



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

REGION I  
2100 RENAISSANCE BLVD., SUITE 100  
KING OF PRUSSIA, PA 19406-2713

November 30, 2015

Mr. George H. Gellrich, Site Vice President  
Calvert Cliffs Nuclear Power Plant, LLC  
Exelon Generation Company, LLC  
1650 Calvert Cliffs Parkway  
Lusby, MD 20657-4702

**SUBJECT: CALVERT CLIFFS NUCLEAR POWER PLANT – PROBLEM IDENTIFICATION  
AND RESOLUTION INSPECTION REPORT 05000317/2015010 AND  
05000318/2015010**

Dear Mr. Gellrich:

On November 12, 2015, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Calvert Cliffs Nuclear Power Plant (Calvert Cliffs), Units 1 and 2. The enclosed report documents the inspection results, which were discussed on October 8, 2015, with Mr. M. Flaherty, Acting Site Vice President, and other members of your staff. During this discussion your staff requested to provide additional information for consideration. In-office review of the additional information continued by the NRC after the conclusion of the onsite inspection, and a telephonic exit meeting was conducted on November 12, 2015, with Mr. M. Flaherty and other members of your staff.

This inspection examined activities conducted under your license as they relate to identification and resolution of problems and compliance with the Commission's rules and regulations and conditions of your license. Within these areas, the inspection involved examination of selected procedures and representative records, observations of activities, and interviews with personnel.

Based on the samples selected for review, the inspection team concluded that Exelon Generating Company, LLC (Exelon) was generally effective in identifying, evaluating, and resolving problems. Exelon personnel identified problems and entered them into the corrective action program at a low threshold. Exelon prioritized and evaluated issues commensurate with the safety significance of the problems and corrective actions were generally implemented in a timely manner.

This report documents one NRC-identified finding of very low safety significance (Green). The inspectors determined that this finding also involved a violation of NRC requirements. However, because of the very low safety significance and because the issue was entered into your corrective action program, the NRC is treating this finding as a non-cited violation, consistent with Section 2.3.2.a of the NRC Enforcement Policy. If you contest this non-cited violation, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk,

G. Gellrich

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Washington, DC 20555-0001, with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Calvert Cliffs. In addition, if you disagree with the cross-cutting aspect assigned to any finding 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 Regional Administrator, Region I, and the NRC Resident Inspector at Calvert Cliffs.

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of the NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

*/RA/*

Daniel L. Schroeder, Chief  
Reactor Projects Branch 1  
Division of Reactor Projects

Docket Nos. 50-317 and 50-318  
License Nos. DPR-53 and DPR-69

Enclosure:  
Inspection Report 05000317/2015010 and 05000318/2015010  
w/Attachment: Supplementary Information

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Washington, DC 20555-0001, with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Calvert Cliffs. In addition, if you disagree with the cross-cutting aspect assigned to any finding 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 Regional Administrator, Region I, and the NRC Resident Inspector at Calvert Cliffs.

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**U.S. NUCLEAR REGULATORY COMMISSION**

REGION I

Docket Nos. 50-317 and 50-318

License Nos. DPR-53 and DPR-69

Report Nos. 05000317/2015010 and 05000318/2015010

Licensee: Exelon Generation Company, LLC

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

Location: Lusby, Maryland

Dates: September 21, 2015, through November 12, 2015

Team Leader: A. Rosebrook, Senior Project Engineer

Inspectors: R. Clagg, Senior Resident Inspector  
J. DeBoer, Project Engineer  
L. Micewski, Reactor Operations Engineer

Approved by: Daniel L. Schroeder, Chief  
Reactor Projects Branch 1  
Division of Reactor Projects

## SUMMARY

Inspection Report 05000317/2015010 and 05000318/2015010; 09/21/2015 – 11/12/2015; Calvert Cliffs Nuclear Power Plant (Calvert Cliffs), Units 1 and 2; Biennial Baseline Inspection of Problem Identification and Resolution. The inspectors identified one finding in the area of corrective action program (CAP) – timely and effective corrective actions.

This U.S. Nuclear Regulatory Commission (NRC) team inspection was performed by two regional inspectors, one headquarters inspector, and one resident inspector. The inspectors identified one finding of very low safety significance (Green) during this inspection and classified this finding as a non-cited violation (NCV). The significance of most findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," dated April 29, 2015. Cross-cutting aspects are determined using IMC 0310, "Aspects Within the Cross-Cutting Areas," dated December 4, 2014. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated February 4, 2015. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 5.

### Problem Identification and Resolution

The inspectors concluded that Exelon Generating Company, LLC (Exelon) was generally effective in identifying, evaluating, and resolving problems. Exelon personnel identified problems, entered them into the CAP at a low threshold, and prioritized issues commensurate with their safety significance. In most cases, Exelon appropriately screened issues for operability and reportability, and performed causal analyses that appropriately considered extent of condition, generic issues, and previous occurrences. The inspectors also determined that Exelon typically implemented corrective actions to address the problems identified in the CAP in a timely manner. However, the inspectors identified one violation of NRC requirements in the area of timely and effective corrective actions.

The inspectors concluded that, in general, Exelon adequately identified, reviewed, and applied relevant industry operating experience to Calvert Cliffs' operations. In addition, based on those items selected for review, the inspectors determined that Exelon's self-assessments and audits were thorough.

Based on the interviews the inspectors conducted over the course of the inspection, observations of plant activities, and reviews of individual CAP and Employee Concerns Program issues, the inspectors did not identify any indications that site personnel were unwilling to raise safety issues nor did they identify any conditions that could have had a negative impact on the site's safety conscious work environment.

### **Cornerstone: Mitigating Systems**

Green. The inspectors identified a Green NCV of Title 10 of the *Code of Federal Regulations* (10 CFR) 50, Appendix B, Criterion XVI, "Corrective Action," because Exelon did not assure that conditions adverse to quality were promptly corrected. Specifically, from November 2012, until October 28, 2015, Exelon did not ensure that diesel fuel oil (DFO) transfer system header check valves DFO-146 and DFO-148 were properly tested or inspected to ensure they would perform their safety function. This issue was previously documented as a NCV of 10 CFR 50, Appendix B, Criterion XI, "Test Control," in inspection report 05000317, 318/2013003.

