



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

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

November 9, 2016

EA-16-235

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

**SUBJECT: CALVERT CLIFFS NUCLEAR POWER PLANT – NRC TRIENNIAL FIRE
PROTECTION INSPECTION REPORT 05000317/2016008 AND
05000318/2016008 AND EXERCISE OF ENFORCEMENT DISCRETION**

Dear Mr. Hanson:

On September 30, 2016, the U.S. Nuclear Regulatory Commission (NRC) completed a triennial fire protection inspection at your Calvert Cliffs Nuclear Power Plant (CCNPP), Units 1 and 2. On September 30, 2016, the NRC inspectors discussed the results of this inspection with Mr. Jay Gaines, Director Work Management, and other members of your staff. The results of this inspection are documented in the enclosed report.

No NRC-identified or self-revealing findings were identified during this inspection. However, Section 1R05.06 of the enclosed report discusses an issue, which your staff identified during the process of converting to a risk-informed performance-based fire protection program under National Fire Protection Association Standard 805 that was determined to be a violation of NRC requirements. Specifically, a violation was identified of low to moderate safety significance (White) of Calvert Cliffs Nuclear Power Plant Operating License Condition 2.E. for Unit 1, and a violation was identified of very low safety significance (Green) of Calvert Cliffs Nuclear Power Plant Operating License Condition 2.E for Unit 2. The NRC determined this issue warranted enforcement discretion because it satisfied the criteria established in NRC Enforcement Policy Section 9.1, "Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48)," and NRC Inspection Manual 0305, "Operating Reactor Assessment Program," Section 11.05(b), "Treatment of Items Associated with Enforcement Discretion." The Regional Administrator, Region I, was consulted regarding the enforcement discretion for this issue.

If you contest the violations or significance of the violations, 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 Region Administrator, Region I; the Director, Office of Enforcement; and the NRC resident inspector at the CCNPP.

B. Hanson

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

Sincerely,

/RA/

Raymond K. Lorson, Director
Division of Reactor Safety

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

Enclosure:
Inspection Report 05000317/2016008
and 05000318/2016008 w/Attachment:
Supplemental Information

cc w/encl: Distribution via ListServ

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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. 05000317/2016008 and 05000318/2016008

Licensee: Exelon Generation Company, LLC (Exelon)

Facility: Calvert Cliffs Nuclear Power Plant

Location: 1650 Calvert Cliffs Pkwy, Lusby, MD 20657

Dates: September 12 - 16 and 26 - 30, 2016

Inspectors: D. Orr, Senior Reactor Inspector (Team Leader)
W. Cook, Senior Reactor Analyst
L. Dumont, Reactor Inspector
J. Patel, Reactor Inspector
J. Rady, Reactor Inspector

Observers: J. Robinson, Senior Fire Protection Engineer,
Office of Nuclear Reactor Regulation

Approved by: Christopher G. Cahill, Chief
Engineering Branch 3
Division of Reactor Safety

Enclosure

SUMMARY

IR 05000317/2016008 and 05000318/2016008; 09/12/2015 – 09/16/2016 and 09/26/2016 – 09/30/2016; Exelon Generation Company, LLC; Calvert Cliffs Nuclear Power Plant; Triennial Fire Protection Baseline Inspection.

The report covered a two-week triennial fire protection team inspection by specialist inspectors. No NRC or self-revealing findings were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process." Cross-cutting aspects associated with findings are determined using IMC 0310, "Components Within The Cross-Cutting Areas." Findings for which the significance determination process does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 5.

Cornerstone: Initiating Events and Mitigating Systems

No findings were identified.

Other Findings

A licensee-identified violation of low to moderate safety significance for Unit 1 and of very low safety significance for Unit 2 was reviewed by the inspectors. Corrective actions were entered into Exelon's corrective action program and were completed. The NRC is exercising discretion and not issuing a violation for this issue as described in Section 1R05.06 of this report.

REPORT DETAILS

Background

This report presents the results of a triennial fire protection inspection conducted in accordance with NRC Inspection Procedure (IP) 71111.05XT, "Fire Protection – NFPA 805." The objective of the inspection was to assess whether Exelon Generation Company, LLC has implemented an adequate fire protection program and that post-fire safe shutdown capabilities have been established and are being properly maintained at the CCNPP facility. The following fire areas (FAs) were selected for detailed review based on risk insights from the Calvert Cliffs Fire Probabilistic Risk Assessment (PRA), Fire Risk Evaluation Report (FRE), C0-FRE-F001, Revision 2.

FA 19, Unit 1 Switchgear Room, Elevation 27 foot
FA 43, Unit 2 Auxiliary Feedwater Pump Room
FA 17, Unit 2 Cable Spread Room
FA 17A, Unit 2 Battery Room No. 21

Inspection of these FAs fulfills the inspection procedure requirement to inspect a minimum of two samples.

The inspection team evaluated Exelon's fire protection program (FPP) against applicable requirements which included the Renewed Facility Operating License Condition 2.E for Unit 1, and Unit 2, NRC Safety Evaluations, and National Fire Protection Association Standard (NFPA) 805. The team also reviewed the Nuclear Safety Capability Assessment Report (NSCA), NFPA-805-00006, Revision 1.

The team also evaluated two mitigating strategies for addressing large fires and explosions as required by Operating License Condition 2.C.(5) for Unit 1 and 2.C.(7) for Unit 2 and 10 CFR 50.54(hh)(2). Inspection of these strategies fulfills the inspection procedure requirement to inspect a minimum of one sample.

Specific documents reviewed by the team are listed in the attachment.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R05 Fire Protection (IP 71111.05XT)

.01 Protection of Safe Shutdown Capabilities

a. Inspection Scope

The team reviewed the NSCA to verify that the shutdown methodology properly identified the components and systems necessary to achieve safe and stable plant conditions for a fire under any plant operational mode or configuration. For each of the selected fire areas, the team reviewed the NSCA fault tree logic model for the

development of the safe shutdown success path, equipment selection, and the FRE report. This review included an assessment of the adequacy of the selected systems for reactivity control, inventory and pressure control, decay heat removal, process monitoring, and associated vital auxiliary support system functions. Recovery actions credited to achieve the nuclear safety performance criteria were evaluated to determine if they are feasible and reliable consistent with the criteria established in Exelon's FPP and as approved in NRC safety evaluations.

b. Findings

No findings were identified.

.02 Passive Fire Protection

a. Inspection Scope

The team walked down accessible portions of the selected fire areas to evaluate whether the material conditions of the fire area boundaries were adequate for the fire hazards in the area. The team compared the fire area boundaries, including walls, ceilings, floors, fire doors, fire dampers, penetration seals, electrical raceway and conduit fire barriers, and redundant equipment fire barriers and radiant energy heat barriers to design and licensing basis requirements, industry standards, and the CCNPP FPP, as approved by the NRC, to identify any potential degradation or non-conformances.

