

Calvert Cliffs 2

2Q/2007 Plant Inspection Findings

Initiating Events

Significance:  Jun 28, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Follow Procedures and maintain Configuration Control during Reactor Fill

The inspectors identified a NCV of Technical Specifications (TS) 5.4.1.a, Administrative Controls, because Constellation did not maintain equipment alignment in accordance with site procedures during drain and fill of the reactor coolant system (RCS). Specifically, operations personnel did not verify a reactor level instrument inlet valve shut prior to the vacuum fill of the RCS contrary to Operating Procedure (OP)-7, Shutdown Operations, and Operating Instruction (OI)-1A, Reactor Coolant System and Pump Operation. This allowed air to enter the in-service RCS level instrumentation lines causing a loss of all level indication for a period of approximately five hours while in reduced inventory. Constellation entered this issue into their CAP as IRE-021-661 and IRE-022-119. The immediate corrective actions included restoration of RCS level from a reduced inventory condition and a prompt investigation to determine the cause of the loss of all level indication.

This finding is greater than minor because it is associated with the Initiating Event cornerstone attribute of configuration control and affects the likelihood of a loss of shutdown cooling event. The inspectors evaluated the significance of the finding using IMC 0609, Appendix G, "Shutdown Operations SDP" and Appendix H, "Containment Integrity SDP," because it represented an actual loss of level indication. Based on the results of the Phase 3 analysis, this finding is determined to have very low safety significance (Green). This finding has a cross-cutting aspect in the area of human performance because Constellation did not define and effectively communicate expectations regarding procedural compliance such that personnel follow procedures (H.4.b).

Inspection Report# : [2007003](#) (*pdf*)

Significance:  Jun 28, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Adequately Maintain the RCS Reduced Inventory Procedure

The inspectors identified a NCV of TS 5.4.1.a, Administrative Controls, when Constellation did not maintain an adequate procedure to drain and fill the RCS. Specifically, OP-7 permitted operation in a reduced RCS inventory condition without requiring redundant means of reactor level indication available. This is not in accordance with Nuclear Operations Administrative Procedure NO-1-103, Lower Mode Operations and Constellation's commitments in response to NRC Generic Letter (GL) 88-17, Loss of Decay Heat Removal. Constellation entered this issue into their CAP as IRE-022-121 and immediate corrective actions included the suspension of OP-7 pending resolution of this issue.

This finding is greater than minor because it is associated with the Initiating Event cornerstone attribute of equipment performance and affects the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown operations. Specifically, the inadequate procedure for operation in reduced RCS inventory increased the likelihood of the loss of RCS level indication and consequently a loss of residual heat removal (RHR) initiating event. The inspectors determined that this finding was of very low safety significance based on IMC 0609, Appendix G, Figure 1. The inspectors determined that this finding had a cross-cutting aspect in the area of human performance because Constellation did not ensure that the procedure for operation with the RCS in reduced inventory was complete and accurate (H.2.c).

Inspection Report# : [2007003](#) (*pdf*)

Significance:  Jun 28, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Preclude Recurrence of a Significant Condition Adverse to Quality Associated with Power Operated Relief Valves

A self-revealing NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," occurred because Constellation did not implement adequate corrective actions for a significant condition adverse to quality associated with the slow closure of a pressurizer power operated relief valve (PORV) due to a main disc guide being out of round. Specifically, Constellation did not perform an extent of condition review from a February 2006 event such that corrective actions would preclude recurrence of the issue. Subsequently, during a Unit 2 reactor trip on November 16, 2006, a PORV remained open longer than expected and resulted in a safety injection actuation signal. Constellation entered this issue into the corrective action program (CAP) for resolution. Immediate corrective actions for this issue included replacement of the main disc guide and an extent of condition review of the remaining PORVs on Unit 1 and Unit 2.

This finding is greater than minor because it is associated with the equipment performance attribute of the Initiating Events cornerstone and affects the cornerstone objective to limit the likelihood of those events that challenge critical safety functions. Inspectors evaluated the significance of the finding using an SDP Phase 2 analysis and determined the issue was of very low safety significance (Green). This finding has a cross-cutting aspect in the area of problem identification and resolution because Constellation did not thoroughly evaluate an equipment malfunction such that the extent of condition was considered and the cause resolved (P.1.c of IMC 0305).

Inspection Report# : [2007003](#) (*pdf*)

Significance:  Dec 31, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Tagout Review Involving a Safety Related Offsite Power Supply

A Green self-revealing non-cited violation (NCV) of Technical Specification (TS) 5.4.1.a was identified for failure to adequately implement tagging procedures. This resulted in an unexpected reactor trip of Unit 2 during preparation for a maintenance activity involving a safety related offsite power supply. Operators did not conduct an adequate tagout review as required by procedures. Constellation entered the deficiency into their corrective action program for resolution. Immediate corrective actions included an Operations night order requiring a challenge review for complex electrical tagouts.