The inspectors determined that not promptly correcting a condition adverse to quality previously documented in an NCV was a performance deficiency that was within Exelon's ability to foresee and prevent. This finding is more than minor because it is associated with the protection against external factors attribute of the Mitigating Systems cornerstone and affects the cornerstone objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the safety function of DFO-146 and DFO-148, to close on the failure of a fuel oil storage tank to prevent draining the unaffected tank had never been verified through test or inspection since initial plant construction; therefore, reasonable doubt exists whether the valves remained capable of performing that function. The inspectors evaluated the significance of this finding using IMC 0609, Appendix A, "The Significance Determination Process for Findings at Power," Exhibit 2, "Mitigating Systems Screening Questions." The inspectors determined that this finding was of very low safety significance (Green) because the finding did not involve the loss or degradation of equipment or function specifically designed to mitigate a seismic, flooding, or severe weather event. The inspectors determined that this finding had a cross-cutting aspect in the area of Human Performance Procedure Adherence because Exelon staff did not follow station processes, procedures, and work instructions. Specifically, Exelon staff did not ensure corrective action due date extensions and cancellations were justified, evaluated for adverse consequences, and presented to the Management Review Committee (MRC) as required by station procedures. As a result, corrective actions to restore compliance were not completed in a timely manner. [H.8]

## REPORT DETAILS

### 4. OTHER ACTIVITIES (OA)

#### 4OA2 Problem Identification and Resolution (71152B)

This inspection constitutes one biennial sample of problem identification and resolution as defined by Inspection Procedure 71152. All documents reviewed during this inspection are listed in the Attachment to this report.

#### .1 Assessment of Corrective Action Program Effectiveness

##### a. Inspection Scope

The inspectors reviewed the procedures that described the CAP at Calvert Cliffs. Since the last NRC biennial Problem Identification and Resolution inspection completed in September 2013, Calvert Cliffs' management transitioned from Constellation Energy Nuclear Group, LLC (Constellation) to Exelon. The transition, which occurred on April 1, 2014, resulted in the review of program effectiveness under two separate sets of program procedures and program processes. To assess the effectiveness of the CAP, the inspectors reviewed performance in three primary areas: problem identification, prioritization and evaluation of issues, and corrective action implementation. The inspectors compared performance in these areas to the requirements and standards contained in 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action"; Exelon procedure PI-AA-125, "Corrective Action Program (CAP)"; and Constellation procedure CNG-CA-1.01-1000, "Corrective Action Program (CAP)."

For each of these areas, the inspectors considered risk insights from the station's risk analysis and reviewed condition reports (CRs) (Constellation) and issue reports (IRs) (Exelon) selected across the seven cornerstones of safety in the NRC's Reactor Oversight Process. Additionally, the inspectors attended multiple Station Ownership Committee (SOC) and MRC meetings. The inspectors selected items from the following functional areas for review: engineering, operations, maintenance, emergency preparedness, radiation protection, chemistry, physical security, nuclear oversight, and the CAP.

##### (1) Effectiveness of Problem Identification

In addition to the items described above, the inspectors reviewed system health reports, a sample of completed corrective and preventative maintenance work orders, completed surveillance test procedures, operator logs, and periodic trend reports. The inspectors also completed field walkdowns of various systems on site, such as the Units 1 and 2 4160 volts alternating current (VAC) and 480 VAC distribution systems, the Units 1 and 2 service water systems, the fire protection system, the Unit 2 component cooling water system, the Units 1 and 2 emergency diesel generators (EDGs), and the DFO transfer systems. Additionally, the inspectors reviewed a sample of CRs and IRs written to document issues identified through internal self-assessments, audits, emergency preparedness drills, and the operating experience program. The inspectors completed this review to verify that Exelon staff entered conditions adverse to quality into their CAP as appropriate.

(2) Effectiveness of Prioritization and Evaluation of Issues

The inspectors reviewed the evaluation and prioritization of a sample of CRs and IRs issued since the last NRC biennial Problem Identification and Resolution inspection completed in September 2013. The inspectors also reviewed CRs and IRs that were assigned lower levels of significance that did not include formal cause evaluations to ensure that they were properly classified. The inspectors' review included the appropriateness of the assigned significance, the scope and depth of the causal analysis, and the timeliness of resolution. The inspectors assessed whether the evaluations identified likely causes for the issues and developed appropriate corrective actions to address the identified causes. Further, the inspectors reviewed equipment operability determinations, reportability assessments, and extent-of-condition reviews for selected problems to verify these processes adequately addressed equipment operability, reporting of issues to the NRC, and the extent of the issues.

(3) Effectiveness of Corrective Actions

The inspectors reviewed Exelon's completed corrective actions through documentation review and, in some cases, field walkdowns to determine whether the actions addressed the identified causes of the problems. The inspectors also reviewed CRs and IRs for adverse trends and repetitive problems to determine whether corrective actions were effective in addressing the broader issues. The inspectors reviewed Exelon's timeliness in implementing corrective actions and effectiveness in precluding recurrence for significant conditions adverse to quality. The inspectors also reviewed a sample of CRs and IRs associated with selected NCVs and findings to verify that Exelon personnel properly evaluated and resolved these issues. In addition, the inspectors expanded the corrective action review to five years to evaluate Exelon's actions related to deficiencies associated with the Units 1 and 2 4160 VAC distribution system (specifically the corrective actions related to the three dual unit plant trips in 2010, 2014, and 2015), and the Units 1 and 2 control element assembly (CEA) drive systems (specifically dropped CEA events from 2012 and 2014).

(4) Trending

The inspectors reviewed Calvert Cliffs' processes for identifying and addressing emergent and existing adverse trends in equipment and human performance. The inspectors conducted interviews with plant staff who conducted the department trend reviews, reviewed department trend reports, site quarterly trend reports, maintenance rule performance monitoring reports, and a(1) action plans and evaluations as required by 10 CFR 50.65. The inspectors also reviewed the minutes from System Health Committee meetings.

b. Assessment

(1) Effectiveness of Problem Identification

Based on the selected samples, plant walkdowns, and interviews of site personnel in multiple functional areas, the inspectors determined that Exelon identified problems and entered them into the CAP at a low threshold. Exelon staff at Calvert Cliffs initiated approximately 22,000 CRs and IRs between September 2013 and August 2015. The inspectors observed supervisors at the Plan-of-the-Day, SOC, and MRC meetings appropriately questioning and challenging CRs to ensure clarification of the issues.



Based on the samples reviewed, the inspectors determined that Exelon trended equipment and programmatic issues, and appropriately identified problems in CRs. The inspectors verified that conditions adverse to quality identified through this review were entered into the CAP as appropriate. In general, the inspectors did not identify any issues or concerns that had not been appropriately entered into the CAP for evaluation and resolution. In response to several questions and minor equipment observations identified by the inspectors during plant walkdowns, Exelon personnel promptly initiated CRs and/or took immediate action to address the issues. The inspectors also observed that the SOC went back to the originators of several IRs in order to obtain additional details so the issue was clearly documented in the CAP and could be appropriately evaluated.