The team reviewed selected engineering evaluations, and qualification records for a sample of penetration seals to determine whether the fill material was properly installed and whether the as-left configuration satisfied design requirements for the intended fire rating.

The team also reviewed recent inspection and functional test records for fire dampers, and the inspection records for penetration seals and fire barriers, to verify whether the inspection and testing was adequately conducted, the acceptance criteria were met, and any potential performance degradation was identified. In addition, the team reviewed recent test results for the Halon fire damper functionality tests for the areas protected to verify the testing was adequately conducted, the acceptance criteria were met, and any performance degradation was identified.

b. Findings

No findings were identified.

.03 Active Fire Protection

a. Inspection Scope

The team evaluated manual and automatic fire suppression and detection systems in the selected fire areas to determine whether they were installed, tested, maintained, and

operated in accordance with NRC requirements, NFPA codes of record, and the CCNPP FPP, as approved by the NRC. The team also assessed whether the suppression systems capabilities were adequate to control and/or extinguish fires associated with the hazards in the selected areas.

The team reviewed the as-built capability of the fire water supply system to verify the design and licensing basis and NFPA code of record requirements were satisfied, and to assess whether those capabilities were adequate for the hazards involved. The team reviewed the fire water system to assess the adequacy of a single fire water pump to supply the largest single hydraulic load on the fire water system plus concurrent fire hose usage. The team evaluated the fire pump performance tests to assess the adequacy of the test acceptance criteria for pump minimum discharge pressure at the required flow rate, to verify the criteria was adequate to ensure that the design basis and hydraulic analysis requirements were satisfied. The team also evaluated the underground fire loop flow tests to verify the tests adequately demonstrated that the flow distribution circuits were able to meet design basis requirements. In addition, the team reviewed recent pump and loop flow test results to verify the testing was adequately conducted, the acceptance criteria were met, and any potential performance degradation was identified.

The team reviewed initial discharge testing, design specifications, engineering evaluations, and routine functional testing for the Halon suppression systems for the areas so protected. The team walked down accessible portions of the Halon systems, including storage tanks and supply systems, to independently assess the material condition, operational lineup, and availability of the systems. The team also reviewed and walked down the associated firefighting strategies and Halon system operating procedures.

The team walked down accessible portions of the detection and water suppression systems in the selected areas and major portions of the fire water supply system, including motor and diesel driven fire pumps, interviewed system and program engineers, and reviewed selected condition reports (CRs) to independently assess the material condition of the systems and components. In addition, the team reviewed recent test results for the fire detection and suppression systems for the selected fire areas to verify the testing was adequately conducted, the acceptance criteria were met, and any performance degradation was identified.

The team assessed the fire brigade capabilities by reviewing training, qualification, and drill critique records. The team also reviewed Exelon's firefighting strategies (i.e., pre-fire plans) and smoke removal plans for the selected fire areas to determine if appropriate information was provided to fire brigade members and plant operators to identify safe shutdown equipment and instrumentation, and to facilitate suppression of a fire that could impact post-fire safe shutdown capability. The team independently inspected the fire brigade equipment, including personnel protective gear (e.g., turnout gear) and smoke removal equipment, to determine operational readiness for firefighting. In addition, the team reviewed Exelon's fire brigade equipment inventory and inspection procedure and recent inspection and inventory results to verify adequate equipment was available, and any potential material deficiencies were identified.

b. Findings

No findings were identified.

.04 Protection from Damage from Fire Suppression Activities

a. Inspection Scope

The team performed document reviews and plant walkdowns to verify that redundant trains of systems required for hot shutdown, which are located in the same fire area, are not subject to damage from fire suppression activities or from the rupture or inadvertent operation of fire suppression systems. Specifically, the team verified that:

- A fire in one of the selected fire areas would not indirectly, through production of smoke, heat or hot gases, cause activation of suppression systems that could potentially damage all redundant safe shutdown trains;
- A fire in one of the selected fire areas (or the inadvertent actuation or rupture of a fire suppression system) would not indirectly cause damage to all redundant trains (e.g. sprinkler caused flooding of other than the locally affected train); and,
- Adequate drainage is provided in areas protected by water suppression systems.

b. Findings

No findings were identified.

.05 Shutdown from a Primary Control Station

a. Inspection Scope

For postulated fire scenarios in the Unit 2 cable spread room (CSR), the ability to control the plant from the main control room (MCR) is potentially impaired due to the impact on functions. As a result, the licensee credited shutdown from primary control stations to achieve safe and stable plant conditions. This involved transferring plant controls from the MCR to the alternate shutdown panels. The team reviewed samples of electrical schematics to verify that circuits for safe shutdown (SSD) equipment, which could be damaged due to fire, were isolated by isolation and transfer switches. The team reviewed the transfer switch testing methodology to assess the functionality of the isolation feature of the transfer switches. The team also reviewed the licensee's FPP, system flow drawings, electrical drawings, and other supporting documents. The reviews focused on ensuring that the required functions for post-fire safe and stable conditions and the corresponding equipment necessary to perform those functions were included in the fire response procedures and AOPs. The review included assessing whether safe and stable plant conditions from the primary control stations outside the MCR could be implemented, and that transfer of control from the MCR to the remote

shutdown panel could be accomplished in accordance with procedures. This review also included verification that safe and stable conditions could be achieved and maintained from the primary control station both with and without the availability of offsite power.

.06 Circuit Analysis

a. Inspection Scope

The inspectors reviewed that Exelon performed a NSCA for the selected fire areas, and that the assessment identified the structures, systems and components important for achieving safe and stable conditions. For each fire area, the inspectors reviewed electrical schematics, flow diagrams, and the NSCA to identify any potential fire-induced cable damage that could directly affect post-fire safe shutdown. The inspectors reviewed a sample of circuit diagrams to determine if all appropriate cables had been selected and incorporated into the NSCA. The inspectors then evaluated selected circuits to ensure all fire scenarios had been identified, and dispositioned for all modes of operation including shut down operations, and abnormal plant configurations.

The inspectors verified whether the NSCA demonstrated that hot shorts, shorts to ground, or other failures that could result in a spurious actuation will not affect the capability to meet the performance criteria. The inspectors reviewed that Exelon's assessment identified circuits that may impact the nuclear safety performance criteria. The assessment demonstrated that hot shorts, shorts to ground, or other failures that would not result in a spurious actuation would not affect the capability to meet the performance criteria. The inspectors reviewed the fire scenarios and cable attributes, potential undesirable consequences, and common power supply/bus concerns.