The finding is greater than minor because it is associated with the human performance and configuration control attributes under the Initiating Event Cornerstone. The finding is associated with an increase in the likelihood of initiating events in that a reactor trip actually occurred. This issue is of very low safety significance since it does not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment will not be available. The cause of this finding is related to the cross-cutting aspect in the area of human performance because operators did not fully consider the operational impact of work activities.

Inspection Report# : [2006005](#) (*pdf*)

Significance:  Jun 28, 2003

Identified By: Self-Revealing

Item Type: FIN Finding

Troubleshooting Human Performance Error Results in a Reactor Trip

The inspectors identified a finding because the work practices during a turbine governor valve control circuit troubleshooting activity were inadequate and resulted in a reactor trip.

This finding is greater than minor because it affected an attribute and the objective of the Initiating Events Cornerstone in that the work practices inadequacies resulted in a perturbation in plant stability by causing a reactor trip. The finding is of very low safety significant in accordance with Phase 1 of the reactor safety SDP because, although it caused a reactor trip, it did not increase the likelihood of a primary or secondary system loss of coolant accident initiator, did not contribute to a combination of a reactor trip and loss of mitigation equipment functions, and did not increase the likelihood of a fire or internal/external flood.

Inspection Report# : [2003003](#) (*pdf*)

Mitigating Systems

G

Significance: Jun 28, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Demonstrate that the MSSV Performance Was Being Effectively Controlled per 10 CFR 50.65(a)(2).

The inspectors identified a NCV of 10 CFR 50.65(a)(2) because Constellation did not demonstrate that performance monitoring of the main steam safety valves (MSSVs) was being effectively controlled through the performance of appropriate preventive maintenance. Specifically, in February 2006, Constellation experienced repetitive and numerous issues associated with MSSV lift settings outside specified TSs. However, Constellation did not recognize the unsatisfactory performance monitoring of this system in accordance with the 10 CFR 50.65(a)(2) and place the system in (a)(1) status. Constellation entered this issue into their CAP for resolution.

The finding is greater than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone and affects the cornerstone objective of ensuring the availability, reliability, and capability of the MSSVs, which respond to initiating events to prevent undesirable consequences. The finding is of very low safety significance (Green) because the finding is not a design or qualification deficiency, does not represent a loss of a system safety function or safety function of a single train, and does not screen as potentially risk significant due to external events. The inspectors also determined that this finding has a cross-cutting aspect in the area of problem identification and resolution because Constellation did not trend and assess information from the CAP and other assessments to identify programmatic and common cause problems with the MSSVs (P.1.b).

Inspection Report# : [2007003](#) (*pdf*)

G

Significance: Mar 31, 2007

Identified By: NRC

Item Type: FIN Finding

Failure To Take timely Actions To Evaluate And Correct Station Blackout Diesel Degraded Conditions

The inspectors identified a finding for the failure to take timely action to evaluate and correct adverse conditions associated with the station blackout (SBO) diesel generator. During the February 14, 2007, performance evaluation, the SBO diesel experienced high crankcase pressure, a high lube oil filter fouling rate, and glycol in the lube oil. Constellation inspected the diesel engine and identified that the head of the A4 cylinder of the SBO diesel 0C2 engine was cracked. The inspectors determined that similar symptoms existed during the January 14, 2007, performance evaluation; however, the degraded conditions were not adequately evaluated and corrected in a timely manner as required by the augmented quality assurance program for the SBO diesel. Constellation entered the deficiency into their corrective action program for resolution. Immediate corrective actions included a replacement of the cracked cylinder head. The cause of the finding is related to the cross-cutting element in the area of problem identification and resolution because Constellation did not properly prioritize and evaluate conditions adverse to quality (P.1.c).

This finding is more than minor because it affected the availability objective of the equipment performance attribute under the Mitigation System Cornerstone. Based on a Significance Determination Process (SDP) Phase 3 analysis, the finding represented low safety significance and was determined to be Green for Units 1 and 2 based on Core Damage Frequency (CDF). (Section 1R15)

Inspection Report# : [2007002](#) (*pdf*)

G

Significance: Mar 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Failure To Recognize That One Or More Channels Of The High-Rate-Of-Change Trip function Was Inoperable

The inspectors identified a non-cited violation (NCV) of Technical Specification Limiting Condition for Operation (LCO) of 3.3.1 and 3.0.3 because Constellation did not recognize that one or more channels of the high rate-of-change

(startup rate) trip function did not meet Technical Specifications (TS) requirements following the completion and acceptance of Linear Power Channel Calibration surveillance on several occasions during a three year period. Constellation discovered this during a reduction of power to perform maintenance on the Unit 2 voltage regulator drawers. Constellation submitted a licensee event report (LER) and entered this issue into their corrective action program for resolution. The inspectors determined that a contributing cause of this finding is related to a cross-cutting aspect in the area of problem identification and resolution because Constellation did not promptly take actions to address safety issues in a timely manner, commensurate with its significance (P.1.a).

