Calvert Cliffs 1
4Q/2012 Plant Inspection Findings

Initiating Events

Significance: G Dec 31, 2012
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Inadequate Work Package Led to Reactor Coolant System Pressure Boundary Leakage
Draft. A self-revealing NCV of technical specification (TS) 3.4.13, "Reactor Coolant System (RCS) Operational LEAKAGE," was identified because Constellation failed to restore the RCS to as-designed configuration following replacement of the 11A reactor coolant pump (RCP) differential pressure transmitter isolation valve in 1998, which resulted in operating with RCS pressure boundary leakage which is prohibited by TS. Specifically, a design required vertical support was missing on the RCP high pressure differential transmitter tubing which created a high cyclic fatigue vulnerability, eventual weld failure at the tube to pipe adapter, and RCS pressure boundary leakage. RCS pressure boundary leakage was first identified in June 2012 due to an increasing trend in RCS leak rate while the plant was operating at power. Immediate corrective actions included entering this issue into the corrective action program (CAP), replacing the tube to pipe adapter, and installing the missing vertical tubing support. Planned corrective actions include establishing a small bore piping inspection program and conducting walkdowns of Unit 1 and Unit 2 RCP differential pressure transmitter sensing lines and similar sensing lines in other systems.

The finding is more than minor because it is associated with the design control attribute of the Initiating Events cornerstone and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the failure to restore the system to as-designed configuration resulted in a RCS pressure boundary leak. The inspectors evaluated the finding using IMC 0609 Appendix A, "The Significance Determination Process (SDP) for Findings at Power," and determined the finding is of very low safety significance (Green) because the performance deficiency, after a reasonable assessment of degradation, could not result in exceeding the RCS leak rate for a small loss of coolant accident (LOCA) and could not likely affect other systems used to mitigate a LOCA, resulting in a total loss of their function.

The finding does not have a cross-cutting aspect since the failure to restore the as-designed configuration is not indicative of current licensee performance. Constellation's current work order planning procedure requires the planner to translate engineering design documents into maintenance work orders while maintaining the design basis of the plant per the configuration program.

Inspection Report# : 2012005 *(pdf)*

Significance: G Sep 30, 2012
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Unit 1 RCS Pressure Boundary Leakage
A self-revealing NCV of Technical Specification (TS) 3.4.13, "Reactor Coolant System (RCS) operational LEAKAGE," was identified because Constellation failed to completely isolate a fault in the RCS pressure boundary, which resulted in Constellation operating with RCS pressure boundary leakage for a period of time prohibited by Technical Specifications. Constellation's corrective actions included enter the issue in their CAP (CR-2012-007012 and CR-2012-007276), performing repairs, and conducting root and apparent cause analyses for the issue.

The finding is more than minor because it is associated with the equipment performance attribute of the Initiating Events cornerstone and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, after the

Constellation personnel identified RCPB leakage at 5:15 p.m. on July 17, 2012, they failed to reach Mode 3 within six hours because all available means to verify proper RCS leak isolation were not used. Constellation's actions did not limit the likelihood of a small loss of coolant accident (LOCA) event when they operated with RCS pressure boundary leakage from July 17 until July 21, 2012. The inspectors evaluated the finding using IMC 0609 Appendix A, "The Significance Determination Process (SDP) for Findings at Power," and determined the finding is of very low safety significance (Green) because the performance deficiency, after a reasonable assessment of degradation, could not result in exceeding the RCS leak rate for a small LOCA and could not likely affect other systems used to mitigate a LOCA resulting in a total loss of their function.