Review of circuit analysis was performed for the following components:

- 1MOV501, Volume Control Tank Outlet Isolation Valve;
- 1PUMPCVCCHG12, Charging Pump 12;
- 1PI102A; Pressurizer Pressure Indication;
- 2CV3938, Steam Generator 22 Atmospheric Dump Valve;
- 2CV4511, Steam Generator 21 Turbine Driven Auxiliary Feedwater Pump Control Valve; and
- 2LI114A, Steam Generator 21 Wide Range Level Indication.

The team assessed whether the transfer of control from the control room to the primary control station would be affected by fire-induced circuit faults (e.g., by the provision of separate fuses and power supplies for alternative shutdown control circuits).

b. Findings

Failure to Adequately Ensure Cable Protection and Eliminate Potential Secondary Fires

Introduction: Exelon identified a violation of low to moderate safety significance of Calvert Cliffs Nuclear Power Plant Operating License Condition 2.E. for Unit 1 and a violation of very low safety significance of Calvert Cliffs Nuclear Power Plant Operating License Condition 2.E for Unit 2. Several unfused direct current cables traversed multiple fire areas where postulated fire-induced faults could cause secondary fires that challenge the ability to achieve post-fire safe shutdown or render additional redundant or alternate safe shutdown equipment unavailable. This issue was determined to satisfy the criteria specified for the exercise of enforcement discretion for plants in transition to a fire protection program that meets the requirements of 10 CFR 50.48(c), "National Fire Protection Association Standard NFPA 805."

Description: As a result of reviewing industry operating experience, On October 18, 2013, CCNPP engineers identified that one Unit 1 and two Unit 2 cables associated with 125Vdc (Volts direct current) ammeter circuits were not fused. This was a legacy issue that was not identified when the original safe shutdown analysis was developed. For a fire-induced fault on these cables, if one of the ammeter wires shorts to ground at the same time as another DC wire of the opposite polarity on the same battery or battery charger also shorts to ground, a ground loop through the unfused ammeter wire could occur. In this condition there would be a potential that the overloaded ammeter wiring could draw excess current, overheat, and damage wiring leading to other equipment needed to conduct safe shutdown of the units or a secondary fire could occur which is outside the design basis of the fire protection program.

Upon identification, this issue was promptly entered into the corrective action program as CR-2013-008305. As an interim compensatory measure, hourly fire tours were established in the affected fire areas until November 11, 2013, when leads were lifted on the ammeter circuits thereby eliminating the concern.

On March 10, 2014, during an extent of condition review for the identified issue, Exelon identified an additional ten cables, five in Unit 1 and five in Unit 2, associated with the 250Vdc system on Units 1 and 2 that were similarly unfused and where similar postulated secondary fires could develop. Exelon promptly entered this issue into the corrective action program as CR-2014-002667. Interim compensatory measures included hot work limitations for the control room and CSRs and daily and weekly transient combustible walkdowns. Several of the 250Vdc circuits could not be deenergized because they powered vital emergency lube oil pumps for the steam generator feed pumps, the main turbine, and the main generator so compensatory measures remained in place instead of lifting leads to the unfused circuits.

The long term corrective actions were completed on December 16, 2014, for the 125Vdc circuits and on February 24, 2016, for the 250Vdc circuits. Protective fuses were installed for each circuit as a permanent plant modification that eliminated the concern.

The licensee reported these issues to the NRC in Licensee Event Reports (LER) 50-317-2013-002 and 50-2014-004 on December 17, 2013 and May 1, 2014, respectively. LER 50-2014-004 was supplemented on October 9, 2014.

The NRC concluded that the licensee's interim compensatory measures were commensurate with the risk significance and the long term corrective actions resolved the issue.

Analysis: Exelon's failure to ensure six Unit 1 cables and seven Unit 2 cables were protected with circuit fuses such that a fire induced fault would clear before high currents potentially caused secondary fires in adjacent fire areas was a performance deficiency. This performance deficiency was more than minor because it adversely affected the protection against external factors (i.e., fire) attribute of the Mitigating Systems Cornerstone and affected the cornerstone objective of ensuring the availability and reliability of systems that respond to initiating events to prevent undesirable consequences. Exelon reviewed the cable routes and evaluated this issue through use of its fire PRA. Exelon determined that the change in core damage frequency (CDF) attributed to the 125Vdc issue for Unit 1 was $9E-6$ per reactor year (White). Exelon determined that the change in CDF attributed to the 250Vdc issues was $5E-6$ per reactor year (White) for Unit 1 and $8E-7$ per reactor year (Green) for Unit 2. A Region I Senior Reactor Analyst reviewed these evaluations and concluded that the risk numbers were appropriately bounded by conservative assumptions.

Cross-cutting aspects are not applicable to findings involving enforcement discretion.

Enforcement: At the time of discovery of these issues, October 18, 2013, and March 10, 2014, and when the issues were resolved, CCNPP Operating License conditions 2.E. for both Unit 1 and Unit 2, require that CCNPP, LLC, implement and maintain in effect all provisions of the approved FPP as described in the approved FPP and the Updated Final Safety Analysis Report (UFSAR). UFSAR Section 9.9.1 states in part that the FPP has been developed in accordance with the documents listed in Section 9.9.12 (References 1 through 19). References 4 and 5 are the Interactive Cable Analysis (ICA) for Calvert Cliffs Nuclear Power Plant – Unit 1 and Unit 2 respectively. Assumption 5 in the ICA Manual for Units 1 and 2 states:

“If a fire causes electrical shorts or overloads, protective devices are assumed to function properly except as affected by the postulated fire.”

Contrary to the above, on October 18, 2013, and March 10, 2014, Exelon identified six Unit 1 cables and seven Unit 2 cables which included 125Vdc and 250Vdc circuits which were not protected with fuses, (i.e. the unfused cables could overheat due to fire induced faults causing secondary fires). The cables traversed multiple fire areas where secondary fires could render additional redundant or alternate safe shutdown equipment unavailable or challenge the ability to achieve post-fire safe shutdown. The violation was historical and occurred when Calvert Cliffs completed its first safe shutdown analysis. Corrective actions were completed on December 16, 2014, for the 125Vdc circuits and on February 24, 2016, for the 250Vdc circuits.

Exelon was in transition to NFPA 805 and, therefore, this licensee-identified violation was evaluated in accordance with the criteria established in NRC Enforcement Policy, Section 9.1 "Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48)," and Inspection Manual Chapter 0305, "Operating Reactor Assessment Program," Section 11.05, "Treatment of Items Associated with Enforcement Discretion." Because all the criteria were satisfied, the NRC exercised enforcement discretion and not issue a violation for this issue.

