Calvert Cliffs 1
2Q/2015 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance: G Jun 30, 2015
Identified By: NRC
Item Type: NCV Non-Cited Violation
Inadequate Maintenance Instructions for Replacement of the Units 1 and 2 Containment Air Cooler Starters
•Green. The inspectors identified a Green NCV of Title 10 of the Code of Federal Regulations (10 CFR) 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for failure to include appropriate quantitative acceptance criteria for determining the auxiliary contacts and mechanical interlocks were properly installed and adjusted when the Units 1 and 2 containment air coolers (CAC) starters and contactors were replaced during plant modifications. The starter and contactors with associated mechanical interlocks and auxiliary contacts provide the necessary electrical coordination to shift the CACs from fast to slow speed during a safety injection actuation signal (SIAS). The starter and contactor replacements occurred from July 2002 to July 2004. The inspectors determined that Exelon's failure to include appropriate quantitative acceptance criteria for determining the auxiliary contacts and mechanical interlocks were properly installed and adjusted when the Units 1 and 2 CAC starters and contactors were replaced during plant modifications is a performance deficiency. Exelon entered this issue into their corrective action program (CAP) as IR02408755, completed an apparent cause evaluation (ACE), and completed corrective action work orders (WO) to adjust all associated starters and contactors auxiliary contacts.

The inspectors reviewed IMC 0612, Appendix B, "Issue Screening," and determined the issue is more than minor because it is associated with the Mitigating Systems cornerstone attribute of design control and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors evaluated the finding using IMC 0609, Attachment 4, "Initial Characterization of Findings," issued on June 19, 2012, and IMC 0609, Appendix A, "The Significance Determination Process for Findings At Power," Exhibit 2, "Mitigating Systems Screenings Questions," issued on June 19, 2012, and determined a detailed risk evaluation was required for the actual loss of function of the 13 CAC for greater than its technical specification (TS) allowed outage time. A regional Senior Reactor Analyst performed a detailed risk evaluation using the Calvert Cliffs Standardized Plant Analysis Risk (SPAR) Model for Calvert Cliffs Unit 1, Version 8.27, for internal events and determined the finding to be of very low safety significance (Green). The inspectors determined that the finding did not have a cross-cutting aspect because the issue was not indicative of current licensee performance. (Section 4OA2.1)

Inspection Report# : 2015002 *(pdf)*

Significance: G Mar 31, 2015
Identified By: NRC
Item Type: NCV Non-Cited Violation
Component Cooling Operated in Unanalyzed Condition

Green: The inspectors identified a Green NCV of Technical Specification (TS) Limiting Condition for Operation (LCO) 3.7.5, "Component Cooling (CC) System," and 3.0.3, because Exelon operated Units 1 and 2 CC systems in an unanalyzed condition on 18 occasions and operated in a condition prohibited by TS on two occasions within the last three years. The inspectors determined that Exelon's operation with both CC loops inoperable and the subsequent failure to place the unit in Mode 5 within 37 hours as required by TS is a performance deficiency. Exelon entered this issue into their corrective action program (CAP) as IR02439913. Exelon's immediate corrective actions included the submission of event notification (EN) 50752 and prohibiting operation of the CC system in a configuration outside of that specified in the TS bases while further analysis was conducted.

The inspectors reviewed IMC 0612, Appendix B, "Issue Screening," and determined the issue is more than minor because it is associated with the configuration control attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the station operated with two CC loops unable to perform their safety function of maintaining component cooling heat exchanger (CCHX) outlet temperatures at or below 120°F. In accordance with IMC 0609, Attachment 4, "Initial Characterization of Findings," issued on June 19, 2012, and IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," Exhibit 2, "Mitigating Systems Screening Questions," issued on June 19, 2012, the inspectors determined that a detailed risk evaluation was necessary to disposition the significance of this finding because the finding represented a loss of a system and/or function. The detailed risk evaluation considered that the deficiency could have, under some ultimate heat sink temperature conditions, resulted in the CCHX outlet temperatures exceeding the design analyzed limit of 120°F following the recirculation actuation signal (RAS) during a loss of coolant accident (LOCA). The Senior Reactor Analyst performed a bounding significance determination by conservatively assuming a complete loss of safety function for the CCHXs for the applicable limited exposure time. Emergency operating procedures also had contingencies for a postulated loss of the CC function which directed the re-alignment of a containment spray (CS) pump to ensure adequate safety injection is maintained. This evaluation determined the issue was of very low safety significance (Green). The inspectors determined that the finding has a cross-cutting aspect in the area of Human Performance, Design Margins, because Exelon did not operate and maintain equipment within design margins. Specifically, Exelon operated the CC system outside its design safety-related specification, resulting in an operating condition prohibited by TS [H.6]. (Section 1R04)

