



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

**REGION I  
2100 RENAISSANCE BOULEVARD, SUITE 100  
KING OF PRUSSIA, PENNSYLVANIA 19406-2713**

February 14, 2020

Mr. Bryan C. Hanson  
Senior Vice President, Exelon Generation Company, LLC  
President and Chief Nuclear Officer (CNO), Exelon Nuclear  
Exelon Generation Company, LLC  
4300 Winfield Road  
Warrenville, IL 60555

**SUBJECT: CALVERT CLIFFS NUCLEAR POWER PLANT, UNITS 1 AND 2 –  
INTEGRATED INSPECTION REPORT 05000317/2019004 AND  
05000318/2019004**

Dear Mr. Hanson:

On December 31, 2019, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Calvert Cliffs Nuclear Power Plant, Units 1 and 2. On January 29, 2020, the NRC inspectors discussed the results of this inspection with Mr. Mark Flaherty and other members of your staff. The results of this inspection are documented in the enclosed report.

One finding of very low safety significance (Green) is documented in this report. This finding involved a violation of NRC requirements. We are treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2 of the Enforcement Policy.

If you contest the violation or the significance or severity of the violation documented in this inspection report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement; and the NRC Resident Inspector at Calvert Cliffs Nuclear Power Plant.

If you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region I; and the NRC Resident Inspector at Calvert Cliffs Nuclear Power Plant.

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,

**/RA/**

Patrick W. Finney, Acting Chief  
Reactor Projects Branch 5  
Division of Reactor Projects

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 05000317/2019004 AND  
 05000318/2019004 DATED FEBRUARY 14, 2020

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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: 05000317/2019004 and 05000318/2019004

Enterprise Identifier: I-2019-004-0036

Licensee: Exelon Generation Company, LLC

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

Location: Lusby, MD

Inspection Dates: October 1, 2019 to December 31, 2019

Inspectors: H. Anagnostopoulos, Senior Health Physicist  
R. Clagg, Senior Resident Inspector  
S. Obadina, Resident Inspector  
M. Patel, Operations Engineer  
C. Roettgen, Resident Inspector  
D. Silk, Senior Operations Engineer

Approved By: Patrick W. Finney, Acting Chief  
Reactor Projects Branch 5  
Division of Reactor Projects

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

Inadequate Assessment of Fire Brigade Performance During an Unannounced Fire Drill			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000317,05000318/2019004-01 Open/Closed	[P.3] - Resolution	71152
The inspectors identified a Green non-cited violation of Calvert Cliffs Nuclear Power Plant Renewed Facility Operating License DPR-53, DPR-69, Condition E, for the licensee's failure to identify, address, and document deficiencies associated with the performance of the fire brigade during an unannounced fire drill. Specifically, the licensee failed to properly identify, address, and document deficiencies associated with two critical tasks which resulted in the fire drill being improperly evaluated as having met the assessment criteria.			

### Additional Tracking Items

None.

## PLANT STATUS

Unit 1 began the inspection period at rated thermal power. On October 11, 2019, the unit was down powered to 30 percent as a result of a dropped control element assembly. The unit was returned to rated thermal power on October 12, 2019, and remained at or near rated thermal power for the remainder of the inspection period.

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 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.

## REACTOR SAFETY

### 71111.01 - Adverse Weather Protection

#### Seasonal Extreme Weather Sample (IP Section 03.02) (1 Sample)

- (1) The inspectors evaluated readiness for seasonal extreme weather conditions prior to the onset of seasonal cold temperatures for the 12 condensate storage tank, emergency diesel generators, and the 11/14 and 21/24 4 kilovolt transformers.