.07 Communications

a. Inspection Scope

The team reviewed safe shutdown procedures, the NSCA, and associated documents to verify an adequate method of communications would be available to plant operators following a fire. During this review the team considered the affects of ambient noise levels, clarity of reception, reliability, and coverage patterns. The team also inspected the designated emergency storage lockers to verify the availability of portable radios for the fire brigade and for plant operators. The team also verified that communications equipment such as repeaters and transmitters would not be affected by a fire.

b. Findings

No findings were identified.

.08 Emergency Lighting

a. Inspection Scope

The team observed the placement and coverage area of emergency light units throughout the selected fire areas to evaluate their adequacy for illuminating access and egress pathways and any equipment requiring local operation or instrumentation monitoring for post-fire safe shutdown. Preventive maintenance procedures and completed surveillance tests of helmet lights were also reviewed to verify that the helmet lights were being maintained consistent with the manufacturer's recommendations and in a manner that would ensure reliable operation.

b. Findings

No findings were identified.

.09 Cold Shutdown Repairs

a. Inspection Scope

The inspectors determined that CCNPP does not credit cold shutdown repairs to meet the nuclear safety performance criteria for both Units 1 and 2. The inspectors reviewed the NSCA and determined that CCNPP Units 1 and 2 do not require transitioning to cold shutdown to achieve a safe and stable condition.

b. Findings

No findings were identified.

.10 Compensatory Measures

a. Inspection Scope

The team verified that compensatory measures were in place for out-of-service, degraded or inoperable fire protection and post-fire safe shutdown equipment, systems, or features (e.g. detection and suppression systems and equipment, passive fire barriers, or pumps, valves or electrical devices providing safe shutdown functions or capabilities). The team also verified that the short term compensatory measures compensated for the degraded function or feature until appropriate corrective action could be taken and that CCNPP was effective in returning the equipment to service in a reasonable period of time.

b. Findings

No findings were identified.

.11 Radiological Release

a. Inspection Scope

The inspectors verified that Exelon had provided reasonable assurance that a fire would not result in a radiological release that adversely affects the public, plant personnel, or the environment in accordance with NFPA 805, Section 1.3.2. The inspectors assessed whether Exelon had evaluated the potential for radioactive releases to any unrestricted areas resulting from fire suppression activities to verify whether the postulated releases were as-low-as-reasonably-achievable. The inspectors verified that Exelon had analyzed radioactive release on a fire area basis in accordance with NFPA 805, Section 2.2.4. The inspectors walked down the selected FAs and verified that the pre-fire plan tactics and instructions were consistent with the potential radiological conditions identified in the fire hazards analysis.

b. Findings

No findings were identified.

.12 Non Power Operations

a. Inspection Scope

Exelon began its implementation phase of CCNPP's NFPA 805 license basis in accordance with 10 CFR 50.48(c) on August 30, 2016, when the NRC issued Amendment No. 318 to Renewed Facility Operating License (RFOL) No. DPR-53, and

Amendment No. 296 to RFOL No. DPR-69, for the Calvert Cliffs Nuclear Power Plant, Units 1 and 2, respectively. Non-Power Operations requirements of the NFPA 805 FPP were not yet implemented by Exelon and were required by the aforementioned license amendments to be completed within 12 months after NRC approval [August 30, 2016] unless that implementation date falls within a scheduled refueling outage. Therefore, implementation is expected to occur 60 days after startup from that scheduled refueling outage. The team verified that Exelon remained committed to implementing the Non-Power Operations requirements of its NFPA 805 license basis FPP by August 30, 2017, and was tracking its completion with review by the Plant Health Committee.

b. Findings

No findings were identified.

.13 Monitoring Program

a. Inspection Scope

Exelon began its implementation phase of CCNPP's NFPA 805 license basis in accordance with 10 CFR 50.48(c) on August 30, 2016, when the NRC issued Amendment No. 318 to RFOL No. DPR-53, and Amendment No. 296 to RFOL No. DPR-69, for the Calvert Cliffs Nuclear Power Plant, Units 1 and 2, respectively. Monitoring Program requirements of the NFPA 805 FPP were not yet implemented by Exelon and were required by the aforementioned license amendments to be completed within 12 months after NRC approval [August 30, 2016] unless that implementation date falls within a scheduled refueling outage. Then, implementation will occur 60 days after startup from that scheduled refueling outage. The team verified that Exelon remained committed to implementing the Monitoring Program requirements of its NFPA 805 license basis FPP by August 30, 2017, and was tracking its completion with review by the Plant Health Committee.

b. Findings

No findings were identified.

.14 Plant Change Evaluation

a. Inspection Scope

Exelon began its implementation phase of CCNPP's NFPA 805 license basis in accordance with 10 CFR 50.48(c) on August 30, 2016, when the NRC issued Amendment No. 318 to RFOL No. DPR-53, and Amendment No. 296 to RFOL No. DPR-69, for the Calvert Cliffs Nuclear Power Plant, Units 1 and 2, respectively. Plant Change Evaluation requirements of the NFPA 805 FPP were not yet implemented by Exelon and were required by the aforementioned license amendments to be completed within 12 months after NRC approval [August 30, 2016] unless that implementation date falls within a scheduled refueling outage. Then, implementation will occur 60 days after

startup from that scheduled refueling outage. The team verified that Exelon remained committed to implementing the Plant Change Evaluation requirements of its NFPA 805 license basis FPP by August 30, 2017, and was tracking its completion with review by the Plant Health Committee.

b. Findings

No findings were identified.

.15 Large Fires and Explosions Mitigation Strategies

a. Inspection Scope

The team reviewed Exelon's preparedness to handle large fires or explosions by reviewing a mitigating strategy to verify that they continue to meet 10 CFR 50.54 (hh)(2) by determining that:

- Procedures are being maintained and adequate;
- Equipment is properly staged and is being maintained and tested; and
- Station personnel are knowledgeable and can implement the procedures.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES [OA]

4OA2 Identification and Resolution of Problems

.01 Corrective Actions for Fire Protection Deficiencies

a. Inspection Scope

The team verified that Exelon was identifying fire protection and post-fire safe shutdown issues at an appropriate threshold and entering them into the corrective action program. The team also reviewed a sample of selected issues to verify that CCNPP had taken or planned appropriate corrective actions.

b. Findings

No findings were identified.

4OA3 Followup of Events and Notices of Enforcement Discretion

.01 (Closed) Licensee Event Report 50-317/2013-002: Unfused Ammeter Circuits Result in Appendix R Unanalyzed Condition

On October 18, 2013, CCNPP engineers determined that unfused ammeter indication circuits associated with safety-related direct current busses could short circuit due to a fire in the circuit cable routing. This ground fault equivalent hot short could cause the cable to self-heat and lead to secondary fires. Specifically, for a fire in the Unit 1 CSR, a secondary fire could be postulated to occur in the Unit 2 CSR. Fire in both CSRs is not an analyzed condition under the 10 CFR 50, Appendix R program and could potentially challenge the ability to achieve safe shutdown conditions for both Unit 1 and Unit 2 for a fire in the Unit 1 CSR. This issue is discussed in detail in Section 1R05.06 of this inspection report. The inspectors did not identify any new issues during the review of this LER. This LER is closed.

