

Calvert Cliffs 1

2Q/2012 Plant Inspection Findings

Initiating Events

Significance:  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 4OA3)
Inspection Report# : [2011005](#) (*pdf*)

Mitigating Systems

Significance:  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)

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Significance: Jun 21, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Violation of 10 CFR 50, Appendix B, Criterion III, Design Control - Inadequate Evaluation of Components that Could be Damaged by Tornado Missiles

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 their design with respect to missile protection of safety-related equipment required for safe shutdown of the plant during and after a tornado. Specifically, the team identified vulnerable tornado missile targets (turbine-driven auxiliary feedwater and main steam safety valve steam exhaust pipes, and salt water pump motor ventilation fan housings) that had not been included in Constellation's aggregate PRA evaluation used to meet licensing requirements. Following the identification of these components, Constellation entered the issue into their corrective action program; and re-performed the aggregate PRA tornado evaluation and concluded that the results remained within their licensing basis.

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

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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*)

G

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*)

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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*)

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Significance: 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(a)(2)(ii) 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 I, "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*)

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Significance: 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 deficiency 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 4OA3)

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

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Significance: Sep 30, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Corrective Actions Associated with Submerged Saltwater Pump Motor Cables

Green: The inspectors identified an NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," because Constellation did not promptly identify and correct a condition adverse to quality associated with submerged saltwater (SW) pump motor safety-related medium voltage cables. As a result, safety-related cables were subjected to a submerged or continuously wetted environment for extended periods. Immediate corrective action included entering this issue into their corrective action program (CAP), conducting an operability determination (OD), and placing these cables into Constellation's Medium Voltage Cable Program.

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 capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, this condition could lead to cable degradation, increased likelihood of cable failure, and subsequent risk associated with the failure of safety-related equipment. The inspectors determined the finding is of very low safety significance because the finding is a design or qualification deficiency confirmed not to result in a loss of operability. The finding has a cross-cutting aspect in the area of problem identification and resolution, operating experience (OE), because Constellation did not fully implement and institutionalized OE to change station processes and procedures associated with submerged cables (P.2.b per IMC 0310).

Inspection Report# : [2011004](#) (*pdf*)

Emergency Preparedness

Significance:  Sep 30, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Compensatory Actions for Out of Service High Range Effluent Radiation Monitors

Green. The inspectors identified an NCV of 10 CFR Part 50.54, "Conditions of Licenses," paragraph (q), because Constellation did not maintain the Emergency Plan to adequately meet the standards in 50.47(b). Specifically, Constellation periodically removed the high range effluent monitors from service without addressing the impact on the site's ability to make a timely assessment of radiological releases as discussed in the Emergency Plan. This could result in an unnecessary delay in dose projection for certain radiological events. Immediate corrective actions included entering this issue into the CAP, updating the evaluation to address any potential delays, and protecting equipment required for dose projection.

The finding is more than minor because it is associated with the facilities and equipment attribute of the Emergency Preparedness (EP) cornerstone and affected the cornerstone's objective to ensure that the licensee is capable of implementing adequate measures to protect public health and safety in the event of a radiological emergency. Specifically, the removal of high range effluent radiation monitors from service that provide a timely assessment capability may result in not immediately recognizing the offsite radiological condition that requires offsite protective actions. The inspectors determined the finding is of very low safety significance because it did not result in a loss or degraded Risk-Significant Planning Standard (RSPS) function. In addition, the finding is similar to examples of Green findings in IMC 0609, Appendix B, Section 4.9, in that the equipment or systems necessary for dose projection are not functional for longer than 24 hours from time of discovery without adequate compensatory measures. This finding has a cross-cutting aspect in the area of problem identification and resolution, CAP, because Constellation did not fully evaluate problems such that the resolution address causes and extent of condition as necessary. Specifically, Constellation did not adequately evaluate the compensatory actions following the removal of the high range effluent monitors from service to ensure that a timely assessment of offsite radiological conditions could be accomplished following a steam generator tube rupture (SGTR) event (P.1.c per IMC 0310).

Inspection Report# : [2011004](#) (*pdf*)

Significance:  Sep 30, 2011

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Lack of Proficiency Evaluating Seismic Recorder Data

Green. A self-revealing NCV of 10 CFR Part 50.54, "Conditions of Licenses," paragraph (q), was identified because Constellation did not maintain the Emergency Plan to adequately meet the standards in 50.47(b). Specifically, Constellation did not have an adequate emergency classification and action level scheme in place for the seismic activity initiating condition and Constellation personnel lacked the proficiency necessary to evaluate seismic recorder data in a timely manner during the seismic event on August 23, 2011. The licensee entered this issue into their CAP and implemented compensatory actions, which included training of operators.

The finding is more than minor because it is associated with the facilities and equipment attribute of the EP cornerstone and affected the cornerstone objective of ensuring that a licensee is capable of implementing adequate measures to protect the health and safety of

the public in the event of a radiological emergency. Specifically, incorrect seismic recorder trigger setpoint settings and untimely evaluations of seismic recorder data could result in the failure of Constellation to declare an Unusual Event (UE) or an Alert in a timely manner. The inspectors determined the finding is of very low safety significance because it did not result in a loss or degraded RSPS function. The finding is also similar to examples of Green findings in Section 4.4 of IMC 0609, Appendix B, in that the EAL classification process would not declare any Alert or Notification of UE that should be declared. This finding has a cross-cutting aspect in the area of human performance, resources, because Constellation did not ensure that the training of personnel was adequate to assure nuclear safety. Specifically, Constellation did not ensure that personnel were proficiently trained to read and evaluate the seismic recorder data which could delay entry into the EALs (H.2.b of IMC 0310).

Inspection Report# : [2011004](#) (pdf)

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: 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 : September 12, 2012