

Calvert Cliffs 1

2Q/2013 Plant Inspection Findings

Initiating Events

Significance:  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:  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:  Jun 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Establish a Test Program for DFO Check Valves

• Green: The inspectors identified an NCV of Title 10 of the Code of Federal Regulations (10 CFR) 50, Appendix B, Criterion XI, "Test Control," because CENG failed to establish a test program to ensure that diesel fuel oil (DFO) transfer system header check valves, DFO-146 and DFO-148, would perform their safety function. Specifically, on November 1, 2012, the inspectors identified that DFO-146 and DFO-148 had never been tested in the reverse flow direction or inspected. DFO-146 and DFO-148 have a design function to close in reverse flow conditions to ensure that the Tornado/Missile protected No. 21 fuel oil storage tank (FOST) will not drain if the non-Tornado/Missile protected No. 11 FOST fails during a tornado/missile event. CENG's immediate corrective actions included entering this issue into their corrective action program (CAP) and performing a reasonable expectation of continued operability. Planned corrective actions include performing an evaluation which includes a probabilistic risk assessment to credit a non tornado/missile protected manual valve located in the DFO unloading station and a tornado/missile protected manual valve in the No. 21 FOST building to perform the function of the DFO tornado/missile protected check valves.

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, a reasonable doubt of operability existed because the capability of the check valves to perform their design function had never been demonstrated. The failure of check valves during a tornado/missile event causing the loss of the No. 11 FOST would

result in the draining of the safety-related No. 21 FOST and consequential loss of all Fairbanks Morse emergency diesel generators (EDGs). Also, this issue is similar to IMC 0612, Appendix E, Example 3.i, in that, if credit is taken for manual valves in lieu of testing the check valves, additional analysis would be required to be performed to assure licensing basis requirements are met. 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 the finding has a cross-cutting aspect in the area of Problem Identification and Resolution, CAP, because CENG failed to ensure that issues potentially impacting nuclear safety are promptly identified and fully evaluated and that actions are taken to address safety issues in a timely manner, commensurate with their significance. Specifically, CENG did not take appropriate corrective actions to address safety issues and adverse trends in a timely manner associated with inadequate testing programs of risk significant equipment. [P.1(d)] (Section 1R04)

Inspection Report# : [2013003](#) (pdf)

Significance:  Mar 31, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Establish Adequate Design Control Measures for Diesel Fuel Oil Cloud Point

Green: The inspectors identified an NCV of 10 CFR 50, Appendix B, Criterion III, "Design Control," because Constellation failed to provide design control measures to assure appropriate specifications were translated into procedures for diesel fuel oil (DFO) in the No.11 fuel oil storage tank (FOST). Specifically, Constellation's cloud point maximum specification for DFO is above historical minimum temperatures recorded in the vicinity of CCNPP. The inspectors determined that Constellation did not have adequate measures in place such as a calculation, temperature monitoring, and/or procedures to assess the operability of the DFO transfer system from the No. 11 FOST for sustained outdoor temperatures below the cloud point specification temperature but above the minimum expected temperature the site may experience. Constellation entered this issue in their corrective action program (CAP). Immediate corrective actions included adding a note in Operations turnover sheet to determine No.11 FOST DFO operability if ambient temperatures dropped below 10°F at the site. Planned corrective actions include performing a calculation to determine cold weather effects on the No.11 FOST.

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 to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, a reasonable doubt of operability existed because the minimum temperature limits and duration of low temperature had not been established for diesel generator operability and historical low temperatures have been below the cloud point of the DFO. If left uncorrected, the performance deficiency has the potential to lead to a more significant safety concern because an inadequate cloud point specification could impact emergency diesel generator (EDG) and/or station blackout (SBO) diesel operation during an actual event during extreme low temperature conditions. The inspectors evaluated the significance of this finding using IMC 0609 Appendix A, "The Significance Determination Process (SDP) 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 is a deficiency affecting the design or qualification of a mitigating structure, system, and component (SSC); however, the SSC maintained its 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. Specifically, the most reasonable opportunity to identify this issue was in 1994 when Constellation reviewed this issue in response to Information Notice (IN) 94-19, "Emergency Diesel Generator Vulnerability to Failure from Cold Fuel Oil." (Section 1R04)

Inspection Report# : [2013002](#) (pdf)