.02 (Closed) Licensee Event Report 50-317/2014-004: Unfused 250 VDC Circuits Result in 10 CFR Part 50 Appendix R Unanalyzed Condition Due to Original Design Did Not Adequately Address Fire Protection Requirements

On March 10, 2014, Exelon determined that ten 250Vdc cables associated with backup emergency lube oil pumps and the battery charger ammeter could short circuit due to a fire in the circuit cable routing. The identified cables were the result of an extent of condition review for the issue described above in 4OA3.01 of this report. The ground fault equivalent hot shorts could cause these cables to self-heat and lead to secondary fires. The unanalyzed fires could adversely affect Unit 1 and Unit 2 safe shutdown equipment for a fire in the control room of either Unit 1 or Unit 2 and potentially cause the loss of the ability to safely shutdown as required by Condition 2.E of the Unit 1 and Unit 2 Renewed Facility Operating Licenses. A supplemental report was submitted by Exelon on October 9, 2014, after the corrective actions were complete and fuses installed to eliminate the postulated condition. This issue is discussed in detail in Section 1R05.06 of this inspection report. The inspectors did not identify any new issues during the review of this LER. This LER is closed.

4OA6 Meetings, Including Exit

Exit Meeting Summary

The team presented their preliminary inspection results to Mr. J. Gaines, Director of Work Management, and other members of the site staff at an exit meeting on September 30, 2016. The inspectors verified that no proprietary information was retained by the inspectors or documented in this inspection report.

4OA7 Licensee Identified Violations

A violation of low to moderate safety significance (White) for CCNPP Unit 1 and a violation of very low safety significance (Green) for CCNPP Unit 2 were identified by Exelon and are violations of NRC requirements. The violations were licensee identified

during the process of converting to a risk-informed performance-based fire protection program under National Fire Protection Association Standard 805. The NRC screened the issues and determined that it warranted enforcement discretion per Section 9.1 of the NRC Enforcement Policy, "Enforcement Discretion for Certain Fire Protection Issues" (10 CFR 50.48) and satisfy the criteria of the NRC Enforcement Policy for being dispositioned as non-cited violations. The violations are described in Section 1R05.06 of this inspection report.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

J. Gaines	Director of Work Management
B. Faoveaux	Operations Shift Supervisor
P. Darby	Safe Shutdown Engineer
C. Dobry	Fire Protection Engineer
R. Haley	Site Fire Marshal
J. Haydin	Engineering Manager
K. Greene	Regulatory Assurance Specialist
W. Lankford Jr.	Equipment Operator
C. Pragman	Exelon Fire Protection Engineer
P. Pringle	PRA Engineer

NRC

R. Clagg	Senior Resident Inspector, CCNPP
C. Roettgen	Resident Inspector, CCNPP

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

NONE

Opened and Closed

NONE

Closed

05000317/2013-002	LER	Unfused Ammeter Circuits Result in Appendix R Unanalyzed Condition
05000317/2014-004	LER	Unfused 250 VDC Circuits Result in 10 CFR Part 50 Appendix R Unanalyzed Condition Due to Original Design Did Not Adequately Address Fire Protection Requirements

Discussed

NONE

LIST OF DOCUMENTS REVIEWED

Fire Protection Licensing Documents

C0-FRE-F001, Fire Risk Evaluation Report, Revision 2
C0-HRA-001, Fire PRA Human Reliability Analysis (HRA) Notebook, Revision 3
CC-AA-211, Fire protection Program, Revision 7
EPM Report R2215-048-001, Fire Area Review Report (Table B-3 Report), Revision 1
NFFPA-805-00006, Nuclear Safety Capability Assessment Report (NSCA), Revision 1
NFFPA-805-00006A, NFFPA 805 Transition Project Attachments, Rev. 1 Updated Final Safety Analysis Report, Chapter 9, Revision 47
SA-1, Fire Protection Program, Rev. 00900Units 1 and 2 Facility Operating Licenses, 3/23/00

Design Basis Documents

C0-FRE-F001, Fire Risk Evaluation Report, Revision 2
EPM Report R2215-048-001, Fire Area Review Report (Table B-3 Report), Revision 1
NFFPA-805-00006, Nuclear Safety Capability Assessment Report, Revision 1
NFFPA-805-00006A, Nuclear Safety Capability Assessment Analysis Results, Revision 1
NO-TRM, Technical Requirements Manual, Revision 22
R2215-022-001, NFFPA Code Conformance Review, Revision 1

Design Changes

ECP-16-000034-CN-01, Pressure at Known Reference Point for Each Sprinkler System, Revision 0
ECP-14-000018, Replacement of the Alarm Check Valve on the Fire Protection Sprinkler System, Revision 0
ECP-14-000203, New Valve to Support Testing of the Deluge Valve, Revision 1
ECP-14-000584, New Valve to Support Testing of the Deluge Valve, Revision 0
ECP-15-000203, Replace Fire Protection Deluge Valve 0HVFP-199 and Add Downstream Isolation Valve, Revision 1
ECP-15-000584, Replace Fire Protection Deluge Valve 0HVFP-195 and Add Downstream Isolation Valve, Revision 1

Calculations/Engineering Evaluation Reports

0113-00092-FPE-011, Fire Protection Evaluation for Penetrations 1BPS601/603B001, Revision 0
03-6004-006, 10" AND 6" Depth Silicone RTV Foam for Electrical and Mechanical Penetration Seals, 7/25/80
C0-2013-028, PRA Evaluation for 125Vdc Unfused Circuit Issue, Revision 0
C0-2014-010, PRA Evaluation for 250Vdc Unfused Circuit Issue, Revision 0
C0-FRE-F001, Units 1 and 2 Fire Risk Evaluation Report, Revision 2
C0-FRQ-001, Unit 1 Fire PRA Fire Risk Quantification Notebook, Revision 2
C0-FRQ-002, Unit 2 Fire PRA Fire Risk Quantification Notebook, Revision 2
CA05974, 10 CFR 50 Appendix R Fire Protection AOP-9 Simulations, Revision 0
Conduit Fire Test Program, 6/1/1987
E-90-071, 4kV Bus 14 Protective Devices, Revision 6
E-90-92, Protective Relay Setpoint Calculation for 480V Breakers, Revision 1
ES-001, Flooding, Revision 4