Inspection Report# : 2015001 *(pdf)*

Significance: G Mar 31, 2015
Identified By: NRC
Item Type: NCV Non-Cited Violation
Inadequate Risk Management Action for LOCI Sequencer Maintenance
Green: The inspectors identified a Green NCV of Title 10 of the Code of Federal Regulations (10 CFR) 50.65(a)(4) because Exelon did not implement adequate risk management actions (RMA) during the replacement of the loss of coolant incident (LOCI) sequencer for the safety-related 11 4KV [kilovolt] bus in accordance with station procedures. The inspectors determined that Exelon's failure to establish adequate RMA's during the performance of LOCI sequencer maintenance activities in accordance with CNG-OP-4.01-1000 is a performance deficiency. Exelon's immediate corrective actions included entering this issue into their CAP as IR02444523

The inspectors reviewed IMC 0612, Appendix B, "Issue Screening," and determined the issue is more than minor because it was associated with the procedure quality attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, without adequate RMAs per station procedure CNG-OP-4.01-1000, the capability of the 0C alternate alternating current (AAC) diesel generator (DG) to perform its safety function of powering the 11 4KV bus was adversely impacted. The inspectors also reviewed IMC 0612, Appendix E, "Examples of Minor Issues," and noted that this issue is sufficiently similar to examples 7.e and 7.f, in

that, Exelon was required, under plant procedures, to establish RMAs or additional RMAs. The inspectors, with the assistance of a Region I Senior Reactor Analyst, evaluated this finding using IMC 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," issued on May 19, 2005. Using Appendix K, Flowchart 2, "Assessment of RMAs," the inspectors determined that the finding was of very low safety significance (Green) based upon the short duration exposure time (approximately one hour). Specifically, comparing the licensee's calculated Yellow (1E-5) annualized risk for this maintenance evolution to the actual (1E-4/year X 1 year/8760 hours = 1E-8) incremental risk increase places the risk of this finding below the Incremental Core Damage Probability (ICDP) > 1E-6 threshold, resulting in a very low safety significance (Green). The inspectors determined that the finding has a cross-cutting aspect in the area of Human Performance, Work Management, because Exelon did not implement a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority. The work process includes the identification and management of risk commensurate to the work and the need for coordination with different groups or job activities. Specifically, Exelon failed to adequately plan, control, and execute the LOCI sequencer maintenance activity by establishing adequate RMAs that would have provided alternate success paths for maintaining the safety function of the out of service structures, systems, and components (SSCs) [H.5]. (Section 1R15)

Inspection Report# : 2015001 *(pdf)*

Barrier Integrity

Significance:  Dec 31, 2014
Identified By: NRC
Item Type: NCV Non-Cited Violation
Spent Fuel Pool Cask Handling Crane 10 CFR 50.65(a)(2) Performance Not Met
•Green: The inspectors identified a Green NCV of Title 10 of the Code of Federal Regulations (10 CFR) 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," paragraph (a)(2), because Exelon did not adequately demonstrate that the spent fuel pool cask handling crane (SFPCHC) (a)(2) performance was effectively controlled through performance of appropriate preventative maintenance. Specifically, Exelon did not identify and properly account for a maintenance rule functional failure (MRFF) of the SFPCHC in September 2013, and thereby did not recognize that the crane exceeded its performance criteria and required a Maintenance Rule (a)(1) determination. Exelon entered this issue in the corrective action program (CAP) as incident report (IR) 02422876. Exelon's immediate corrective actions were to reclassify the September 2013 failure as a MRFF and conduct a Maintenance Rule (a)(1) determination on the SFPCHC.