### 71111.04Q - Equipment Alignment

#### Partial Walkdown Sample (IP Section 03.01) (3 Samples)

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

- (1) Unit 1, 11 emergency core cooling system train during 12 emergency core cooling system pump room air cooler out of service for maintenance, October 16, 2019
- (2) Unit 2, 2A emergency diesel generator during 2B emergency diesel generator out of service for maintenance, November 14, 2019
- (3) Common, fuel oil storage system during underground piping tightness testing, November 22, 2019

## 71111.05Q - Fire Protection

### Quarterly Inspection (IP Section 03.01) (3 Samples)

The inspectors evaluated fire protection program implementation in the following selected areas:

- (1) Unit 2, 21 and 22 emergency core cooling system pump rooms, fire areas 1-2, October 8, 2019
- (2) Units 1 and 2, auxiliary feedwater pump rooms, fire areas 42 and 43, November 22, 2019
- (3) Units 1 and 2, component cooling water pump and equipment fan rooms, fire areas 12-15, November 22, 2019

## 71111.11A - Licensed Operator Requalification Program and Licensed Operator Performance

### Requalification Examination Results (IP Section 03.03) (1 Sample)

- (1) The inspectors reviewed and evaluated the licensed operator examination failure rates for the requalification annual operating exam administered on December 6, 2019.

## 71111.11B - Licensed Operator Requalification Program and Licensed Operator Performance

### Licensed Operator Requalification Program (IP Section 03.04) (1 Sample)

- (1) Biennial Requalification Written Examinations

The inspectors evaluated the quality of the licensed operator biennial requalification written examination administered on November 12, 2019.

#### Annual Requalification Operating Tests

The inspectors evaluated the adequacy of the licensee's annual requalification operating test.

#### Administration of an Annual Requalification Operating Test

The inspectors evaluated the effectiveness of the licensee in administering requalification operating tests required by 10 CFR 55.59(a)(2) and that the licensee is effectively evaluating their licensed operators for mastery of training objectives.

#### Requalification Examination Security

The inspectors evaluated the ability of the licensee to safeguard examination material, such that the examination is not compromised.

### Remedial Training and Re-examinations

The inspectors evaluated the effectiveness of remedial training conducted by the licensee, and reviewed the adequacy of re-examinations for licensed operators who did not pass a required requalification examination.

### Operator License Conditions

The inspectors evaluated the licensee's program for ensuring that licensed operators meet the conditions of their licenses.

### Control Room Simulator

The inspectors evaluated the adequacy of the licensee's control room simulator in modeling the actual plant, and for meeting the requirements contained in 10 CFR 55.46.

### Problem Identification and Resolution

The inspectors evaluated the licensee's ability to identify and resolve problems associated with licensed operator performance.

## 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 response to a dropped Unit 1 control element assembly and a halon discharge in the cable spreading room which led to a down power to 30 percent rated thermal power, on October 11, 2019.
- (2) The inspectors observed and evaluated licensed operator response to grid instability during an offsite power line out of service on October 16, 2019.

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

- (1) The inspectors observed and evaluated a training event involving feedwater heater level issues, a steam generator tube leak, and a leaking power operated relief valve with a failed blocking valve which resulted in the declaration of an Alert on October 8, 2019.

## 71111.12 - Maintenance Effectiveness

### Routine Maintenance Effectiveness Inspection (IP Section 02.01) (4 Samples)

The inspectors evaluated the effectiveness of routine maintenance activities associated with the following equipment and/or safety significant functions:

- (1) Unit 1, (a)(1) action plan for CA-1-032-01 - switch gear, heating, ventilation and air conditioning, December 4, 2019
- (2) Unit 1, AR04273037, (a)(1) determination for auxiliary building heating, ventilation and air conditioning, December 19, 2019



- (3) Unit 2, (a)(1) determination and action plan for CA-2-018-01 - provide 120 volt AC to vital load, December 7, 2019
- (4) Units 1 and 2, Review of licensee's 10 CFR 50.65(a)(3) periodic assessment of the maintenance rule program covering November 2016 - October 2018, December 7, 2019

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

##### Risk Assessment and Management Sample (IP Section 03.01) (4 Samples)

The inspectors evaluated the risk assessments for the following planned and emergent work activities:

- (1) Unit 1, Yellow risk condition during 11 high pressure safety injection pump out of service for maintenance, December 18, 2019
- (2) Unit 2, elevated risk condition during 2B emergency diesel generator out of service for maintenance, November 14, 2019
- (3) Units 1 and 2, elevated risk condition due to diesel fuel oil underground piping testing, November 21, 2019
- (4) Units 1 and 2, elevated risk condition during 1B emergency diesel generator biennial test, December 2, 2019