The inspectors did identify an occasion where items were not entered into the CAP. Specifically,

- During June 2015, roof inspections and roof drainage equipment inspections were performed for safety-related buildings including the turbine building, auxiliary building, EDG enclosures, and service water buildings. These inspections were required by the Individual Plant Examination for External Events report in order to demonstrate these structures would not collapse during a maximum precipitation event. Although these inspections did identify degradation, non-conforming conditions, and other deficiencies, the results were not captured in the CAP. In response to the inspectors' observations, several IRs were written on September 29, 2015. When evaluated, none of the non-conformances and deficiencies were determined to adversely impact the operability of the structures or enclosed equipment; therefore, this issue was determined to be of minor significance in accordance with the guidance of IMC 0612, Appendix B, "Issue Screening." The IRs written are documented in the appendix.

## (2) Effectiveness of Prioritization and Evaluation of Issues

The inspectors determined that, in general, Exelon appropriately prioritized and evaluated issues commensurate with the safety significance of the identified problem. Exelon screened CRs for operability and reportability, categorized the CRs by significance, and assigned actions to the appropriate department for evaluation and resolution. The CR screening process considered human performance issues, radiological safety concerns, repetitiveness, adverse trends, and potential impact on the safety conscious work environment.

Based on the sample of CRs reviewed, the inspectors noted that the guidance provided by Exelon CAP implementing procedures appeared sufficient to ensure consistency in categorization of issues. Operability and reportability determinations were generally performed when conditions warranted and in most cases, the evaluations supported the conclusion. Causal analyses appropriately considered the extent of condition or problem, generic issues, and previous occurrences of the issue. Root cause evaluations (RCEs) and apparent cause evaluations reviewed were completed when required and received management review prior to approval. However, the inspectors noted some observations in Exelon's prioritization and evaluation of issues (described below).

Independent Spent Fuel Storage Installation (ISFSI) Dry Storage Cask (DSC) #77 related IRs not properly prioritized

The inspectors identified that several IRs related to issues with the loading, drying, and sealing of Independent Spent Fuel Pool Cask #77 were not properly classified in accordance with Exelon procedure PI-AA-120, Attachment 2, "Issue Report Level and Class Criteria," Revision 3. Specifically, IR 2556357, "ISFSI Skid Valve Manipulation Caused Wide Range Nobel Gas Monitor Spike," and IR 2557356, "ISFSI DSC #77 Helium Leak UNSAT Per ISFSI-03 Procedure," were both improperly classified as 4D Non CAP. In both cases the IRs met PI-AA-120, Attachment 2 guidance for Significance Level 3 CAP Issues. A significance level 4D issue is not required to have an evaluation or investigation; however, a significance level 3 requires one. Exelon staff acknowledged the inspectors' observation and reclassified the IRs appropriately and verified that the required evaluations had been completed, albeit outside of the CAP. As a result there was not violation of NRC requirements.

Improper application of engineering judgement in corrective actions for an NRC NCV

In response to NRC NCV 05000317, 318/2015001-01, "Component Cooling Operated in Unanalyzed Condition," Exelon staff completed Engineering Change Package (ECP) 15-000259, which in part, updated the component cooling water system design basis calculations to include the previously unanalyzed system configuration discussed in the NCV. The component cooling water system had a design limit where water exiting the component cooling heat exchanger must be less than 120°F. Licensee Event Report 05000317/2015-001-00, "Component Cooling and Shutdown Cooling Heat Exchanger Lineup Potential to Exceed Design Basis Temperatures," and the NRC NCV both concluded that exceeding this limit resulted in the system being inoperable. ECP 15-000259 identified that in one configuration of the component cooling system, this limit would be exceeded by approximately 10°F. Exelon staff concluded that this was acceptable since the containment heat up GOTHIC™ modeling did not take component cooling water temperature into account and stated the 120°F limit was arbitrary and there were no adverse consequences for exceeding it. The inspectors questioned Exelon staff's basis for concluding that there were no potential adverse consequence for exceeding the 120°F limit, noting a failure of the component cooling water system pumps, valves, or piping system would result in the loss of the containment heat sink. Further evaluation by Exelon staff determined that the 120°F limit was to ensure the system temperature would not exceed the design temperature limits for the system (180°F) during an accident. The inspectors noted that system design temperature would be exceeded in this configuration. Based on the inspectors' concerns, Exelon conducted a review of the piping, heat exchangers, and pumps and determined that the mechanical seals on the pumps were the most limiting component with respect to high temperature. The original seal package was replaced in 1999 and the new design was rated to a temperature of 250°F. Therefore, Exelon demonstrated the overall conclusion of ECP 15-000259 was correct and the configuration was capable of meeting the system's safety function during a design basis accident and no violation of NRC requirements was identified. Exelon documented this observation in their CAP as IR 2588556.

(3) Effectiveness of Corrective Actions

The inspectors concluded that corrective actions for identified deficiencies were generally timely and adequately implemented. For significant conditions adverse to quality, Exelon identified actions to prevent recurrence. The inspectors concluded that in

most cases, corrective actions to address the sample of NRC NCVs and findings since the last problem identification and resolution inspection were timely and effective. However, the inspectors did identify one example of more than minor significance where Exelon did not implement timely corrective actions. This finding is documented in Section 4OA2.1.c.

The inspectors reviewed Exelon's change management from the Constellation CAP and CAP tracking systems to Exelon's. Inspectors verified that all open Constellation corrective actions were transferred to the Exelon system. The inspectors determined that Exelon appropriately managed the transition and did not identify any open corrective action assignments in the old system which failed to be moved to the new system.

The inspectors determined that the documentation of the completion of the corrective actions taken for NRC 2013-003-01, "Failure to Establish a Test Program for DFO Check Valves," NRC NCV 2014-003-01, "Main Steam Line Drain Containment Isolation Valves not Scoped in In-Service Testing," and NRC NCV 2015-001-01 were not clear and made it difficult for the inspectors and Exelon to determine what corrective actions were taken. In the case of 2013-003-01, this poor documentation contributed to corrective actions not being completed in a timely manner. See Section 4OA2.1.c for additional details.

#### Five Year Reviews

The inspectors completed a five year look back of the 4160 VAC distribution system and corrective actions related to the 2010 (weather related), 2014 (weather related), and 2015 (offsite power grid related) dual unit trips related to failures in the 4160 VAC initiated by external events. For each event a thorough RCE was conducted and corrective actions were implemented in a timely manner commensurate with the safety significance. The inspectors confirmed that the 2014 weather induced event was different enough in cause that corrective actions and extent of condition/extent of cause review for the 2010 event would not have been expected to preclude repetition. The inspectors also reviewed the evaluations of the turbine control system reboot during the 2014 event and the failures of the 2B EDG speed switch and 2A shutdown load sequencer following the 2015 event and determined that Exelon adequately evaluated and developed appropriate corrective actions.