M-93-124, Pressure Known Reference Point for each Sprinkler System, Revision 2
R2447-003-001, Detailed Fire Modeling Updates, Revision 0
R2516-001-002, Cable Material Impact Review, Revision 0
R2523-001-009, Calvert Cliffs Detailed Fire Modeling Report - PAU 302, Revision 2
R2523-001-010, Calvert Cliffs Detailed Fire Modeling Report - PAU 306, Revision 1
R2523-001-014, Calvert Cliffs Detailed Fire Modeling Report - PAU 317, Revision 0
R2523-001-016, Calvert Cliffs Detailed Fire Modeling Report - PAU 407, Revision 0
Report of Fire Test of a Fire Stopping Method for Through Penetrations in a 9 Inch Thick
Concrete Slab using 9 Inch thick Dow Corning 3-6548 Silicone Foam, 2/18/86
TS-TP-0006, Fire and Hose-Stream Tests of Penetration Seal Systems, 4/1978

Procedures

AOP-9B, Safe Shutdown Due to a Severe Cable Spreading Room Fire, Revision 19
CC-AA-206, Fuse Control Program, Revision 10
CVCS-11C, Charging Pump Packing Removal and Replacement, Revision 9
EP-CC-124-1001-F-21, B.5.b Pump and Auxiliary Equipment [B2345, SFP Pump, B.5.b],
Revision A
ERPIP-B.1, Equipment Checklist, Revision 03401
FM-FP-W-1, Weekly B.5.b Checks per OP-AA-201-010-1001, Revision 1
FTE-29, Acceptance Test and Calibration of Amptectors, Revision 8
FTE-53A, Westinghouse 480V Load Center Cubicle Maintenance, Revision 1
FTE-56, Periodic Calibration of Switchboard, Panel, Graphic Meters and Associated Meter
Equipment, Revision 3
FTE-59, Periodic Maintenance, Calibration and Functional Testing of Protective Relays,
Revision 6
FTE-89, Cutler Hammer DS-206 and DS-416 Circuit Breaker Inspection, Revision 2
LS-AA-107, UFSAR/FPR Update Procedure, Revision 11
LS-AA-107-1001, UFSAR/FPR Update T&RM, Revision 6
OI-20A, Fire Protection Performance Evaluations and Fire System Inspection, Revision 02101
OP-AA-201-010-1001, B.5.B Mitigating Strategies Equipment Expectations, Revision 3
SA-1-100, Fire Prevention, Revision 02202
SA-1-101, Fire Fighting, Revision 00800
STP M-510EL-1, Reactor Protection System Pressurizer and Thermal Margin Low Pressure
Loop Calibration, Revision 4
STP M-525AL-2, Steam Generator Level Loop Calibration, Revision 4
STP-063-1, Unit 1 Remote Shutdown and Post-Accident Monitoring Instrumentation Channel
Check, Revision 33
STP-063-2, Unit 2 Remote Shutdown and Post-Accident Monitoring Instrumentation Channel
Check, Revision 33

Operations Procedures

AOP-7D, Loss of Instrument Air, Revision 13
AOP-9B, Bases Document, Unit 2, Revision 13
AOP-9B, Safe Shutdown Due to a Severe Cable Spreading Room Fire, Revision 19
AOP-9J, Safe Shutdown Due to a Severe Fire in Room 317 Unit 1 Switchgear Room 27',
Revision 14

AOP-9R, Safe Shutdown Due to a Severe Fire in Room 605 Unit 2 Auxiliary Feed Pump Room,
Revision 11

ERPIP-3.0, Immediate Actions, Revision 05902

ERPIP-612, Candidate High Level Actions SFP Uncovered, Revision 00404

Large Fires and Explosions Mitigation Strategies Training Documents

Mechanical Maintenance Training Program, MM-CIL-B5BPump, B.5.b Pump Operation, 10/14

Plant Operator Continuing Training, POC-204-1-15, 7/15

SAMG B5b Operator in Charge 2015

TQ-AA-224-F020, Course Attendance Sheet, N-CC-MM-MM-CIL-B5B-Pump, 7/15

Completed Tests/Surveillances

0-013-27-O, Fire Brigade Locker Inspection, completed 5/2/16

1-102-16-O-R, Sound Power Phones, completed 2/20/16

2-102-10-O-R, Remote Shutdown Panel Operation Verification, completed 3/9/15

C92933364-100, 1-102-54-O-SA, AOP/EOP Pre-staged Equipment, completed 11/13/16

C93136384-510, STP O-63-2, Remote Shutdown and Post Accident Monitoring Instr Channel
Check, completed 07/23/16

FTE-29, Acceptance Test and Calibration of Amptectors, completed 12/17/10

FTE-56, Periodic Calibration of Switchboard, Panel, Graphic Meters and Associated Meter
Equipment, completed 2/17/10

FTE-59, Periodic Maintenance, Calibration and Functional Testing of Protective Relays,
completed 2/18/14

FTE-89, Cutler Hammer DS-206 and DS-416 Circuit Breaker Inspection, completed 2/17/10

Halon Discharge Test – 27' Room 317 Switchgear, completed 9/10/81

Halon Discharge Test – Cable Spreading Room, completed 10/13/81

STP F-696-0, Fire Pump Flow Test, completed 10/13/06

STP F-696-0, Fire Pump Flow Test, completed 10/15/03

STP F-696-0, Fire Pump Flow Test, completed 10/28/09

STP F-696-0, Fire Pump Flow Test, completed 12/17/15

STP F-696-0, Fire Pump Flow Test, completed 3/06/16

STP F-696-0, Fire Pump Flow Test, completed 4/06/05

STP F-696-0, Fire Pump Flow Test, completed 4/25/14

STP F-696-0, Fire Pump Flow Test, completed 5/30/08

STP F-76-0, Staggered Test of Diesel Fire Pump, completed 7/06/16

STP F-76-0, Staggered Test of Diesel Fire Pump, completed 8/01/16

STP F-76-0, Staggered Test of Electrical Fire Pump, completed 7/18/16

STP F-76-0, Staggered Test of Electrical Fire Pump, completed 8/15/16

STP M-510EL-1, Reactor Protection System Pressurizer and Thermal Margin Low Pressure
Loop Calibration, completed 8/21/15

STP-063-1, Unit 1 Remote Shutdown and Post-Accident Monitoring Instrumentation Channel
Check, completed 7/8/16

STP-063-2, Unit 2 Remote Shutdown and Post-Accident Monitoring Instrumentation Channel
Check, completed 7/22/16

