

## Calvert Cliffs 2

### 4Q/2013 Plant Inspection Findings

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#### Initiating Events

**Significance:**  Dec 31, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

##### **Inadequate Emergency and Abnormal Operating Procedures for the Loss of the 21 DC Bus**

Green. The inspectors identified an NCV of Technical Specification (TS) 5.4.1, "Procedures," because Constellation Energy Nuclear Group (CENG) failed to maintain adequate guidance in Emergency Operating Procedure (EOP) 8, "Functional Recovery Procedure," and/or Abnormal Operating Procedure (AOP) 7J, "Loss of 120 Volt Vital Alternating Current (AC) or 125 Volt Vital Direct Current (DC) Power." Specifically, EOP 8 and/or AOP-7J did not contain adequate instructions to cross-tie the 480 volt AC vital buses to restore the 120 volt AC vital buses during a loss of offsite power (LOOP) event concurrent with a single failure of the 21 125 volt DC bus. As a result, the engineered safety features actuation system (ESFAS) and auxiliary feedwater actuation system (AFAS) would inadvertently actuate on both units if the 120 volt AC vital buses were not restored within a specified period of time. CENG staff's immediate corrective actions included entering this issue into their corrective action program (CAP). Corrective actions planned include revising AOP-7J to add in steps to cross-tie the 480 volt AC vital buses.

The finding is more than minor because it is associated with the procedure quality attribute of the Initiating Events cornerstone and affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, following a LOOP concurrent with a failure of the 21 DC bus, inadvertent ESFAS and AFAS actuations would occur on both units if power is not restored to the vital 120 volt AC buses. The inspectors evaluated the finding using IMC 0609, Appendix A, "The Significance Determination Process for Findings at Power," Exhibit 1, "Initiating Events Screening Questions." The inspectors determined that this finding was of very low safety significance (Green) because the finding did not cause a reactor trip and the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. The inspectors determined that this finding did not have a cross-cutting aspect because the most significant contributor to the performance deficiency was not reflective of current licensee performance. Specifically, the inspectors determined that this was a legacy procedure issue and did not note any recent reasonable opportunities for CENG personnel to identify this issue. (Section 1R15)

Inspection Report# : [2013005](#) (*pdf*)

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#### Mitigating Systems

**Significance:**  Dec 31, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

##### **Pre-Conditioning of Containment Air Coolers Emergency Outlet Valves**

Green. The inspectors identified an NCV of Title 10 Code of Federal Regulations (CFR) 50, Appendix B, Criterion XI, "Test Control," because CENG's in-service test (IST) procedures did not provide instructions to preclude

preconditioning of the containment air cooler (CAC) emergency outlet valves. Specifically, STP-O-065B-2, “21 SRW Subsystem Operability Test,” was written such that a full stroke of the CAC emergency outlet valves was allowed prior to performance of the IST stroke time testing of the valves in the open direction. As a result, the 21 CAC emergency outlet valve, 2-CV-1582, was preconditioned during the last four surveillance tests performed on the valve and the 24 CAC emergency outlet valve, 2-CV-1593, was preconditioned during three of the last four surveillance tests performed on the valve. Immediate corrective actions included entering this issue in the CAP. Corrective actions included revising STP-O-065B to prevent future preconditioning of all the CAC emergency outlet valves.

The finding is more than minor because it is associated with the procedure quality 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 (i.e. core damage). Specifically, preconditioning of the CAC emergency outlet valves prior to performing IST stroke time testing could mask valve degradation. The inspectors evaluated the 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 affect the design or qualification of a mitigating structure, system, and component (SSC), did not represent a loss of system 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 having high safety significance in accordance with the maintenance rule program, for greater than 24 hours. The inspectors determined that the finding has a cross-cutting aspect in the area of Human Performance, Resources, because CENG staff failed to ensure that personnel, equipment, procedures, and other resources were available and adequate to assure nuclear safety. Specifically, CENG staff did not provide a complete and accurate procedure that would preclude preconditioning of the CAC emergency outlet valves during in-service testing [H.2(c)]. (Section 1R22)

Inspection Report# : [2013005](#) (pdf)

**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:**  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:**  Sep 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate Post-Maintenance Test Associated with an Atmospheric Dump Valve**

Green: The inspectors identified an NCV of Technical Specifications 5.4.1, "Procedures," for the failure of Constellation Energy Nuclear Group (CENG) personnel to establish, implement, and maintain maintenance requirements associated with No. 21 atmospheric dump valve (ADV). Specifically, CENG personnel failed to perform an adequate post-maintenance test (PMT) in accordance with the work instructions for the No. 21 ADV following maintenance and prior to its return to service. As a result, the valve was returned to service in a condition where its containment isolation function was inoperable. Immediate corrective actions included entering this issue into the corrective action program (CAP). Additional corrective actions taken or planned include training Maintenance shop

personnel on writing condition reports (CRs) for all failed PMTs and for Operations to ensure that work orders involving ADVs include post-maintenance operability tests for containment closure.

The finding is more than minor because it is associated with the human performance attribute of the Barrier Integrity cornerstone and affected the cornerstone objective to provide reasonable assurance that physical design barriers (containment) protect the public from radionuclide releases caused by accidents or events. Specifically, the No. 21 ADV was returned to service in a condition where its containment isolation function was inoperable. In addition, the finding is similar to IMC 0612, Appendix E, Example 5.b, in that, the system was returned to service prior to resolution of the degraded condition. The inspectors evaluated the 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. Specifically, there was no loss of steam generator tube integrity. 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 Problem Identification and Resolution, CAP component, because CENG staff did not ensure that issues potentially impacting nuclear safety were promptly identified, fully evaluated, and that actions are taken to address safety issues in a timely manner, commensurate with their safety significance. Specifically, CENG staff did not implement a CAP with a low threshold for identifying issues such as writing a CR following the identification that the ADV was degraded [P.1(a)]. (Section 1R19)

Inspection Report# : [2013004](#) (*pdf*)

**Significance:**  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*)

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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:** N/A Sep 27, 2013

Identified By: NRC

Item Type: FIN Finding

### PI&R Report Summary

The inspectors concluded that Constellation was generally effective in identifying, evaluating, and resolving problems. Constellation personnel identified problems, entered them into the CAP at a low threshold, and 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 CAP 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 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 CAP 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# : [2013008](#) (*pdf*)

Last modified : February 24, 2014