pressurizer surge line nozzle, 4-404 (NDE Report ISI-UT-016).
- Manual ultrasonic testing of the pressurizer pipe to safe end weld, 4-PS-2003-7 (NDE Report ISI-UT-008).
- Manual ultrasonic testing of the safety injection pipe to valve weld, 12-SI-2012-7 (NDE Report ISI-UT-015).
- Liquid penetrant testing of the 21 reactor coolant pump support lug, 21A-2 (NDE Report ISI-PT-003).
- Visual examinations of the core shroud tie-rods #1 through #8 (NDE Report ISI-VT-144).
- Visual examinations of the containment accessible surfaces, including the liner, leak chase channels, and moisture barrier (WO C93732456).
- Welding activities associated with the repair of the pressurizer heater sleeve penetration G-1 under engineering change ECP-21-000102

(WO C91977390). This repair was in response to leakage identified during the visual examination of the pressurizer heater sleeves in accordance with American Society of Mechanical Engineers Code Case N-722-1 (NDE Report ISI-VT-051).

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

- Follow-up review of head penetrations 72 and 73 subjected to bare metal visual examinations as required in response to previous examination results (NDE Report ISI-VT-134).

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

- Boric acid evaluation for 2CV517 on the core spray system (IR 04405537).
- Boric acid evaluation for the reactor vessel head flange (IR 04406312).

71111.11Q - Licensed Operator Regualification Program and Licensed Operator Performance

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

- (1) The inspectors observed and evaluated licensed operator performance in the Control Room during the shutdown of Unit 2 for the refueling outage on March 1, 2021.

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

- (1) The inspectors observed operator simulator training involving the loss of a low pressure safety injection pump, loss of offsite power, and leak on a shutdown cooling heat exchanger on February 2, 2021.

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, AR04399180, 2CV110Q letdown control valve failure to shut, March 22, 2021

Quality Control (IP Section 03.02) (1 Sample)

The inspectors evaluated the effectiveness of maintenance and quality control activities to ensure the following SSC remains capable of performing its intended function:

- (1) Unit 2, WO C93721752, 21 saltwater header out of service due to replacement of 2CV5150, 21 A/B service water heat exchanger saltwater inlet, February 24, 2021

### 71111.13 - Maintenance Risk Assessments and Emergent Work Control

#### Risk Assessment and Management Sample (IP Section 03.01) (6 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 preventive maintenance on the 21A service water heat exchanger, January 13, 2021
- (2) Unit 2, elevated risk condition due to 22 emergency core cooling system pump room air cooler maintenance, January 21, 2021
- (3) Unit 2, elevated risk condition due to 21 saltwater header out of service for maintenance, January 27, 2021
- (4) Unit 2, Yellow risk condition due to having four containment air coolers out of service, March 5, 2021
- (5) Unit 2, Yellow risk condition due to lowered inventory for reactor pressure vessel head installation, March 14, 2021
- (6) Unit 2, Yellow risk condition due to reduced inventory for reactor coolant system vacuum fill, March 18, 2021

### 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, AR04393743, 1MOV6200OP, fire protection containment isolation valve, degraded grease, Grade 3, January 12, 2021
- (2) Unit 2, AR04395519, Unit 2 containment outage door penetration 13 leaking excessively, January 13, 2021
- (3) Units 1 and 2, AR04396365, 0-FP-110, 12 diesel fire pump discharge valve packing leak, January 21, 2021
- (4) Unit 2, AR04396969, Unit 2 cable spreading room supply damper not functioning properly, January 21, 2021
- (5) Unit 2, AR04395583, technical evaluation to remove high energy line break barrier plug for draining of the 21 charging and volume control system letdown filter to support basket inspection, February 16, 2021

### 71111.18 - Plant Modifications

#### Temporary Modifications and/or Permanent Modifications (IP Section 03.01 and/or 03.02) (2 Samples)

The inspectors evaluated the following temporary or permanent modifications:

- (1) ECP-17-000734, air operated valve/containment isolation valve vulnerability reduction, March 24, 2021
- (2) ECP-21-000102, Unit 2 pressurizer heater sleeve penetration G-1 plug repair, March 22, 2021