STP-F-490-0-B, Fire detection Instrument Functional Test, completed 12/31/15

STP-F-493-0, Fire Suppression System Flush, completed 1/16/16

STP-F-591-1, Fire Doors and Watertight Doors, completed 2/08/16

STP-F-591-2, Fire Doors and Watertight Doors, completed 2/03/16
STP-F-592-1, Penetration Fire Barrier Inspection, completed 4/11/16
STP-F-592-2, Penetration Fire Barrier Inspection, completed 4/23/16
STP-F-593-1, Inspection of Fire Dampers in Fire Rated Barriers, completed 5/24/16
STP-F-593-2, Inspection of Fire Dampers in Fire Rated Barriers, completed 5/21/16
STP-F-691-0, Fire Suppression System Flow Test, completed 12/12/15
STP-F-691-0, Fire Suppression System Flow Test, completed 9/03/14
STP-F-692-0, Hose Station Operability Test, completed 8/25/14
STP-F-697-0, Fire Suppression System Functional Test, completed 7/19/15
STP-M-190-0, Diesel Fire Pump Battery Weekly Check, completed 8/10/16
STP-M-498-2, Cable Spreading Room Halon System Fire Detection Instruments Functional Test, completed 3/25/16
STP-M-499-1, 27' and 45' Switchgear Rooms Halon System Fire Detection Instruments Functional Test, completed 11/30/15
STP-M-499-2, 27' and 45' Switchgear Rooms Halon System Fire Detection Instruments Functional Test, completed 6/08/16

Quality Assurance Audits and Self Assessments

Nuclear Safety Oversight Audit Report, 5/29/14
Nuclear Oversight Fire protection Audit Report 11/05/15

System Health Reports

Common Unit Fire Protection, Deluge, Detection and Barriers, 1st qtr. 2016
Common Unit Fire Protection, Deluge, Detection and Barriers, 2nd qtr. 2016
Fire Protection, Detection, Deluge and Barrier System Health Report 1st qtr. 2016
Fire Protection, Detection, Deluge and Barrier System Health Report 2nd qtr. 2016
Unit 1 AC and DC Systems, 1st qtr. 2016
Unit 2 AC and DC Systems, 1st qtr. 2016

Drawings and Wiring Diagrams

60159, Unit 1 Schematic Diagram Engineered Safety Features Actuation System, Revision 25
60714, Sht. 1, Plant Fire Protection System Fire Pump House and Main Header, Revision 45
60714, Sht. 2, Plant Fire protection system Auxiliary and Containment Buildings, Revision 28
60714, Sht. 3, Plant Fire Protection System Turbine and Service Bldgs. & Intake Structure, Revision 34
60714, Sht. 4, Plant Fire Protection & Halon Fire Suppression System, Revision 12
60714, Sht. 5, Plant Fire Protection System Figure Numbers 1, 2,3,4,5 & 5, Revision 35
60714, Sht. 6, Plant Fire Protection System Outside Protected Area, Revision 18
60909, Sht. 2, Loop Diagram 11 Steam Generator Auxiliary Feedwater Flow Turbine Driven Feed Pumps 1FT4509B, Revision 11
60933, Sht. 1A, Unit Loop Diagram 11 Pressurizer Pressure 1PT102A, Revision 4
61001, Sht. 1, Units 1 And 2, Electrical Main Single Line Diagram, Revision 45
61004, Units 1 and 2, Single Line Meter and Relay Diagram 13kV System, Revision 26
61005, Unit 1 Meter and Relay Diagram 4kV System Unit Buses 11 and 14, Revision 36
61006, Unit 1 Meter and Relay Diagram 4kV System Unit Buses 12, 13, 15 and 16, Revision 19
61009, Unit 1 Single Line Meter and Relay Diagram 480V Unit Buses, Revision 42
61075, Sht. 23A, Unit 1 Schematic Diagram Charging Pump 12, Revision 22
61075, Sht. 31, Schematic Diagram MOV-501 Volume Control Tank Discharge, Revision 11

61075, Sht. 36A, Unit 1 Schematic Diagram Pressurizer Level Channel L-110, Revision 2
 61075, Sht. 36B, Unit 1 Schematic Diagram Pressurizer Level Channel L-110, Revision 4
 61085, Sht. 9C, Heating and Ventilation Switchgear Room Schematic Diagram, Revision 10
 611425, Sht. 13A, Electrical Connection Diagram Radiotelephone Communication System, Revision 10
 61261, Units 1 and 2 Trays and Conduits Auxiliary Building Areas 15 and 16, Revision 48
 61262, Unit 1 Trays and Conduits Auxiliary Building Area 17, Revision 46
 61263, Units 1 and 2 Trays and Conduit Auxiliary Building Area 15, Revision 64
 61264, Sht. 1, Unit 1 Trays and Conduits Auxiliary Building Areas 18 and 26, Revision 72
 61266, Units 1 and 2 Trays and Conduits Auxiliary Building Area 16, Revision 40
 61267, Unit 1 Trays and Conduits Auxiliary Building Area 17, Revision 43
 61269, Unit 1 Trays and Conduits Auxiliary Building Area 18 and 26, Revision 76
 61271, Units 1 and 2 Trays and Conduits Auxiliary Building Area 17, Revision 34
 61272, Unit 1 Trays and Conduit Auxiliary Building Section and Details, Revision 16
 61273, Sht. 1, Unit 1 Trays and Conduit Auxiliary Building Area 17 and 19, Revision 80
 61275, Sht. 1, Unit 1 Trays and Conduits Auxiliary Building Areas 18 and 26, Revision 70
 61275, Sht. 2, Unit 1 Trays and Conduits Auxiliary Building Areas 18 and 26, Revision 7
 61285, Unit 1 Trays and Conduits Auxiliary Building Area 15, Revision 43
 61291, Unit 1 Trays and Conduits Auxiliary Building Areas 22 and 23, Revision 23
 61406SEC108.3, Sht. 5, Fire Barriers/Stops, Revision 5
 61406SEC108.3, Sht. 6, Fire Barriers/Stops, Revision 3
 61523, Sht. 1, Yard Piping Plan Sheet 1, Revision 36
 62150, Sht. 47, Barrier Segment Drawing for Plant Elevation 5'-0", Revision 0
 62151, Sht. 27, Barrier Segment Drawing for Plant Elevation 27'-0", Revision 0
 62152, Sht. 4, Barrier Segment Drawing for Plant Elevation 45'-0", Revision 0
 62626, Sht. 1, Unit 2 Loop Diagram 21 Steam Generator Wide Range Level Alternate Shutdown 2LT1114A, Revision 8
 62633, Sht. 1, Loop Diagram 21 And 22 Steam Generator Main Steam Line Atmospheric Dump and Turbine Bypass 2PT4056 and 2HIC4056, Revision 11
 63005, Sht. 1, Unit 2 Meter and Relay Diagram 4kV System Unit Buses 21 and 24, Revision 32
 63006, Unit 2, Meter and Relay Diagram Buses 22, 23, 25 and 26, Revision 11
 63009, Unit 2 Single Line Meter and Relay Diagram 480V Buses, Revision 37
 63036, Sht. 1 Schematic Diagram 208/120V Instrumentation Buses 21 and 22, Revision 68
 63069, Unit 2 Schematic Diagram Turbine Steam Dump and Bypass Controls, Revision 19
 63077, Sht. 28, Unit 2 Block Diagram Reactor Regulatory System 21, Revision 9
 63077, Sht. 29, Unit 2 Block Diagram Reactor Regulatory System, 22, Revision 9