#### 71111.15 - Operability Determinations and Functionality Assessments

##### Operability Determination or Functionality Assessment (IP Section 02.02) (3 Samples)

The inspectors evaluated the following operability determinations and functionality assessments:

- (1) Unit 2, AR04288642, operation of 2CKVSI-148, 22A safety injection tank header check valve arm impacts insulation on 2CKVSI-245, 22A safety injection tank outlet check valve, October 21, 2019
- (2) Unit 2, AR04295722, 22 service water pump bearing losing oil, November 13, 2019
- (3) Unit 2, AR04256305, Schrader valve depth affecting halon functionality, November 14, 2019

#### 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) Unit 2, Engineering Change Package-19-0005752, remove insulation from 2CKVSI-245, 22A safety injection tank outlet check valve

### 71111.19 - Post-Maintenance Testing

#### Post-Maintenance Test Sample (IP Section 03.01) (5 Samples)

The inspectors evaluated the following post-maintenance tests:

- (1) Unit 1, WO C93682706, perform replacement on 12 emergency core cooling system air cooler saltwater inlet solenoid valve, October 17, 2019
- (2) Unit 1, WO C93700359, inspect and lubricate 1-MOV-656, high pressure safety injection auxiliary header isolation valve, December 18, 2019
- (3) Unit 2, WO C93685046, 2B emergency diesel generator -10 and emergency diesel generator -20 with hydra test, November 15, 2019
- (4) Unit 2, WO C93624427, replace 22 component cooling pump motor, December 30, 2019
- (5) Units 1 and 2, WO C93703440, diesel fuel oil underground piping precision tightness testing, November 22, 2019

### 71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

#### Surveillance Tests (other) (IP Section 03.01) (1 Sample)

- (1) Unit 1, STP-O-8B2YR-1, "Biennial Test of 1B DG," Revision 1, December 2, 2019

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

- (1) Unit 1, STP-O-73I-1, "High Pressure Safety Injection Pump and Check Valve Quarterly Operability Test," Revision 1100, November 6, 2019

### 71114.06 - Drill Evaluation

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

The inspectors evaluated:

- (1) The inspectors observed and evaluated the conduct of a simulator training evolution involving a steam generator tube leak and a leaking power operated relief valve with a failed blocking valve which resulted in a declaration of an Alert, October 8, 2019.

## **RADIATION SAFETY**

### 71124.06 - Radioactive Gaseous and Liquid Effluent Treatment

#### Walk Downs and Observations (IP Section 02.01) (1 Sample)

The inspectors reviewed the following:

- (1) The inspectors walked down the gaseous and liquid radioactive effluent monitoring and filtered ventilation systems to assess the material condition and verify proper alignment according to plant design.

#### Calibration and Testing Program (Process & Effluent Monitors) (IP Section 02.02) (1 Sample)

The inspectors reviewed the following:

- (1) The inspectors evaluated the gaseous and liquid effluent monitor instrument calibration and testing.

#### Sampling and Analysis (IP Section 02.03) (1 Sample)

The inspectors reviewed the following:

- (1)
  - Radioactive effluent sampling activities
  - Representative sampling requirements
  - Compensatory measures taken during effluent discharges with inoperable effluent radiation monitoring instrumentation
  - Use of compensatory radioactive effluent sampling
  - Results of the inter-laboratory and intra-laboratory comparison program, including scaling of hard-to-detect isotopes

#### Instrumentation and Equipment (IP Section 02.04) (1 Sample)

The inspectors reviewed the following:

- (1) The inspectors reviewed radioactive effluent discharge system surveillance test results and reviewed the methodology used to determine the radioactive effluent stack and vent flow rates based on Technical Specifications/Off Site Dose Calculation Manual acceptance criteria.

#### Dose Calculations (IP Section 02.05) (1 Sample)

The inspectors reviewed the following:

- (1) The inspectors reviewed several liquid and gaseous discharge permits to evaluate public dose calculations (monthly, quarterly, and annual) and the annual radiological effluent release reports for 2017 and 2018.

