

## Calvert Cliffs 1

### 3Q/2012 Plant Inspection Findings

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## Initiating Events

**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*)

**Significance:** G Dec 31, 2011

Identified By: Self-Revealing

Item Type: FIN Finding

### **Turbine Building Siding Failure Below Design Specification**

Green: A self-revealing finding of very low safety significance was identified because Constellation did not ensure the turbine building (TB) siding was installed in accordance with design requirements of ES-005, Civil and Structural Design Criteria. This resulted in wind induced TB siding failures significantly below design wind speeds. Consequently, Unit 1 experienced an automatic trip from 100 percent power due to a phase-to-phase short circuit on the main transformer when the main transformer high voltage lines were struck by

dislodged TB siding caused by high winds associated with Hurricane Irene. The inspectors determined that Constellation missed multiple opportunities to identify the TB siding installation deficiencies following several high wind events and through the use of operating experience (OE). Immediate corrective actions included entering this issue into their CAP and restricting personnel travel in outside areas with sustained wind speed greater than 40 mph until the TB corner siding on all corners has been verified to be properly installed. Other corrective actions include testing and inspection of the main transformer, repairs to the 'B' and 'C' phase high line drops to the main transformer, temporary repairs to the TB siding, and development of new installation requirements which meet the design requirements of the TB siding corners. In addition, Constellation's planned corrective actions include inspecting all building siding inside the protective area to identify other possible deficiencies.

The finding is more than minor because it is associated with the protection against external factors attribute (wind and grid stability) of the Initiating Events cornerstone and adversely affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. Specifically, the finding resulted in a reactor trip of Unit 1. The inspectors determined that the finding is of very low safety significance because the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. This finding has a cross-cutting aspect in the area of problem identification and resolution, OE, because Constellation did not use OE information and internally generated lessons learned, to support plant safety and implement changes to station processes, procedures, equipment, and training programs. Specifically, Constellation did not implement and institutionalize OE associated with siding failures through changes to station processes, procedures, and equipment, and training programs (P.2.b per IMC 0310). (Section 40A3)  
Inspection Report# : [2011005](#) (*pdf*)

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## Mitigating Systems

**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 them 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.

Inspection Report# : [2012007](#) (*pdf*)

**Significance:**  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:**  Mar 31, 2012

Identified By: NRC

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*)

**Significance:**  Dec 31, 2011

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**Did Not Adequately Prescribe and Implement Procedures Associated with Protected Equipment**

Green: A self-revealing NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified, because Constellation did not prescribe and accomplish procedures appropriate to the circumstances associated with protected safety related equipment. As a result, on October 3, 2011, Constellation allowed work on a protected emergency diesel generator (EDG). The work activity inadvertently resulted in the protected EDG becoming inoperable. This led to required Technical Specification (TS) shutdowns of Unit 1 and Unit 2 because the other required EDG was already out of service (OOS) for planned maintenance. Prior to the shutdown being completed, the protected EDG was restored to an operable status and the shutdowns were aborted. Immediate corrective actions included entering this issue into their corrective action program (CAP), issuing a site wide communication stating the expectations regarding work on protected safety equipment, and revising the Operations Administrative Policy (OAP) associated with protected equipment.

The finding is more than minor because it is associated with the configuration control attribute of the Mitigating Systems 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, the work activity impacted the availability and capability of the 1A EDG. The inspectors determined 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 for greater than its individual TS allowed outage time, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding has a cross-cutting aspect in the area of human performance, decision making, because the Constellation did not adequately make a risk significant decision using a systematic process when faced with uncertain or unexpected plant conditions, to ensure safety is maintained. Specifically, Constellation personnel did not follow the integrated work management process for emergent work which

ultimately led to the downpower of both units (H.1.a per IMC 0310). (Section 1R04)  
Inspection Report# : [2011005](#) (*pdf*)

**Significance:** G Dec 31, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

**Annual Operating Tests Are Not Comprehensive**

Green: The inspectors identified an NCV of 10 CFR Part 55.59(aX2Xii) for Constellation's failure to administer annual operating tests to licensed operators to accomplish a comprehensive sample of items specified by 10 CFR Part 55.45(a)(7)&(8). Specifically, for the past five years, Constellation's annual operating tests have not evaluated licensed operators on important tasks that would be performed inside the auxiliary building. Constellation entered this issue into their CAP to evaluate corrective actions.

This finding is more than minor because if left uncorrected, it would have the potential to lead to a more significant safety concern. This finding is associated with human performance attribute of the mitigating systems 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, Constellation's annual operating tests have not evaluated licensed operators on mitigation tasks that would be performed inside the auxiliary building. The finding is of very low safety significance according to IMC 0609, "SDP," Appendix 1, "Licensed Operator Requalification SDP," because the issue was related to operating test quality. The inspectors determined that this finding had a cross-cutting aspect in the area of human performance, decision making, because Constellation did not use conservative assumptions in decision making that resulted in the development and administration of annual operating tests over the past five years that were not comprehensive (H.1.b per IMC 0310). (Section 1R11 )  
Inspection Report# : [2011005](#) (*pdf*)

**Significance:** G Dec 31, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate Inspection of Floor Drains Led to Clogging and EDG Failure During Hurricane**

Green: The inspectors identified an NCV of TS 5.4.1, "Procedures," because Constellation did not adequately implement the procedural requirements to conduct floor drain inspections. Specifically, operators did not ensure that floor drains were free to drain and clear of debris in the 80 foot elevation of the 1A EDG building. This contributed to the inoperability of the 1A EDG due to clogged floor drains during Hurricane Irene on August 28, 2011. Additional causes included the failure of a combustion intake penetration boot seal to remain leak tight and the installation of drain filters without an engineering evaluation. Immediate corrective actions included entering this issue into their CAP, removing all the drain filters from the 1A EDG building, and installation of a curb around the combustion intake penetration. Planned corrective actions include replacing combustion intake penetration boot seal.

The finding is more than minor because it is associated with the human performance attribute of the Mitigating System cornerstone and affected the cornerstone's objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the performance

deiciency resulted in the 1A EDG becoming inoperable. A phase 3 SDP was required because the finding was potentially risk significant due to a seismic, flooding, or severe weather initiating event. A Region I Senior Reactor Analyst (SRA) conducted a Phase 3 assessment and concluded that the finding was of very low safety significance. The finding has a cross-cutting aspect in the area of human performance, work practices, because Constellation did not ensure that personnel work practices support human performance by defining and effectively communicating expectations regarding procedural compliance and personnel following procedures related to floor drain inspections (H.4.b per IMC 0310). (Section 40A3)

Inspection Report# : [2011005](#) (pdf)

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## Barrier Integrity

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## Emergency Preparedness

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## Occupational Radiation Safety

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## Public Radiation Safety

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## 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.

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## 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*)

**Significance:** N/A Nov 18, 2011

Identified By: NRC

Item Type: FIN Finding

### **Calvert Cliffs Biennial PI&R Inspection Summary**

The inspectors concluded that Constellation was generally effective in identifying, evaluating, and resolving problems. Constellation personnel identified problems, entered them into the corrective action program at a low threshold, and in general, prioritized issues commensurate with their safety significance. In most cases, Constellation appropriately screened issues for operability and reportability, and performed causal analyses that appropriately considered extent of condition, generic issues, and previous occurrences. The inspectors also determined that Constellation typically implemented corrective actions to address the problems identified in the corrective action program in a timely manner.

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

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

Inspection Report# : [2011010](#) (*pdf*)

Last modified : November 30, 2012