The inspectors also conducted a five year look back of the CEA system. The RCEs and the status of the implementation of corrective actions were reviewed. The inspectors determined that Exelon has appropriately developed and scheduled corrective actions to address the issue. A number of these corrective actions can only be completed during a unit outage.

#### (4) Trending

The inspectors reviewed Exelon's processes for identifying and addressing emergent and existing adverse trends in equipment and human performance. Exelon was able to identify trends at a low level using their department trending process. These trends were rolled up to station level on a quarterly basis and action and monitoring plans were developed as appropriate. Additionally, the station's maintenance rule performance monitoring program was effective in evaluating system performance and identifying trends. The SOC members also identified potential trends during their screening

meeting and elevated the significance level low level issues based on the identification of potential trends. During interviews, many staff members commented on the emphasis by management to enter issues into the CAP at a very low level so trends could be identified.

c. Findings

Untimely Actions to Test or Inspect DFO Check Valves Relied on for Safety

Introduction. The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion XVI because Exelon did not assure that conditions adverse to quality were promptly corrected. Specifically, from November 2012, until October 28, 2015, the licensee did not restore compliance with a previously documented NCV of 10 CFR 50, Appendix B, Criterion XI and ensure that DFO transfer system header check valves DFO-146 and DFO-148 were properly tested or inspected to ensure they would perform their safety function.

Description. On November 1, 2012, the NRC inspectors identified that DFO-146 and DFO-148 had never been tested in the reverse flow direction or inspected. The Updated Final Safety Analysis Report (UFSAR) states that check valves DFO-146 and DFO-148 are designed to close in reverse flow conditions to ensure that the seismic and tornado/missile protected No. 21 fuel oil storage tank (FOST) would not drain if the non-tornado/missile protected No. 11 FOST failed during a tornado/missile event. In NRC inspection report 05000317, 318/2013-003, an NRC-identified NCV (2013-003-01) was issued for failure to establish a test program for DFO check valves. This was a NCV of 10 CFR 50, Appendix B, Criterion XI and was more than minor since the valves had never been tested or inspected; and therefore, the safety function could not be assured.

Constellation first entered the issue into their CAP in November 2012 as IR 01843928 Actions to correct this condition adverse to quality, as determined in November 2012, were to implement maintenance procedures to disassemble and inspect the check valves to provide assurance they would perform their safety function. IR 01843928 was subsequently closed with comments stating that a preventive maintenance task had been created to perform internal inspections every 8 years. This action would have restored compliance. However, Exelon later determined that it was not desirable to inspect the check valves, and cancelled the inspection preventive maintenance tasks prior to any inspections being performed. The date and justification for this decision were not documented in the CAP.

After the NRC issued the NCV in July 2013, Constellation entered the same issue into their CAP in August 2013, as IR 01700160. (Note: the IR numbers reflect that both IR 01700160 and IR 01843928 were still open in the Constellation CAP tracking system and transferred to the Exelon system in 2014. The IR numbers for transferred issues are not in chronological order) The corrective actions identified included taking credit for two manual valves, in lieu of the untested check valves, to meet the safety function. The NRC residents and Constellation staff recognized that one of the manual valves needed to perform this isolation function was located in the DFO unloading station, which is not tornado/missile protected. Therefore, the Constellation staff determined that an evaluation, including a probabilistic risk assessment, was needed to assess whether the manual valves could be credited. Corrective actions also included updating the UFSAR, adding the manual valves to the in-service testing program, and testing the manual valves once the evaluation was completed.

In July 2015, Exelon identified that the due dates for corrective actions assigned in IR 01700160 had been extended seven times, including five times without approval from the MRC. Exelon documented this in IR 02535663. In spite of recognizing that the corrective action assignments had already been extended seven times, on or about October 1, 2015, Exelon extended the due date again to December 2015.

Since neither the actions of IR 01700160 nor IR 1843928 had been implemented by the completion of the onsite inspection period, the UFSAR safety function was not able to be assured. As a result, the team concluded that compliance had not been restored and the corrective actions were untimely for a violation of NRC requirements of more than minor safety significance per the guidance in the NRC Enforcement Manual. The inspectors took into consideration that Exelon identified that the corrective actions had been extended on multiple occasions and wrote IR 2535663 to document this fact on July 31, 2015. However, the corrective actions for IR 01700160 were extended an additional time after IR 2535663 was written and thus led the inspectors to conclude that Exelon was unaware that compliance had never been restored. Additionally, IR 2535663 was classified as significance level 4/D (non CAP). In accordance with PI-AA-120, Attachment 2, identification of a potential violation of regulatory requirements would be considered a condition adverse to quality and screened as at least a significance level 3 (CAP).

Following the completion of the onsite inspection, Exelon staff expedited their review of the issue, completing ECP 15-000583, "Demonstration that manual valves, 0HVDFO-145 for Header 1 and 0HVDFO-147 for Header 2, Can Be Relied Upon For Isolation," and Calculation CA 10117 Revision 1, "FOST 11 Evaluation for Tornado Wind Loading." These documents were provided to the inspectors on October 28, 2015, and provided a reasonable basis for revising the USFAR to credit the manual valves vice the check valves for header isolation safety function. The manual valves were added to the inservice testing program, thus restoring compliance with the NCV of 10 CFR 50, Appendix B, Criterion XI and correcting the associated condition adverse to quality. The NRC added significant value by ensuring the Exelon took prompt actions to restore compliance after the issue was brought to their attention. For this reason, this finding is considered to be NRC-identified.