### **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, October 1, 2018 - September 30, 2019
- (2) Unit 2, October 1, 2018 - September 30, 2019

IE03: Unplanned Power Changes per 7000 Critical Hours Sample (IP Section 02.02)  
(2 Samples)

- (1) Unit 1, October 1, 2018 - September 30, 2019
- (2) Unit 2, October 1, 2018 - September 30, 2019

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

- (1) Unit 1, October 1, 2018 - September 30, 2019
- (2) Unit 2, October 1, 2018 - September 30, 2019

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

- (1) The inspectors reviewed licensee submittals for the occupational radiological occurrences performance indicators for the fourth quarter 2018 through the third quarter of 2019.

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) The inspectors reviewed licensee submittals for the radiological effluent Technical Specifications/Offsite Dose Calculation Manual radiological effluent occurrence performance indicators for the fourth quarter 2018 through the third quarter of 2019.

71152 - Problem Identification and Resolution

Semiannual Trend Review (IP Section 02.02) (1 Sample)

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

Annual Follow-up of Selected Issues (IP Section 02.03) (2 Samples)

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

- (1) Unit 1, Calvert Cliffs Nuclear Power Plant has experienced multiple failures in the heater drain tank level control systems, November 14, 2019
- (2) Common, Review of the licensee's evaluation and corrective actions for Non-Cited Violation 05000317, 318/2017-004-01, "Inadequate Assessment of Fire Brigade Performance During an Announced Drill," December 19, 2019

## INSPECTION RESULTS

Inadequate Assessment of Fire Brigade Performance During an Unannounced Fire Drill			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000317,05000318/2019004-01 Open/Closed	[P.3] - Resolution	71152
<p>The inspectors identified a Green non-cited violation of Calvert Cliffs Nuclear Power Plant Renewed Facility Operating License DPR-53, DPR-69, Condition E, for the licensee's failure to identify, address, and document deficiencies associated with the performance of the fire brigade during an unannounced fire drill. Specifically, the licensee failed to properly identify, address, and document deficiencies associated with two critical tasks which resulted in the fire drill being improperly evaluated as having met the assessment criteria.</p> <p><u>Description:</u> On October 9, 2019, the inspectors observed an unannounced fire drill involving a simulated fire in the spent fuel pool exhaust fan room located in the Unit 1 auxiliary building. Fire drills are conducted and evaluated using the guidance in licensee procedure OP-AA-201-003, "Fire Drill Performance," Revision 17. The inspectors observed the fire drill in and around the fire area and noted the following:</p> <ul style="list-style-type: none"> <li>• One fire brigade member failed to properly don required personal protective equipment. Fire brigade members failed to identify this deficiency during required peer checks of members donning required personal protective clothing.</li> <li>• The fire brigade leader failed to utilize the pre-fire plan for the fire area, which resulted in the placement of a command post directly outside the fire area door causing congestion at the entrance to the fire area and could have possibly exposed the fire brigade leader to an atmosphere that was potentially immediately dangerous to life or health. The fire brigade leader did not reevaluate the placement of the command post for the duration of the fire brigade drill.</li> </ul> <p>The inspectors observed the post fire drill critique conducted by the licensee and reviewed the OP-AA-201-003, Attachment 1, Fire Drill Record, completed for the October 9, 2019, fire brigade drill and noted the following:</p> <ul style="list-style-type: none"> <li>• Using OP-AA-201-003, Attachment 1, Section 3.0, Fire Brigade Response, Strategy, and Tactics, the fire brigade drill evaluators evaluated the fire brigade's demonstration of proper donning of personal protective equipment (a critical task) as Satisfactory during the post fire drill critique. The inspectors identified that one fire brigade member failed to properly don required personal protective equipment and fire brigade members failed to identify this deficiency during required peer checks of members donning required personal protective equipment. The fire brigade drill evaluators subsequently changed the evaluation of this task to Unsatisfactory based on inspector identified deficiencies.</li> <li>• Using OP-AA-201-003, Attachment 1, Section 3.0, Fire Brigade Response, Strategy, and Tactics, the fire brigade drill evaluators evaluated the fire brigade's demonstration of the two in, two out method (a critical task) as Unsatisfactory based on one fire brigade member, acting as part of the back-up team, entering the fire area while the attack team was in the fire area.</li> <li>• Using OP-AA-201-003, Attachment 1, Section 4.0, Command and Control, the fire brigade drill evaluators evaluated the fire brigade leader's utilization of the command</li> </ul>			