The inspectors reviewed IMC 0612, Appendix B, "Issue Screening," and determined the finding is more than minor because it is associated with the structure, system, and component (SSC) performance attribute of the Barrier Integrity cornerstone and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system (RCS), and containment) protect the public from radionuclide releases caused by accidents or events. Specifically, following the MRFF of the SFPCHC in October 2014, Exelon personnel did not identify that the crane required a Maintenance Rule (a)(1) determination, to establish if the crane should be monitored in accordance with 10 CFR 50.65(a)(1). As a result, an excessive amount of time passed for Exelon to comply with the requirements of the Maintenance Rule. In accordance with IMC 0609.04, "Initial Characterization of Findings," issued on June 19, 2012, and IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," Exhibit 3, "Barrier Integrity Screening Questions," issued on June 19, 2012, the inspectors determined that the finding was of very low safety significance (Green) because the finding did not result in handling errors, dropped storage cask, or crane operations over the spent fuel pool that caused mechanical damage to fuel clad and a detectible release of radionuclides. The inspectors determined that the finding has a cross-cutting aspect in the

area of Problem Identification and Resolution, Evaluation, because Exelon did not thoroughly evaluate issues to ensure that resolutions address causes and extent of conditions commensurate with their safety significance. Specifically, Exelon personnel failed to properly evaluate the issue that occurred in September 4, 2013 as a MRFF [P.2]. (Section 1R12)

Inspection Report# : 2014005 *(pdf)*

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Significance: G Jun 30, 2015
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Properly Ship Category 2 Radioactive Material - Quantity of Concern
•Green. The inspectors identified a Green NCV of 10 CFR 71.5, “Transportation of Licensed Material,” and CFR 172, Subpart I, “Safety and Security Plans.” Specifically, Exelon personnel shipped a Category 2 radioactive material quantity of concern (RAM-QC) on public highways to a waste processor without adhering to a transportation security plan. Prior to shipment, Exelon’s staff failed to recognize that the quantity of radioactive material met the definition RAM-QC. The inspectors determined that Exelon’s failure to ship material as a Category 2 RAM-QC was a performance deficiency. Exelon entered this issue into their CAP as IR02481678 and corrective actions included revising the shipping procedure to reflect the appropriate Department of Transportation requirements for shipment of Category 2 radioactive material. Additionally, Exelon implemented a formal process for reviewing pending regulatory changes for impacts to operations and support activities by the implementation of Exelon Procedure LS-AA-110, “Commitment Management,” Revision 10, in September 2014.

The inspectors reviewed IMC 0612, Appendix B, “Issue Screening,” and determined the issue is more than minor because it is associated with the program and process attribute of the Public Radiation Safety cornerstone and adversely affected the cornerstone objective to ensure adequate protection of public health and safety from exposure to radioactive materials released into the public domain as a result of routine civilian nuclear reactor operation. In accordance with IMC 0609, Appendix D, "Public Radiation Safety Significance Determination Process," issued on February 12, 2008, the inspectors determined the finding to be of very low safety significance (Green) because Exelon had an issue involving transportation of radioactive material, but it did not involve: (1) a radiation limit that was exceeded; (2) a breach of package during transport; (3) a certificate of compliance issue; (4) a low level burial ground nonconformance; or (5) a failure to make notifications or provide emergency information. The inspectors determined that the finding did not have a cross-cutting aspect because the issue was not indicative of current licensee performance because Exelon successfully implemented its transportation security plan in shipping three Category 2 RAM-QC packages in 2014. (Section 2RS8)

Inspection Report# : 2015002 *(pdf)*

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the cover letters to security inspection reports may be viewed.

Miscellaneous

Last modified : August 07, 2015