Analysis. The inspectors determined that not correcting a condition adverse to quality in a timely matter, previously documented in an NCV of 10 CFR 50, Appendix B, Criterion XI, was a performance deficiency that was within Exelon's ability to foresee and prevent. This finding is more than minor because it is associated with the protection against external factors attribute of the Mitigating Systems cornerstone and affects the cornerstone objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the safety function of DFO-146 and DFO-148, to close on the failure of a fuel oil storage tank to prevent draining the unaffected tank, had never been verified through test or inspection since initial plant construction; therefore, reasonable doubt existed whether the valves remained capable of performing that function. The inspectors evaluated the significance of this finding using IMC 0609, Appendix A, Exhibit 2. The inspectors determined that this finding was of very low safety significance (Green) because the finding did not involve the loss or degradation of equipment or function specifically designed to mitigate a seismic, flooding, or severe weather event. The inspectors determined that this finding had a cross-cutting aspect in the area of Human Performance Procedure Adherence because Exelon staff did not follow station processes, procedures, and work instructions. Specifically, Exelon staff did not ensure corrective action due date extensions and

cancellations were justified, evaluated for adverse consequences, and presented to the management review committee as required by station procedures. As a result, corrective actions to restore compliance were not completed in a timely manner. [H.8]

Enforcement. 10 CFR 50, Appendix B, Criterion XVI requires, in part, that measures shall be established to assure that conditions adverse to quality are promptly identified and corrected. Contrary to the above, from November 2012, to October 28, 2015, Exelon did not assure that a condition adverse to quality was promptly corrected. Specifically, the condition adverse to quality previously documented in a Green NCV 05000317, 318/2013003-01 of 10 CFR 50, Appendix B, Criterion XI was not corrected for approximately 3 years which is not considered prompt commensurate with the documented safety significance of the issue. Exelon revised their UFSAR, implemented an alternative means to test the safety function of the valves, and entered the issue into the CAP. Because this issue was of very low safety significance (Green) and was entered into Exelon's CAP (IR 02568351), this violation is being treated as an NCV in accordance with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000317, 318/2015010-01, Untimely Actions to Test or Inspect DFO Check Valves Relied on for Safety)**

## 2 Assessment of the Use of Operating Experience

### a. Inspection Scope

The inspectors reviewed a sample of CRs and IRs associated with review of industry operating experience to determine whether the Exelon staff appropriately evaluated the operating experience information for applicability to Calvert Cliffs and had taken appropriate actions, when warranted. The inspectors also reviewed evaluations of operating experience documents associated with a sample of NRC generic communications to ensure that Exelon staff adequately considered the underlying problems associated with the issues for resolution via their CAP. In addition, the inspectors observed various plant activities to determine if the station considered industry operating experience during the performance of routine and infrequently performed activities.

### b. Assessment

The inspectors determined that Exelon staff, in general, appropriately considered industry operating experience information for applicability, and used the information for corrective and preventive actions to identify and prevent similar issues when appropriate. The inspectors determined that operating experience was appropriately applied and lessons learned were communicated and incorporated into plant operations and procedures when applicable. The inspectors also observed that industry operating experience was routinely discussed and considered during the conduct of Plan-of-the-Day meetings and pre-job briefs.

However, the inspectors noted that in one case, for IR 2448450, which reviewed NRC Information Notice 2014-15, "Inadequate Controls of Respiratory Protection Accessibility, Training, and Maintenance," a corrective action was developed to conduct a periodic review to ensure the pre-staged respirators and self-contained breathing apparatus masks were the correct size and amount for the operating crews. Specifically, the task was to ensure crew had the proper distribution of small, medium, and large masks during an event. This action was done once, considered complete, and closed. The

inspectors raised a concern that as crew make up changed over time enough properly sized masks might not be available. Exelon acknowledged the inspectors' observation, wrote IR 2472786, conducted an inventory and compared to the current crew requirements, and created a recurring action to periodically review this requirement. No violation of NRC requirements was identified.

c. Findings

No findings were identified.

.3 Assessment of Self-Assessments and Audits

a. Inspection Scope

The inspectors reviewed a sample of audits, including the most recent audit of the CAP, departmental self-assessments, and assessments performed by independent organizations. The inspectors performed these reviews to determine if Exelon entered problems identified through these assessments into the CAP, when appropriate, and whether Exelon staff initiated corrective actions to address identified deficiencies. The inspectors evaluated the effectiveness of the audits and assessments by comparing audit and assessment results against self-revealing and NRC-identified observations made during the inspection.

b. Assessment

Based on the inspected sample, the inspectors concluded that self-assessments, audits, and other internal Exelon assessments were critical, thorough, and effective in identifying issues. The inspectors observed that Exelon personnel knowledgeable in the subject completed these audits and self-assessments in a methodical manner. The inspectors observed that Nuclear Oversight was critical and identified weaknesses and areas requiring improvement. When progress in improving performance was not being accomplished in a timely manner, Nuclear Oversight escalated the issues. Exelon completed these audits and self-assessments to a sufficient depth to identify issues which were then entered into the CAP for evaluation. In general, the station implemented corrective actions associated with the identified issues commensurate with their safety significance.

c. Findings

No findings were identified.

.4 Assessment of Safety Conscious Work Environment

a. Inspection Scope

During interviews with station personnel, the inspectors assessed the safety conscious work environment at Calvert Cliffs. Specifically, the inspectors interviewed personnel to determine whether they were hesitant to raise safety concerns to their management and/or the NRC. The inspectors conducted small group interviews with "rank and file" employees from the Operations, Systems Engineering, Instrumentation and Controls, Maintenance, Chemistry, and Security groups. The inspectors also interviewed the station Employee Concerns Program coordinators to determine what actions are

implemented to ensure employees were aware of the program and its availability with regards to raising safety concerns. The inspectors reviewed the Employee Concerns Program files to ensure that the Exelon staff entered issues into the CAP when appropriate.

b. Assessment

During interviews, Exelon staff expressed a willingness to use the CAP to identify plant issues and deficiencies and stated that they were willing to raise safety issues. The inspectors noted that no one interviewed stated that they personally experienced or were aware of a situation in which an individual had been retaliated against for raising a safety issue. All persons interviewed demonstrated an adequate knowledge of the CAP and the Employee Concerns Program. Based on these limited interviews, the inspectors concluded that there was no evidence of an unacceptable safety conscious work environment and no significant challenges to the free flow of information.

c. Findings

No findings were identified.

4OA6 Meetings, Including Exit

On October 8, 2015, the inspectors presented the inspection results to Mr. M. Flaherty, Acting Site Vice President, and other members of the Exelon staff. Exelon requested to provide additional information for consideration during the meeting. In-office review of the additional information continued after the conclusion of the onsite inspection, and a telephone exit meeting was conducted on November 12, 2015, with Mr. M. Flaherty and other members of the Exelon staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

**ATTACHMENT: SUPPLEMENTARY INFORMATION**



**SUPPLEMENTARY INFORMATION**

**KEY POINTS OF CONTACT**

Licensee Personnel

M. Flaherty, Acting Site Vice President  
T. Tierney, Acting Plant Manager  
A. Elliott, Design Engineer  
A. Simpson, Nuclear Oversight  
C. Cartwright, Performance Improvement /Accreditation and Evaluation Specialist  
C. Jones, Engineering  
D. Lauver, Design Engineering Manager  
D. Schrupf, Maintenance  
J. Gains, Operations  
J. York, Reactor Protection  
K. Gardiner, Regulatory Assurance/CAP  
K. Greene, Regulatory Affairs  
M. Fick, Manager Regulatory Affairs  
M. Micebradt, Nuclear Oversight  
P. Amos, Site EP Manager  
P. Furio, Regulatory Affairs  
S. Looper, System Engineer  
S. O'Kelley, Senior Maintenance and Technical Instructor  
T. Cervini, Nuclear Oversight