board, worksheet, checklist, and pre-fire plans (a critical task) as Needs Improvement because the fire brigade leader failed to consistently use the provided command worksheet. The inspectors identified that the fire brigade leader failed to utilize the pre-fire plan for the fire area. The inspectors identified that the pre-fire plan for this fire area recommended two potential command post locations that were not in the immediate vicinity of the fire area. The fire brigade drill evaluators subsequently changed the evaluation of this task to Unsatisfactory based on inspector identified deficiencies.

The inspectors reviewed OP-AA-201-003 and noted that Attachment 1, Section 6.0, establishes three acceptance criteria, all of which must be met for the fire drill to be evaluated as Satisfactory. One of these acceptance criteria is that no more than two critical tasks are scored as Unsatisfactory. The inspectors noted that for the two of the three critical tasks, described above, inspector-identified deficiencies directly resulted in the critical task being evaluated as Unsatisfactory.

The inspectors concluded that the licensee failed to identify, address, and document deficiencies associated with the performance of the fire brigade. Specifically, absent inspector-identified deficiencies, two critical tasks would not have been evaluated as Unsatisfactory which would have resulted in the fire brigade drill being improperly assessed as having met the acceptance criteria established in OP-AA-201-003, Attachment 1, Section 6.0.

The inspectors also reviewed AR04094397 which documents a corrective action program evaluation completed by the licensee in response to Non-Cited Violation 05000317, 318/2017004-01, Inadequate Assessment of Fire Brigade Performance During an Announced Fire Drill. The inspectors noted that the apparent cause identified was that management involvement was insufficient to correct fire drill program degraded performance. Specifically, program oversight was not increased when previous related issues were externally identified based on over-confidence in subject matter experts to understand the impact and correct deficiencies. The inspectors noted that a corrective action for the apparent cause was to implement a fire protection performance improvement action plan to improve and sustain performance. The inspectors reviewed the performance improvement action plan as documented in AR04098949. The inspectors noted that this document included corrective actions to develop improved metrics for fire brigade performance and oversight, specifically the development of a fire brigade drill grading job aid. The inspectors identified that for the fire brigade drill observed on October 9, 2019, the fire brigade drill grading job aid was not utilized when assessing fire brigade drill performance.

**Corrective Actions:** The licensee's immediate corrective actions included temporary removal of qualifications and remedial training for the fire brigade members who were identified as having deficient performance.

**Corrective Action References:** AR04286658

**Performance Assessment:**

**Performance Deficiency:** The inspectors determined that the licensee's failure to identify, address, and document deficiencies associated with the performance of the fire brigade as required by OP-AA-201-003, "Fire Drill Performance," Revision 17, was a performance deficiency.

**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. The inspectors reviewed IMC 0612, Appendix B, "Issue Screening," issued on December 13, 2017. Specifically, failure to identify, address, and document deficiencies associated with the performance of the fire brigade adversely affects the fire brigade's ability to protect against the effects of a fire.

**Significance:** The inspectors assessed the significance of the finding using Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." In accordance with IMC 0609, Attachment 4, "Initial Characterization of Findings," issued on October 7, 2016, the inspectors determined that this finding is of very low safety significance (Green) since it involved fire brigade training requirements, the fire brigade demonstrated the ability to meet the required times for fire extinguishment for the fire drill scenarios, and the finding did not significantly affect the fire brigade's ability to respond to a fire.

**Cross-Cutting Aspect:** P.3 - Resolution: The organization takes effective corrective actions to address issues in a timely manner commensurate with their safety significance. The inspectors determined that the finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Resolution, because the licensee failed to take effective corrective actions to address issues in a timely manner commensurate with their safety significance. Specifically, the licensee failed to utilize a fire brigade drill grading job aid that was developed as a corrective action to address previously identified deficiencies in the grading of fire brigade drills.