### 71111.19 - Post-Maintenance Testing

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

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

- (1) Unit 2, WO C93721752, 21 saltwater header out of service due to replacement of CV5150, 21 A/B service water heat exchanger inlet valve, January 28, 2021
- (2) Unit 2, WO C93720690, preventative maintenance on 2MOV269OP, safety injection to charging header motor operated valve, January 29, 2021
- (3) Unit 2, WO C93705327, 23 auxiliary feedwater pump bearing replacement, March 24, 2021
- (4) Unit 2, WO C92676514, 21 high pressure safety injection pump bearing replacement, March 31, 2021
- (5) Unit 2, WO C93092012, 21 low pressure safety injection pump discharge check valve maintenance, March 31, 2021
- (6) Unit 2, WO C93704701, 21 auxiliary feedwater governor valve and throttle/stop valve maintenance, March 31, 2021

### 71111.20 - Refueling and Other Outage Activities

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

- (1) The inspectors evaluated refueling outage 2R24 activities from February 28, 2021 to March 26, 2021.

### 71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

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

- (1) Unit 2, I-131-2, "Leak Rate Testing of Containment Outage Door (COD) Seals and Penetrations," Revision 003, January 12, 2021
- (2) Unit 2, STP-M-698-2, "Functional Test of Halon System for Cable Spreading Room," Revision 003, January 21, 2021
- (3) Unit 2, STP-O-8B-2, "Test of 2B Diesel Generator and 4kV Bus 24 Undervoltage," Revision 03404, January 21, 2021
- (4) STP-O-8A-1, "Test of 1A Diesel Generator and 11 4kV Bus Undervoltage," Revision 33, February 24, 2021
- (5) Unit 1, STP-O-8B-1, "Test of 1B Diesel Generator and 14 4kV Bus Undervoltage," Revision 35, March 31, 2021

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

- (1) Unit 1, STP-O-5A12-1, "12 Auxiliary Feedwater Pump Quarterly Surveillance Test," Revision 8, January 22, 2021
- (2) Unit 2, STP-O-5A23-2, "23 Auxiliary Feedwater Pump Quarterly Surveillance Test," Revision 0, February 17, 2021

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

- (1) Unit 2, STP-O-108D38-2, "Containment Penetration 38 Local Leak Rate Tests," Revision 0, March 15, 2021

**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)

The inspectors evaluated instructions to workers including radiation work permits used to access high radiation areas.

- (1) The inspectors reviewed the following:

Radiation Work Packages

- CC-2-21-00401
- CC-2-21-00613
- CC-2-21-00503

Electronic Alarming Dosimeter Alarms

No alarms occurred during the period of this inspection

Labeling of Containers

- Boxes in the storage yard adjacent to the Unit 2 butler building
- Resin drums in the Unit 2 69' truck bay
- Storage box for a tri-nuke filtration system in the solid waste processing area

Contamination and Radioactive Material Control (IP Section 03.03) (2 Samples)

The inspectors evaluated licensee processes for monitoring and controlling contamination and radioactive material.

- (1) The inspectors observed the radiological control and handling of the RT-11 radiation source during the calibration of the containment high-range radiation monitors.
- (2) The inspectors observed the implementation of contamination controls for the removal of the fuel transfer tube blind flange in the reactor cavity.

Radiological Hazards Control and Work Coverage (IP Section 03.04) (3 Samples)

The inspectors evaluated in-plant radiological conditions during facility walkdowns and observation of radiological work activities.

- (1) The inspectors also reviewed the following radiological work package for areas with airborne radioactivity:
  - CC-2-21-00613
- (2) The inspectors also reviewed the following radiological work package for areas with airborne radioactivity:
  - CC-2-21-00503
- (3) The inspectors also reviewed the following radiological work package for areas with airborne radioactivity:
  - CC-2-21-00617

High Radiation Area and Very High Radiation Area Controls (IP Section 03.05) (2 Samples)

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

- (1)
  - Unit 2 personnel airlock
- (2)
  - Unit 1 monitored waste retention 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.