NRC Personnel

E. Torres, NRO Mechanical Vendor Inspection Branch

**LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED**

Opened and Closed

05000317, 318/2015010-01	NCV	Untimely Actions to Test or Inspect DFO Check Valves Relied on for Safety (4OA2.1.c(1))
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## LIST OF DOCUMENTS REVIEWED

### Section 40A2: Problem Identification and Resolution

#### Audits and Self-Assessments

Audit Checklist CHE-14-01-C, "Chemistry," Revision 1, dated June 12, 2014  
 Audit Plan CHE-14-01-C, "Chemistry Program," dated June 13, 2014  
 CHE-14-01-C, "Chemistry Audit Report," dated August 4, 2014  
 DES-14-01-C Attachment 2, "Audit Plan Design and Engineering," dated March 31, 2014  
 DES-14-01-C, "Design and Engineering Audit Report," dated May 13, 2014  
 EPP-14-01 C Emergency Preparedness  
 Focused Area Self Assessment – AR2457331, dated August, 14, 2015  
 MAI-14-01-C Maintenance Program  
 NOSA-CAL-15-01, "Materials Management and Procurement Engineering Programs Audit Report," dated February 6, 2015  
 NOSA-CAL-15-02, Security Programs Audit Report  
 NOSA-CAL-15-03 Emergency Preparedness  
 NOSA-CAL-15-05 Attachment 2, "Engineering Design Control Audit," dated June 9, 2015  
 NOSA-CAL-15-05, "Engineering Design Control Audit," dated July 22, 2015  
 OPS-14-01-C, Operations Program  
 RPP-13-01-C, "Report of Audit for Radiation Protection Program," dated December 12, 2013  
 SEC-14-01-C, Security Programs, Access Authorization, and Fitness for Duty  
 TQS-14-01-C, Training and Qualification

#### Issue Reports (Exelon) and Condition Reports (Constellation) (\* indicates that issue report was generated as a result of this inspection)

02562527*	02562530*	02562535*	02562537*
02562540*	02562543*	02562546*	02562551*
02562554*	02562555*	02562558*	02562560*
02562561*	02562562*	02562563*	02562566*
02562571*	02562572*	02562574*	02562576*
02584978*	02568351*	2013-007009	2013-006274
2014-005425	2014-005375	2014-005264	2014-005180
2014-005176	2014-005159	2014-005086	2014-005045
2014-005044	2014-005012	2014-005011	2014-005010
2014-004893	2014-001702	2014-001277	2014-001244
01700154	01700160	01700167	01700179
01700212	01700228	01700263	01700277
01700291	01700317	01700345	01700346
01839217	01843928	01844017	01846025
01846049	01846419	01846428	01846766
01848424	01848425	01848963	01850285
01851001	01851001	01852025	01852162
01852164	01852405	01852409	01852411
01852419	01852424	01852486	01852521
01852527	01852622	01852819	01852991
01853048	01853055	01853106	01853206
01853263	01853268	01853342	01854145
01854687	01854832	01855058	01855176
01855213	01855327	01856563	01856649
01856711	01856725	01856891	01857271

01857320	01857486	01857823	01857989
01858023	01858077	01858700	01858770
01858793	01858927	01858973	01859202
01859264	01859363	01860250	01860381
01860392	01860394	01860438	01860768
01860782	01860804	01860867	02010030
02010042	02010050	02010216	02130789
02130827	02130830	02381638	02383011
02386700	02392534	02395870	02400928
02402616	02402639	02402641	02402642
02402644	02404200	02404557	02405078
02406237	02408882	02409518	02409582
02409813	02410642	02413473	02413553
02413961	02415207	02415799	02428577
02434189	02439913	02443827	02445151
02446064	02448450	02449132	02449932
02450337	02450358	02453154	02455942
02456939	02456941	02456944	02457904
02458012	02458087	02458766	02458872
02459244	02459390	02459655	02459658
02460764	02462248	02464752	02464754
02465094	02466396	02466410	02466529
02467288	02472786	02473371	02474487
02474582	02477927	02481678	02481769
02484165	02486722	02491941	02492108
02498497	02500139	02501531	02501778
02502002	02504442	02504600	02504639
02505898	02528509	02528945	02529215
02531692	02532360	02533012	02533672
02535421	02535663	02535938	02550908
02552390	02555331	02556357	02557356
02559505			

### Drawings

C-18022-C, Service Water Reactor & Turbine Buildings P&I Diagram, Sheet 1, Revision 79  
 Doc No 12073-04 Sh1 "Component Cooling Water Pumps" Revision 2  
 DWG No 12073-0004SH007 "Component Cooling Water Pumps Seal Installation," Revision 0  
 DWG No. 60736SH0001, "Fuel Oil Storage System," Revision 53,

### Operating Experience

IN 2013-13, Deficiencies with Effluent Radiation Monitoring System Instrumentation  
 IN 2014-05, Verifying Appropriate Dosimetry Evaluation  
 IN-14-03 Turbine-Driven Auxiliary Feedwater Pump Overspeed Trip Mechanism Issues  
 IN-15-02 Antifreeze Agents in Fire Water Sprinkler Systems  
 IR 02382641, Multiple Electrical Faults Results in Auxiliary Transformer Fire (IER L2-14-46)  
 IR 0239930, Duane Arnold Torus Coating Delamination, October 23, 2014  
 IR 02424411, Part 21, December 12, 2014, Potential Failure of SBM Switches  
 IR 02494120, Loss of Instrument Air Complicated Post Scram (IER L2-15-16)  
 IR 02524898, Part 21, 2015-26/33/36, Allen Bradley 700 RTC Relay  
 NRC Generic Communications Learning Analysis Report ePIC OE #OE-2013-001702, "IN 13-12, Improperly Sloped Instrument Sensing Lines," dated August 15, 2013