**Enforcement:**

**Violation:** Calvert Cliffs Nuclear Power Plant Renewed Facility Operating License DPR-53, DPR-69, Condition E requires, in part, that Exelon shall implement and maintain in effect all provisions of the approved Fire Protection Program. The Fire Protection Program at Calvert Cliffs Nuclear Power Plant is described in the Updated Final Safety Analysis Report, Section 9.9, and is controlled by licensee procedures, including OP-AA-201-003, "Fire Drill Performance," Revision 17. OP-AA-201-003 requires, in part, that deficiencies of the fire brigade shall be identified, addressed, and documented. Contrary to the above, during the unannounced fire drill on October 9, 2019, the licensee failed to identify, address, and document deficiencies associated with the performance of the fire brigade. Specifically, the licensee failed to properly identify, address, and document deficiencies associated with two critical tasks which resulted in the fire drill being improperly evaluated as having met the assessment criteria. The licensee's immediate corrective actions included temporary removal of qualifications and remedial training for the fire brigade members who were identified as having deficient performance.

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

<p>Observation: Review of Licensee's Evaluation and Corrective Actions Associated with Non-Cited Violation 05000317, 318/2017-004-001, Inadequate Assessment of Fire Brigade Performance During an Announced Fire Drill</p>	<p>71152</p>
<p>The inspectors reviewed the licensee's evaluation and corrective actions associated with Non-Cited Violation 05000317, 318/2017004-01, "Inadequate Assessment of Fire Brigade Performance During an Announced Fire Drill," as documented in AR04094397 and AR04098949. The inspectors reviewed licensee documentation and interviewed licensee personnel. In addition, the inspectors observed an unannounced fire brigade drill on October 9, 2019, to evaluate implementation of corrective actions associated with Non-Cited Violation 05000317, 318/2017004-01. The results of this observed fire brigade drill and the associated enforcement aspects are documented in the inspection results section of this report above.</p> <p>The inspectors reviewed AR04094397 which documents a corrective action program evaluation completed by the licensee in response to the non-cited violation and noted the following items.</p> <p>The inspectors noted that a contributing cause was identified to be lead controller and drill assistants did not effectively implement their roles in a manner that allows for adequate drill control and evaluation, as well, as effective critique of crew performance. The inspectors noted that a Corrective Action, 04094397-15, for this contributing cause, was to develop a site job aid for the development and grading of fire brigade drills including the minimum elements documented in the corrective action program evaluation report. The inspectors reviewed the site job aid and noted that it did not include the required minimum elements. The inspectors reviewed the effectiveness review, documented in AR04181257, conducted for the corrective action program evaluation and noted that this deficiency was identified in October 2018. The inspectors noted that corrective actions were developed to resolve these issues. The inspectors reviewed AR04181257 and identified that these subsequent corrective actions were closed without the missing minimum items having been included in the site job aid. The inspectors noted that the site job aid included actions for the lead fire brigade drill controller regarding evaluation of fire brigade drills, specifically meeting with the fire brigade leader and shift manager to discuss critical objectives and for the fire brigade leader to lead a crew debrief and discuss expected response versus actual response and discuss any differences. The inspectors identified that for the fire brigade drill observed on October 9, 2019, the site job aid was not utilized and these required items were not completed.</p> <p>Corrective action 04094397-10, for this contributing cause, was to align fire brigade drill control to match emergency response style preparations, execution, and critique rigor. The inspectors noted that a site job aid for the development and grading of fire brigade drills was developed to address this corrective action. The inspectors noted that, similar to Corrective Action 04094397-15 discussed above, the site job aid included actions for the lead fire brigade drill controller regarding evaluation of fire brigade drills, specifically meeting with the fire brigade leader and shift manager to discuss critical objectives and for the fire brigade leader to lead a crew debrief and discuss expected response versus actual response and discuss any differences. The inspectors reviewed the effectiveness review, documented in AR04181257, conducted for the corrective action program evaluation and noted that it identified that the use of the job aid was not required by licensee procedure OP-AA-201-003, "Fire Drill Performance," Revision 17, and, as a result, lacked sustainability. The inspectors noted that corrective actions were developed to resolve these issues. The inspectors reviewed AR04181257 and identified that these subsequent corrective actions were closed</p>	



without the use of the site job aid being implemented in OP-AA-201-003. The inspectors identified that for the fire brigade drill observed on October 9, 2019, the site job aid was not utilized and these required items were not completed.