Significance: G Mar 31, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Technical Specification Surveillance Testing of the Diesel Fuel Oil Transfer System

Green: The inspectors identified an NCV of Technical Specification (TS) surveillance requirement (SR) 3.8.1.7 because Constellation failed to adequately perform SR associated with the DFO transfer system. Specifically, since approximately 1996, Constellation did not test the 2A EDG fuel oil transfer system aligned to the No. 21 FOST. The No. 21 FOST is the credited tank in the plant's licensing bases. Immediate corrective actions included entering this issue into the CAP and entering TS SR 3.0.3 for a missed surveillance which required performing a probabilistic risk assessment and performing the missed surveillance within 31 days. Corrective actions planned includes revising the quarterly EDG surveillance procedure to test the 2A EDG while aligned to the No. 21 FOST and develop and implement a testing program to periodically test each EDG aligned to the normal and alternate FOSTs.

This finding is more than minor because it is associated with the equipment performance attribute of the Mitigating System cornerstone and affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, Constellation's testing program did not provide assurance that no obstruction exists in the DFO transfer system. If left uncorrected, this issue potentially would result in a greater safety concern in that an obstruction could exist would not be identified until an actual event requiring the 2A EDG to be aligned to the No. 21 FOST as described in the safety analysis. In accordance with IMC 0609.04, "Initial Characterization of Findings" and Exhibit 2 of IMC 0609, Appendix A, "Significance Determination Process For Findings At-Power," issued June 19, 2012, the inspectors determined that this finding is of very low safety significance (Green) because the performance deficiency was not a design or qualification deficiency; did not represent a loss of system and/or function; did not represent an actual loss of function of at least a single train for greater than its TS allowed outage time; and did not represent an actual loss of function of one or more non-TS trains of equipment designated as high safety significance. The inspectors determined that 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 are promptly identified, fully evaluated, and that actions are taken to address safety issues in a timely manner, commensurate with their significance. Specifically, Constellation did not take appropriate corrective actions to address safety issues and adverse trends in a timely manner associated with previously identified inadequate testing programs of risk significant equipment [P.1(d)] (Section 1R22)

Inspection Report# : [2013002](#) (pdf)

Barrier Integrity

Significance: G Jun 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Steam Generator Tube Rupture Emergency Operating Procedure

Green: The inspectors identified an NCV of Technical Specification 5.4.1.b, "Procedures," because CENG failed to maintain guidance in Emergency Operating Procedure (EOP)-6, "Steam Generator Tube Rupture (SGTR)." Specifically, EOP-6 guidance does not provide an alternative action to cool down the reactor coolant system (RCS) for a SGTR event with a loss of offsite power (LOOP) and the single failure of the unaffected steam generator (SG)

atmospheric dump valve (ADV). This could result in the inability to terminate the primary to secondary leak into the affected SG and the cycling of the affected SG ADV to control the SG level resulting in additional dose to the public. Immediate corrective actions included entering this issue into their CAP. Corrective actions planned include revising EOP-6 to address the identified deficiency. In addition, CENG established interim administrative controls of the ADVs to ensure that appropriate remedial actions are taken if the ADVs are out of service and is evaluating adding the ADVs to their technical specifications.

This finding is more than minor because it is associated with the procedure quality attribute of the Barrier Integrity cornerstone and affects the cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding, RCS, and containment) protect the public from radionuclide releases caused by accidents or events. Specifically, the performance deficiency could result in the operation of the affected SG ADV and, consequently, the release of radioactivity to the environment until an adequate method to cool down the RCS is established. The inspectors evaluated the significance of this finding using IMC 0609, Appendix A, "The Significance Determination Process for Findings at Power," Exhibit 3, "Barrier Integrity Screening Questions." The inspectors determined that this finding was of very low safety significance (Green) because the finding does not represent an actual open pathway in the physical integrity of reactor containment. Also, the finding did not involve an actual reduction of hydrogen igniters in the reactor containment. The inspectors determined that the finding has a cross-cutting aspect in the area of Human Performance, Resources, because CENG did not ensure that personnel, equipment, procedures, and other resources were available and adequate to assure nuclear safety. Specifically, CENG did not ensure that EOP-6 was complete, accurate, and up-to-date through required periodic reviews. [H.2(c)] (Section 1R04)

Inspection Report# : [2013003](#) (*pdf*)

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:  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 : September 03, 2013