- NRC Generic Communications Learning Analysis Report ePIC OE #OE-2013-000694, "NRC Information Notice 2013-02: Issues Potentially Affecting Nuclear Facility Fire Safety," dated May 15, 2013
- NRC Generic Communications Learning Analysis Report ePIC OE #OE-2014-000395, "IN 14-02, Failure to Properly Pressure Test Reactor Vessel Flange Leak-Off Lines, dated April 3, 2014
- NRC Generic Communications Learning Analysis Report ePIC OE #OE-2014-000396, "IN 14-03, Turbine-Driven Auxiliary Feedwater Pump Overspeed Trip Mechanism Issue," dated April 10, 2014
- Presentation of INPO Event Report Level 3 15-27, "Gas Binding results in Loss of all Charging Flow at Palo Verde." dated September 22, 2015
- RIS 2014-09, Maintaining the Effectiveness of License Renewal Aging Management Programs Significance Level 3 OPEX Evaluation Assignment #02386737 04, "NRC Information Notice 2014-10, Unfused DC Ammeter Circuits," dated November 19, 2014
- Significance Level 3 OPEX Evaluation Assignment #0238679 Assignment #2, "NRC Information Notice 2014-11: Recent Issues Related to the Qualification of Safety-Related Components," dated December 4, 2014
- Significance Level 3 OPEX Evaluation Assignment #02421301-04, "NRC Information Notice 2014-15, Inadequate Controls of Respiratory Protection Accessibility, Training, and Maintenance," dated February 6, 2015
- Significance Level 3 OPEX Evaluation Assignment #02494070-04, "NRC Information Notice 2015-04: Fatigue in Branch Connection Welds," dated June 15, 2015
- Significance Level 3 OPEX Evaluation Assignment #02502665-04, "NRC Information Notice 2015-05: Inoperability of Auxiliary and Emergency Feedwater Auto-start circuits on the Loss of Main Feedwater Pumps," dated July 7, 2015

Non-Cited Violations (NCVs) and Findings (FIN)

- 05000317, 318/2014003-01 NCV Main Steam Line Drain Containment Isolation Valves not Scoped in In-Service Testing
- 05000317, 318/2015001-01 NCV Component Cooling Operated in Unanalyzed Condition
- 05000317, 318/2015002-01 NCV Failure to Properly Ship Category 2 Radioactive Material – Quantity of Concern
- 05000317, 318/2015002-02 NCV Inadequate Maintenance Instructions for Replacement of the Units 1 and 2 Containment Air Cooler Starters
- 05000317/2014002-01 NCV 11 and 12 AFW Pumps Inoperable due to Valves Misposition
- 05000317/2014002-03 NCV Inadvertent Loss of RCS Inventory During Lowered Inventory Conditions
- 05000317/2015001-02 NCV Inadequate Risk Management Action for LOCI Sequencer Maintenance
- 05000317, 318/2013003-01 NCV Failure to Establish a Test Program for DFO Check Valves
- 05000317, 318/2013003-02 NCV Inadequate Steam Generator Tube Rupture Emergency Operating Procedure
- 05000317, 318/2013005-01 NCV Inadequate Emergency and Abnormal Operating Procedures for the Loss of the 21 DC Bus
- 05000317, 318/2013005-02 NCV Preconditioning of Containment Air Coolers Emergency Outlet Valves
- 05000317, 318/2013202-01 Physical Security Finding
- 05000317, 318/2014003-03 NCV Inadequate EAL Initiating Condition HA3.1
- 05000317, 318/2014-005-01 NCV Spent Fuel Pool Cask Handling Crane 10 CFR 50.65(a)(2) Performance Not Met
- 05000317, 318/2014404-01 Physical Security Finding

05000317, 318/2014404-02 Physical Security Finding  
 05000318/2013004-01 NCV Inadequate Post-Maintenance Test Associated with an  
 Atmospheric Dump Valve  
 05000318/2014002-02 NCV Inadequate Compensatory Actions for Out of Service Letdown  
 Radiation Monitor  
 05000318/2014003-02 NOV Inaccurate EAL Threshold Values Incorporated into Site EAL  
 Scheme Change

#### Procedures

CNG-AM-1.01-1023, Maintenance Rule Program, Revision 201  
 CNG-CA-1.01-1000, Corrective Action Program, Revision 01100  
 CNG-CA-1.01-1004, Root Cause Analysis, Revision 00804  
 CNG-CA-1.01-1005, Apparent Cause Analysis, Revision 00603  
 CNG-CA-2.01-1000, Self-Assessment and Benchmarking Process, Revision 00703  
 CNG-CM-1.01-1003, Design Engineering and Configuration Control, Revision 00401  
 CNG-OP-1.01-1000, Conduct of Operations, Revision 00800  
 CNG-OP-1.01-1002, Conduct of Operability/Functionality Determinations, Revision 201  
 CNG-TR-1.01-1002, Training Analysis Phase Activities, Revision 00300  
 EI-AA-101, Employee Concerns Program, Revision 10  
 EI-AA-101-1001, Employee Concerns Program Process, Revision 13  
 EI-AA-101-1002, Employee Issues Trending, Revision 7  
 EP-AA-1013 Addendum 3, Unit 1 Emergency Classification Technical Bases, Revision 0  
 EP-AA-1013, Radiological Emergency Plan Annex for Calvert Cliffs Nuclear Power Plant,  
 Revision 0  
 EP-AA-120, Emergency Plan Administration, Revision 17  
 EP-CE-121-1004, Calvert Cliffs Equipment Matrix, Revision 0  
 EPIP-EPP-04, Personnel Injury or Illness, Revision 02100  
 ER-AA-310-1004, Maintenance Rule – Performance Monitoring, Revision 13  
 ER-AA-410, Air Operated Valve Program Implementing Procedure, Revision 2  
 M-500 (BGE DWG 92401), Instrumentation and Tubing Installation, Revision 26  
 M-500 (BGE DWG 92401), Instrumentation and Tubing Installation, Revision 25  
 NO-AA-21, Nuclear oversight Audit Process Description, Revision 7  
 NO-AA-210, Nuclear Oversight Regulatory Audit Procedure, Revision 6  
 NO-AA-210-1001, Nuclear Oversight Audit Handbook, Revision 10  
 OP-AA-108-101, Control of Equipment and System Status, Revision 12  
 OP-AA-108-115, Operability Determinations, Revision 16  
 OP-AA-300-1540, Reactivity Management Administration, Revision 11  
 PI-AA-115, Operating Experience Program, Revision 0  
 PI-AA-115-1002, Processing of Level 2 OPEX Evaluations, Revision 0  
 PI-AA-120, Issue Identification and Screening Process, Revision 3  
 PI-AA-125, Corrective Action Program (CAP), Revision 2  
 PI-AA-125-1001, Root Cause Analysis Manual, Revision 2  
 PI-AA-125-1001, Root Cause Analysis Manual, Revision 1  
 PI-AA-125-1003, Apparent Cause Evaluation Manual, Revision 2  
 PI-AA-125-1003, Apparent Cause Evaluation Manual, Revision 2  
 PI-AA-126, Self-Assessment and Benchmark Program, Revision 0  
 PI-AA-126-1001, Focused Area Self-Assessments, Revision 0  
 RP-AA-10, Radiation Protection Process Description, Revision 3  
 RP-AA-100, Conduct of Radiation Protection Operations, Revision 1  
 RP-AA-15, Radioactive Contamination Control Program Description, Revision 2  
 RP-AA-203-1001, Personnel Exposure Investigations, Revision 8