The finding has a cross-cutting aspect in the area of Human Performance, Decision Making, because Constellation personnel did not use conservative assumptions in decision making and adopt a requirement to demonstrate that the proposed action was safe in order to proceed rather than a requirement to demonstrate that it is unsafe in order to disapprove the action. Specifically, after attempting to isolate the RCS pressure boundary leakage, Constellation personnel non-conservatively assumed that the leak was going to be isolated, as demonstrated by non-rigorous post-isolation verification criterion and the lack of a robust monitoring plan in the ensuing days after the valves were shut.
Inspection Report# : 2012004 *(pdf)*

Mitigating Systems

Significance: G Jun 30, 2012
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Establish Testing Program for ESFAS SDS
The inspectors identified an NCV of 10 CFR 50, Appendix B, Criterion XI, "Test Control," because Constellation did not establish an operational test program for the engineered safety features actuation system (ESFAS) shutdown sequencers (SDSs). Specifically, on May 4, 2012, the inspectors determined that the licensee had never performed an operational test on the SDSs. The SDS supports the Loss of Offsite Power (LOOP) event in chapter 14 of the Updated Final Safety Analysis Report. Constellation's immediate corrective actions included entering the issue into their corrective action program (CAP), conducting an operability determination, developing a procedure to test the SDSs online, and testing the SDSs. Planned corrective actions include submittal of a license amendment request to include the SDS testing in their technical specification requirements.

The finding is more than minor because it is associated with the equipment performance attribute of the Mitigating System cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, when tested, one of the SDSs did not perform as designed. The SDS logic for the No. 24 4kV bus initiated start of the auxiliary feedwater pump on the incorrect step. In addition, if left uncorrected the performance deficiency had the potential to lead to a more safety significant concern, in that, an SDS failure would go undetected until an actual demand during an LOOP. The inspectors evaluated the finding using Phase 1, "Initial Screening and Characterization," worksheet in Attachment 4 to IMC 0609, "Significance Determination Process," and determined the finding is of very low safety significance (Green) because the performance deficiency was not a design or qualification deficiency, did not involve an actual loss of safety function, did not represent actual loss of safety function of a single train for greater than its TS allowed outage time, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding has a cross-cutting aspect in the area of problem identification and resolution, CAP, because Constellation did not identify this issue completely, accurately, and in a timely manner commensurate with its safety significance. Specifically, within the last 3 years, Constellation had several opportunities to completely and accurately identify the SDS test program deficiency as a result of multiple sequencer module replacements and through reviews of the emergency diesel generator testing program (P.1.a per IMC 0310).

Inspection Report# : 2012003 *(pdf)*

Significance: G Jun 21, 2012

Identified By: NRC
Item Type: NCV NonCited Violation
Violation of 10 CFR 50, Appendix B, Criterion III, Design Control - Inadequate Cooling to Containment Spray Pumps
The team identified a finding of very low safety significance involving a non-cited violation of 10 CFR 50, Appendix B, Criterion III, “Design Control,” in that Constellation did not assure that design control measures verified or checked the adequacy of design of the containment spray (CS) pump cooling systems. Specifically, the team determined that the seal cooling units installed on the CS pumps would not provide sufficient cooling to the seals, and the team found that there were discrepancies in the installed configuration of the bearing cooling system for the pump; and no calculations or tests that demonstrated that adequate cooling was available for the pump bearings at design basis accident conditions. Following the identification of these issues, Constellation entered these issues into their corrective action program, and performed operability determinations on the cooling systems. The team’s review concluded that the systems were operable but degraded.

The finding was more than minor becasue it was associated with the design control attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The team evaluated the finding in accordance with IMC 0609, Significance Determination Process, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings," and determined the finding was of very low safety significance (Green) because it was a design or qualification deficiency confirmed not to result in loss of operability or functionality. This finding did not have a cross-cutting aspect because the most significant contributor of the performance deficiency was not reflective of current licensee performance. (Section 1R21.2.1.1)
Inspection Report# : 2012007 *(pdf)*

Significance: G Mar 31, 2012
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Establish Test Program for Auxiliary Feedwater Emergency Air Accumulators
The inspectors identified an NCV of 10 CFR Part 50, Appendix B, Criterion XI, “Test Control,” due to Constellation’s failure to establish a test program to demonstrate that the auxiliary feedwater (AFW) air-operated valves (AOVs) will operate as design with the emergency air accumulators and associated air pressure control valves (PCVs). Specifically, on January 26, 2012, the inspectors identified that safety related AFW emergency PCVs were replaced without a functional post maintenance test (PMT). The inspectors also identified that the AFW emergency air system had not being tested since the emergency air accumulators were installed in the 1980s and the 1990s. Constellation immediate corrective actions included entering the issues in their corrective action program (CAP), performing a functional test of the installed PCVs, performing an operability determination for the AFW emergency air system, and developing a testing procedure to periodically verify operation of AFW AOVs using the emergency air system.