71124.05 - Radiation Monitoring Instrumentation

Walkdowns and Observations (IP Section 03.01) (5 Samples)

The inspectors evaluated the following radiation detection instrumentation during plant walkdowns:

- (1) REM Ball S/N 0024399
- (2) Telepole S/N 0017242
- (3) RO-20 S/N 0021939
- (4) Ludlum 9-4 S/N 0023359
- (5) 3030P S/N 0018429

Calibration and Testing Program (IP Section 03.02) (11 Samples)

The inspectors evaluated the calibration and testing of the following radiation detection instruments:

- (1) FASTSCAN whole body counter in the dosimetry office
- (2) TriCarb 3100TR Liquid Scintillation Counter in the chemistry lab
- (3) Containment High Range Radiation Monitor (1RE5317A)
- (4) Containment High Range Radiation Monitor (2RE5317A)
- (5) Containment High Range Radiation Monitor (1RE5317B)
- (6) Containment High Range Radiation Monitor (2RE5317B)
- (7) REM Ball S/N 0024399
- (8) Telepole S/N 0017242

- (9) RO-20 S/N 0021939
- (10) Ludlum 9-4 S/N 0023359
- (11) 3030P S/N 0018429

Effluent Monitoring Calibration and Testing Program Sample (IP Sample 03.03) (3 Samples)

The inspectors evaluated the calibration and maintenance of the following radioactive effluent monitoring and measurement instrumentation:

- (1) Unit 2 Wide Range Gas Monitor (2-RE-5415)
- (2) Gas & liquid waste discharge radiation monitor flow elements (0FT2192 and 0FT2199)
- (3) Waste processing exhaust filter HEPA test and flow verification

**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 03.10) (2 Samples)

- (1) Unit 1, January 1, 2020 - December 31, 2020
- (2) Unit 2, January 1, 2020 - December 31, 2020

BI02: RCS Leak Rate Sample (IP Section 03.11) (2 Samples)

- (1) Unit 1, January 1, 2020 - December 31, 2020
- (2) Unit 2, January 1, 2020 - December 31, 2020

**INSPECTION RESULTS**

Licensee-Identified Non-Cited Violation	71152
This violation of very low safety significance was identified by the licensee and has been entered into the licensee corrective action program and is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.	
Violation: The Calvert Cliffs Unit 1 and Unit 2 renewed facility operating licenses, DPR-53 and DPR-69, Appendix C, contain a license condition, implemented under License Amendment 237, that requires, in part, that “the established decommissioning trust agreement must provide that no disbursements or payments from the trust shall be made by the trustee until the trustee has first given the NRC 30-days prior written notice of payment.”	
Contrary to the above, on five occasions between 2017 and 2020, Exelon enacted disbursements from the Calvert Cliffs Units 1 and 2 decommissioning trust funds and the trustee had not first given the NRC 30-days prior written notice of payment.	
Significance/Severity: Severity Level IV. The NRC traditional enforcement process applies to this violation because the violation represents an impact to the regulatory process (i.e. failure to notify the NRC of changes in licensed activities). The significance of this violation was evaluated per the NRC enforcement policy and was determined to be Severity Level IV because the disbursements made were legitimate decommissioning planning	

expenses and prior written notice, as required, would not have likely caused the NRC to reconsider its regulatory position or undertake substantial further inquiry.

Corrective Action References: AR04410080, ML21089A302

## **EXIT MEETINGS AND DEBRIEFS**

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

- On April 9, 2021, the inspectors presented the integrated inspection results to Mr. Thomas Haaf, Site Vice President and other members of the licensee staff.
- On January 22, 2021, the inspectors presented the radiation monitoring instrumentation inspection results to Mr. Thomas Haaf, Site Vice President and other members of the licensee staff.
- On March 5, 2021, 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.
- On March 23, 2021, the inspectors presented the inservice inspection activities 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	IR 04406378		
		IR 04407741		
		IR 04408803		
	Corrective Action Documents Resulting from Inspection	IR 04411160		
	Drawings	02-8126886	Calvert Cliffs Unit 2 Pressurizer Penetration G1 Plug Implementation	Revision 0 and 2
	Miscellaneous	ER-CA-330-1001	ISI program Plan Fifth Ten-Year Inspection Interval	Revision 2
	Procedures	55-WP43/43/F43AW1	Welding Procedure Specification for manual GTAW of P-Number 43 base materials with F-Number 43 filler materials	Revision 11 and 12