

## Calvert Cliffs 2

### 1Q/2014 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*)

## 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*)

## **Emergency Preparedness**

**Significance:**  Mar 31, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Compensatory Actions for Out of Service Letdown Radiation Monitor**

Green: The inspectors identified an NCV of Title 10 of the Code of Federal Regulations (10 CFR) 50.54, “Conditions of Licenses,” paragraph (q)(2), because CENG did not maintain the Emergency Plan to adequately meet the standards in 50.47(b)(4). Specifically, following the removal of the Unit 2 letdown radiation monitor for maintenance on October 28, 2013, CENG did not establish adequate compensatory measures to ensure that a fuel clad degradation

emergency action level (EAL) could be assessed in a timely manner as discussed in the Emergency Plan. This could have resulted in an unnecessary delay in the recognition of a Notice of an Unusual Event (NOUE) EAL declaration for elevated coolant reactivity. Immediate corrective actions included restoring the proper valve lineup, entering this issue into their CAP, and implementing compensatory actions, which included the use of a portable radiation monitor with appropriate alarm setpoints to initiate action to sample the RCS to determine if the specified reactor coolant activity limits are exceeded. Planned corrective actions include restoration of the Unit 2 letdown radiation monitor.

This finding is more than minor because it was associated with the emergency response organization performance attribute of the Emergency Preparedness (EP) cornerstone and affected the cornerstone's objective to ensure that CENG is capable of implementing adequate measures to protect public health and safety in the event of a radiological emergency. Specifically, the failure to establish compensatory actions beyond the normal RCS sampling frequency could have resulted in exceeding an NOUE EAL threshold for a degraded fuel clad and the condition not becoming known until the next normal RCS sample or upon further fuel clad degradation requiring escalation under other EALs. In accordance with IMC 0609.04, "Initial Characterization of Findings," issued June 19, 2012, and IMC 0609, Appendix B, "Emergency Preparedness Significance Determination Process," issued February 24, 2012, the inspectors determined the finding is of very low safety significance (Green). Utilizing IMC 0609, Appendix B, the inspectors determined that the finding is associated with an aspect of the Emergency Plan related to the EAL Classification Scheme 10 CFR 50.47(b)(4). The inspectors determined that the EAL was ineffective because it, in and of itself, no longer resulted in a timely and accurate declaration for the initiating condition. Utilizing Figure 5.4.1, the impact of the ineffective EAL is that a NOUE would be declared in a timely manner, which screens as a Green finding. In addition, the finding is similar to a Green finding in Table 5.4.1, "Significance Examples §50.47(b)(4)," in that the EAL classification process is not capable of classifying an Alert or NOUE in a timely and accurate manner. This finding has a cross-cutting aspect in the area of Human Performance, Work Management, because CENG personnel adequately implement a work process that included the identification and management of risk commensurate to the work and the need for coordination with different groups or job activities. Specifically, Operations and Chemistry personnel did not ensure that the assigned tasks were adequate to compensate for the increased in nuclear risk associated with having the letdown radiation monitor out of service [H.5]. (Section 1R15)

Inspection Report# : [2014002](#) (*pdf*)

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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.

## 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 : May 30, 2014