The finding is more than minor because it is associated with the equipment performance attribute of the Mitigating System cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, a reasonable doubt of operability existed because the capability of the AFW AOVs to operate using the backup air supply had not been demonstrated since original installation. In addition, if this issue was left uncorrected, it could have resulted in a greater safety concern because there was potential for build-up of particulate and condensation in the tight fits of the PCVs which could impact reliable operation. The inspectors determined that the finding is of very low safety significance because the performance deficiency was not a design or qualification deficiency, did not involve an actual loss of safety function, did not represent actual loss of safety function of a single train for greater than its TS allowed outage time, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding has a cross-cutting aspect in the area of problem identification and

resolution, CAP, because Constellation did not ensure that issues potentially impacting nuclear safety were promptly identified, fully evaluated, and actions were taken to address safety issues in a timely manner commensurate with their safety significance. Specifically, Constellation did not implement a CAP with a low threshold for identifying test control issues associated with the AFW system [P.1.(a) per IMC 0310]. (Section 1R19)
Inspection Report# : 2012002 *(pdf)*

Significance: G Mar 31, 2012
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Failure to Replace Batter Charger Circuit Board within Its Recommended Service Life
A self-revealing NCV of Technical Specification (TS) 5.4.1, "Procedures," was identified for the failure of Constellation to establish, implement, and maintain preventive maintenance (PM) requirements associated with the safety related No. 16 battery charger. Specifically, Constellation did not establish and implement a PM program to replace the current sensing/limiting printed circuit board (PCB) within its 10-year service life. As a consequence, the No. 16 battery charger failed rendering the 1A emergency diesel generator (EDG) inoperable. Constellation's immediate corrective actions included entering this issue into their CAP, performing an apparent cause evaluation, performing an extent of condition review, and replacing the No. 16 battery charger PCBs.

The finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capacity of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure of the No. 16 battery charger led to the 1A EDG being declared inoperable. The inspectors determined that the finding is of very low safety significance because the performance deficiency was not a design or qualification deficiency, did not involve an actual loss of safety function, did not represent actual loss of safety function of a single train for greater than its TS allowed outage time, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding has a cross-cutting aspect in the area of human performance, resources, because Constellation did not ensure that personnel, equipment, procedures, and other resources were available and adequate to assure nuclear safety. Specifically, Constellation did not maintain complete, accurate, and up-to-date procedures associated with the PM program [H.2.(c) per IMC 0310].
Inspection Report# : 2012002 *(pdf)*

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

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

Significance: G Sep 30, 2012
Identified By: NRC
Item Type: NCV NonCited Violation
Inattentive Non-Licensed Operator
In accordance with Inspection Procedure 92702, "Followup on Traditional Enforcement Actions Including Violations, Deviations, Confirmatory Action Letters, Confirmatory Orders, and Alternative Dispute Resolution Confirmatory Orders," the inspectors conducted a follow-up inspection of a Severity Level IV NCV which was identified due to the deliberate failure of a non-licensed operator to remain attentive to their duties while performing a maintenance evolution on the 2B EDG on June 15, 2011, contrary to Technical Specification 5.4.1.a, "Procedures." This issue was communicated to Constellation in a letter dated April 9, 2012, following the completion of an NRC investigation into this matter.

The inspectors reviewed the scope and depth of analysis performed in addressing the identified deficiency. The inspectors also reviewed Constellation's assessment of generic implications of the identified violation and evaluated the corrective actions implemented by Constellation personnel to determine whether they were adequate to address the identified deficiency and prevent recurrence. The inspectors reviewed Constellation's identified causes and the actions taken to prevent recurrence of those causes.
Inspection Report# : 2012004 *(pdf)*

Last modified : February 28, 2013