Piping and Instrumentation Diagrams

60583, Sht. 2, Unit 1 Auxiliary Feedwater System, Revision 2
 60729, Sht. 1, Unit 1 Reactor Coolant System, Revision 78
 60730, Sht. 1, Unit 1 Chemical and Volume Control System, Revision 87
 60730, Sht. 2, Unit 1 Chemical and Volume Control System, Revision 74
 62700, Sht. 1, Unit 2 Main Steam and Reheat, Revision 48
 62702, Sht. 1, Condensate and Feedwater System, Revision 44
 64310, Simplified System Drawing Unit 1 Chemical and Volume Control (CVCS), Revision 13
 64311, Simplified System Drawing Unit 1 Safety Injection and Containment Spray, Revision 13
 64312, Simplified System Drawing Unit 1 Auxiliary Feedwater, Revision 1
 84303, Simplified System Drawing Unit 2 Service Water, Revision 17

84310, Simplified System Drawing Unit 2 Chemical and Volume Control, Revision 15
84311, Simplified System Drawing Unit 2 Safety Injection and Containment Spray Sys,
Revision 15
84312, Simplified System Drawing Unit 2 Auxiliary Feedwater, Revision 3

Vendor Manuals

5800/5800F, Fairbanks Morse Horizontal Split-Case and Fire Pumps with Non Removable
Bearing Arm, 5/16/88
VTD-12283-055-1002, Instruction Manual for High Level Isolated Transmitter, Revision 1
45-110, Crowned Tooth Gear Couplings 1000G series, 4/84

Operator Training

N-CC-OPS-LOR-202-9A-16, AOP-9A/NFPA-805 License Operators Requal Training Program,
05/31/16
TCA_Fld01, De-energize PORVs after Appendix R Fire, completed 4/10/14
TCA_Fld02, Isolate SG Blowdown after Appendix R Fire, completed 4/10/14
TCA_Fld03, Trip RCPs after Appendix R Fire, completed 4/10/14
TCA_Fld04, Initiate AFW Flow after Appendix R Fire, completed 4/10/14
TCA_Fld05, Initiate Charging Flow after Appendix R Fire, completed 4/10/14
TCA_Fld06, Align Air Supply to AFW Control Valves after Appendix R Fire, completed 4/10/14

Pre-Fire Plans

Fire Strategies Manual Unit 1 27' Switchgear Room, Revision 00202
Fire Strategies Manual Unit 2 21' Battery Room, Revision 00202
Fire Strategies Manual Unit 2 Auxiliary Feed Pump Room, Revision 1
Fire Strategies Manual Unit 2 Cable Spreading Room, Revision 00202

Fire Drills and Critiques

P-13000-1 Transformer, 5/06/15
Protected Area Fire Pump House, 8/11/15
Unit 1 Containment Fire, 1/09/15
Unit 1 Turbine Building Lighting Panel 1L11, 10/13/15
Unit 2 Turbine Building 27' MCC Fire South West Corner, 10/07/15
Unit 2 Voltage Regulator Fire, 4/20/16

Fire Brigade Training

Attendance Roster of Annual Fire School, 7/8/16
Qualification Record for D. Burger
SA-1-105, Fire Brigade Training, Rev. 01000
TQ-AA-223-F080, Dynamic Learning Activity Template, Rev. 03
Training with St Leonard Fire Department, completed 7/28/16

Hot Work and Ignition Source Permits

List of Qualified Staff for Fire Watch and Hot Work Activities
OP-AA-201-004, Weld/Grind on AFW Piping Supports, completed 6/06-29/16
OP-AA-201-004, Welding and Grinding in Turbine Bldg., completed 8/09/16
Qualification Record for T. Bellere
Qualification Record for Z. Young

Transient Combustible Permits and Evaluations

- 16-21, Cables in U1 AFW, 5/02/16
- 16-22, Ropes and Cables in Aux Bldg., 5/03/16
- 16-33, Plastic Cords and containers in Aux Bldg., 6/10/16
- 16-34, Paint Thinner in Aux Bldg., 6/10/16

Miscellaneous Documents

- Aid Agreement letter Between Calvert Cliffs and the Calvert County Volunteer & Rescue Association, 3/21/16
- Electrical Cable and Conduit Routing Information
- NEIL Property Loss Control Evaluation Report, 7/12/16
- Pump -23 Fairbanks Morse Fire Protection Pump Overhaul, completed 8/24/11

Condition Reports

CR-2010-004623	02464674	02648272	02715241*
CR-2013-008305	02514931	02666307	02716539*
CR-2014-002667	02600987	02693844	02721121*
CR-2014-006814	02601077	02693847	02721294
01860688	02646260	02694256	02721559*
02411712	02648243	02694319	02720773*
02431297	02648245	02695165	
02456645	02648247	02700230	
02458498	02648249	02710623*	

* NRC identified during this inspection.

Work Orders

C90270685	C92830785	C92985528	C93130216
C91393465	C92856501	C93108911	C93284527
C91952257	C92887228	C93116928	C93347519
C91952327	C92931262	C93119214	C93349514

LIST OF ACRONYMS

CCNPP	Calvert Cliffs Nuclear Power Plant
CDF	Core Damage Frequency
CFR	Code of Federal Regulations
CR	Condition Report
CSR	Cable Spread Room
DRS	Division of Reactor Safety
Exelon	Exelon Generation Company, LLC
FA	Fire Area
FPP	Fire Protection Program
FRE	Fire Risk Evaluation
IMC	Inspection Manual Chapter
ICA	Interactive Cable Analysis
IP	Inspection Procedure
IR	Inspection Report
LER	Licensee Event Report
MCR	Main Control Room
NSCA	Nuclear Safety Capability Assessment
NFPA	National Fire Protection Association
NRC	Nuclear Regulatory Commission
P&ID	Piping and Instrumentation Drawing
PRA	Probabilistic Risk Assessment
RFOL	Renewed Facility Operating License
SSD	Safe Shutdown
UFSAR	Updated Final Safety Analysis Report
Vdc	Volts Direct Current