Corrective action 04094397-16, for this contributing cause, was to conduct training for fire drill controllers, fire drill assistants, and fire brigade members on the new site standard, as documented in 04094397-15 and discussed above. The inspectors reviewed the training developed for this corrective action and noted that it did not include many of the elements documented on the site job aid developed in 04094397-15. The inspectors also reviewed the training attendance record for this required training and identified that all required members did not receive the training. Specifically, training attendance was limited to equipment operators, who are normally members of the fire brigade. The inspectors did not identify documented training attendance by members who only serve as fire drill controllers and fire drill assistants.

The inspectors determined that while the observations above contributed to the Green non-cited violation documented above, none of these issues independently were of more than minor significance, in accordance with IMC 0612, Appendix B.

Observation: Semi-annual Trend	71152
<p>The inspectors performed a semi-annual review of site issues, as required by IP 71152, "Problem Identification and Resolution," to identify trends that might indicate the existence of more significant safety issues. In this review, the inspectors included repetitive or closely-related issues that may have been documented by Exelon personnel outside of the corrective action program, such as trend reports, performance indicators, major equipment problem lists, system health reports, maintenance rule assessments, and maintenance or corrective action program backlogs. The inspectors also reviewed Exelon's corrective action program database for the third and fourth quarters of 2019 to assess action requests written in various subject areas (equipment problems, human performance issues, etc), as well as individual issues identified during the NRC's daily action request review. The inspectors reviewed Exelon's quarterly trend report for the third and fourth quarters of 2019 to verify that Exelon personnel were appropriately evaluating and trending adverse conditions in accordance with applicable procedures.</p> <p>The inspectors evaluated a sample of action requests generated by departments that provide input to the quarterly trend reports. The inspectors assessed whether the issues were appropriately evaluated by Exelon staff for potential trends and resolved within the scope of the corrective action program. The inspectors reviewed self-assessments performed by Exelon outside of the corrective action program, including quarterly performance assessment reports and Nuclear Oversight Audits, and verified that trends identified were input into the corrective action program and appropriately evaluated.</p> <p>No findings were identified. The inspectors determined that none of the above issues were of more than minor significance, in accordance with IMC 0612, Appendix B.</p>	

Observation: Multiple Instances of Thermal Power Transients Due to Heater Drain Tank Level Control Problems	71152
<p>The inspectors reviewed the licensee's evaluation and corrective actions associated with multiple instances of Unit 1 heater drain tank level control problems that resulted in short thermal power transients above the licensed steady state power limit as documented in AR04197071, AR04197034, AR04120128, and AR04123368. The inspectors concluded that the licensee had taken timely and appropriate actions in accordance with the licensee's operating and alarm response procedures, PI-AA-125, "Corrective Action Program Procedure," various revisions. The inspectors reviewed the licensee's causal evaluations associated with the failures and determined the evaluations were adequate and did not identify any common causal factors between the failures. Based on the documents reviewed and discussions with licensee personnel, the inspectors noted that the licensee personnel identified problems and entered them into the corrective action program at an appropriate low threshold.</p> <p>The inspectors determined that none of the above issues were of more than minor significance, in accordance with IMC 0612, Appendix B.</p>	

## EXIT MEETINGS AND DEBRIEFS

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

- On January 29, 2020, the inspectors presented the integrated inspection results to Mr. Mark Flaherty and other members of the licensee staff.

## DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.15	Drawings	60727SH0002	Diesel Generator Cooling Water, Starting Air, Fuel and Lube Oil, Diesel No. 1B	69
	Procedures	ETP 94-027	Instrument Air Start Testing	
		I-584-2A	Leak Rate Test of 2A DG Air Receiver Inlet Check Valves	00100
		M-184-1A	Leak Rate Test of 1A DG Air Receiver Inlet Check Valves	00400
	Work Orders	C93695727	2A-DSA-106 Excessive Check Valve Leaking	
71152	Corrective Action Documents	04120128, 04123368, 04123411, 04197071, 04197034		
	Procedures	WC-AA-106	Work Screening and Processing	17
	Work Orders	C93661567, C93662368, C93688285		