RP-AA-350, Personnel Contamination Monitoring, Decontamination and Reporting, Revision 13  
 RP-AA-600-1006, Shipment of Category 1 Quantities of Radioactive Material or Waste  
 (Category 1 RAMQC), Revision 11  
 RP-AA-600-1009, Shipment of Category 2 Quantifies of Radioactive Material or Waste  
 (Category 2 RAMQC), Revision 2  
 S-MRM-REL-0102, Structural Monitoring Program, Revision 00800  
 STP O-65Y-1 & 2, Main Steam Line Drain Valve Operability Test, Revision 2  
 STP O-65B1-1, 11 CNTMT CLR SRW INLET, 1-SRW-1581-CV Quarterly Operability Test,  
 Revision 0  
 STP O-65C1-1, 13 CNTMT CLR SRW INLET, 1-SRW-1589-CV Quarterly Operability Test,  
 Revision 0  
 STP O-65B1-2, 21 CNTMT CLR SRW INLET, 2-SRW-1581-CV Quarterly Operability Test,  
 Revision 0  
 STP O-65C1-2, 23 CAC INLET, 2-SRW-1589-CV Quarterly Operability Test, Revision 0  
 Technical Procedure CP-0642, Cask Handling Procedure for US DOT Specification 7A, Type A  
 Transportation Casks, Revision 0  
 Technical Procedure TURB-04, AFW Turbine Overspeed Trip Adjustment, Revision 00400  
 Technical Procedure Unit One AOP-2A, Excessive Reactor Coolant Leakage, Revision 26  
 Technical Procedure Unit One EOP-3, Loss of all Feedwater, Revision 21  
 Technical Procedure Unit One EOP-5, Loss of Coolant Accident, Revision 27  
 Technical Procedure Unit One EOP-8, Functional Recovery Procedure, Revision 37  
 Technical Procedure Unit Two AOP-2A, Excessive Reactor Coolant Leakage, Revision 23  
 Technical Procedure Unit Two EOP-3, Loss of all Feedwater, Revision 21  
 Technical Procedure Unit Two EOP-5, Loss of Coolant Accident, Revision 26  
 Technical Procedure Unit Two EOP-8, Functional Recovery Procedure, Revision 36  
 WC-AA-101, On-Line Work Control Process, Revision 24

#### Work Orders

C92797521	C92530524	C92460687
C93048158	C92559900	C92808620
C92465217	C92710527	
C92489444	C93063328	
C92491203	C92449223	

#### Miscellaneous

“Analysis of a Failed MC 671 A Triple 3-Input NAND Gate for Calvert Cliffs Nuclear Power  
 Plant,” performed by DM Data and Hi-Rel Laboratories, dated May 25, 2015  
 ASME B31.1, “Power Piping”  
 CA 10117, “FOST 11 Evaluation for Tornado Wind Loading,” Revision 1.  
 Calculation 93-0203 EDG Fuel Oil Consumption Rate and Tank Capacity Calculation  
 Supplement 4, Revision 000  
 Calculation CA 07786, “Containment Response Analysis in Support of CCNPP Unit 1&2  
 Licensee Amendment,” Revision 000  
 Calculation M-93-041, “Adequacy of Component Cooling Water Heat Exchanger Design.”  
 Calvert Cliffs Technical Specification Basis through Revision 55  
 Calvert Cliffs Technical Specifications through Revision 55  
 Calvert Cliffs UFSAR, Revision 34  
 Chesterton 442 Split Mechanical Seal Vendor Manual  
 Configuration Change Package No. ECP-14-000123, “Adding Fuses to DC Ammeter Circuits,”  
 Revision 0000

Configuration Change Package No. ECP-14-000573, "Fusing 250 VDC Battery Chargers and  
Emergency Backup Lube Oil Circuits," Revision 0000  
Design Consideration Summary for ECP-15-000056, Revision 000  
Design Consideration Summary for ECP-15-000213, Revision 0002  
ECP 11-001022  
ECP 14-000024 Revision 1  
ECP 15-000289, Revision 000  
ECP-15-000531, Revision 000  
Effectiveness Review CA-2014-000013  
Engineering and Technical Consultants Roof Maintenance Report, dated June 3, 2015  
Engineering Service Package 199700555, Revision 000  
FCR 91-284, "Change Salt Water Inlet Temperature to 90F"  
General Design Criteria 17  
M-601 Piping Class Summary Sheet No HB-3  
MRC Packages for 9/22/15, 9/24/15, 10/6/15, and 10/8/15  
NRC Generic Letter 79-36  
PCR-14-02150, "1) Add a New Section to Valve-04 for Tappett Installation and Engagement  
Adjustment. 2) Add a New Step to Inspect the Latch-Up Lever and Trip Hook Surfaces,"  
Revision 1.0, dated April 18, 2014  
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SOC Packages for 9/22/15, 9/23/15, 9/24/15, 10/6/15, and 10/7/15  
Struthers Wells Heat Exchanger Specification Sheet for Component Cooling Water Heat  
Exchangers Job No. 6750  
System Health Report for Fairbanks Morse Emergency Diesel Generators  
System Health Report for Unit 1 AFW  
System Health Report for Unit 1 CRD  
System Health Report for Unit 2 AFW  
System Health Report for Unit 2 CRD  
TRR-2015-016  
TRR-2015-032  
TRR-2015-211  
TRR-2015-430  
Vendor Technical Manual VTD 12083-010-1017, "Mechanical Overspeed Trip Device," Revision  
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**LIST OF ACRONYMS**

10 CFR	Title 10 of the <i>Code of Federal Regulations</i>
CAP	corrective action program
CEA	control element assembly
CR	condition report
DFO	diesel fuel oil
DSC	dry storage cask
ECP	engineering change package
EDG	emergency diesel generator
FOST	fuel oil storage tank
IMC	Inspection Manual Chapter
IR	issue report
ISFSI	independent spent fuel storage installation
MRC	Management Review Committee
NCV	non-cited violation
NRC	Nuclear Regulatory Commission, U.S.
RCE	root cause evaluation
SOC	Station Ownership Committee
UFSAR	Updated Final Safety Analysis Report
VAC	volts alternating current