This finding is greater than minor because it affected the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems (i.e., reactivity control) that respond to initiating events to prevent undesirable consequences and is related to attributes of procedure quality and human performance. The finding is of very low safety significance because it did not result in an actual loss of safety function because the plant was not in a condition that only relied on the startup rate trip function to protect against anticipated operational occurrences (AOOs). The startup rate trip function serves as a backup to the power level high and thermal margin/low pressure trip functions while the reactor is critical at low power levels, to protect against CEA rod withdrawal and boron dilution events. (Section 4OA3.5)

Inspection Report# : [2007002](#) (pdf)

G

Significance: Dec 31, 2006

Identified By: NRC

Item Type: FIN Finding

Inadequate Post-Trip Review

Green. The inspectors identified a Green finding for the failure to adequately implement post trip review procedures required by Generic Letter (GL) 83-28, "Required Actions Based on Generic Implications of Salem ATWS Events." Specifically, Constellation's post-trip review for the Unit 2 trip on November 16, 2006, failed to identify equipment deficiencies revealed during the trip. In addition, Constellation's post-trip review did not critically evaluate some aspects of operator performance and emergency procedure implementation. Prior to restart of the Unit these issues were discussed with Constellation management. Constellation subsequently performed additional evaluations to address the shortcomings of the initial post-trip review and appropriately entered issues in the corrective action program for resolution.

The inspectors determined that Constellation's failure to perform an adequate post-trip review for the Unit 2 reactor trip on November 16, 2006, constitutes a performance deficiency and a finding. The finding is greater than minor because it affected the reliability objective of the Equipment Performance attribute under the Mitigating Systems Cornerstone. Specifically, the failure to identify and correct equipment or procedural deficiencies revealed during a plant trip will decrease the reliability of systems that respond to initiating events to prevent undesirable consequences. This finding has a cross-cutting aspect in the area of problem identification and resolution because Constellation did not identify multiple plant and procedure deficiencies during the initial post-trip review.

Inspection Report# : [2006005](#) (pdf)

G

Significance: Sep 30, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Comply with TS for SRW and AFW with Watertight Doors Open

The Inspectors identified a non-cited violation (NCV) for the Service Water (SRW) and Auxiliary Feedwater (AFW) systems being inoperable without completing the actions required by Technical Specifications. Constellation did not declare AFW and SRW trains inoperable when water tight doors providing a High Energy Line Break (HELB) carrier were opened for maintenance or testing. Station personnel wrote condition report (CR) IRE-016-870 to address the control of these HELB barriers and have provided guidance to declare the trains inoperable if the water tight doors are open.

This finding is more than minor because it had a credible impact on the objective for the mitigating system cornerstone and the attribute of component availability during design basis events, specifically HELBs. The SDP phase 1 review determined a phase 1 evaluation was required since both SRW and AFW subsystems could have been

impacted with the HELB barrier removed. The phase 2 evaluation yielded a very low safety significance (Green) because of the low exposure time when the watertight doors were open. A contributing cause of the finding is related to the cross cutting aspect in the area of problem identification and resolution (PI&R) because Constellation did not implement and institutionalize operating experience (OE) related to control of the HELB barriers through changes to station processes or procedures. (Section 1R15)

Inspection Report# : [2006004](#) (*pdf*)

Significance:  Sep 30, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Comply with TS 5.4.1 for Salt Water Strainers

The inspectors identified a NCV of TS 5.4.1.a because Constellation did not initiate a condition report (CR) to document the adverse performance of the service water (SRW) heat exchanger salt water (SW) strainers during high debris loading as required in the Service Water Heat Exchanger Alarm Manual. Constellation also did not assess the operability of the strainers as required by the Corrective Action Program. Station personnel initiated CR IRE-017-018 to address the issue and assess operability of the strainers.

The finding was more than minor since it had a credible impact on the objective for the mitigating system cornerstone and the attribute of component reliability during design basis events where the SRW system was required. This finding was determined to be a finding of very low safety significance (green) because only one subsystem of the SRW system was inoperable at any time and the subsystem inoperability time was less than the maximum allowed by TS. A contributing cause of this finding was related to the cross-cutting aspect of PI&R because Constellation did not implement the corrective action program with a low threshold for identifying the problems with the SRW heat exchanger SW strainers. (Section 4OA2)

Inspection Report# : [2006004](#) (*pdf*)

Barrier Integrity

Significance:  Jun 28, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Implement TS 3.6.3 Required Actions for Containment Isolation Valves

The inspectors identified a NCV of TS 3.6.3, Containment Isolation Valves, because Constellation did not implement actions as specified in TS 3.6.3. Specifically, Constellation did not include all containment isolation valves (CIVs) within the scope of TS requirements, which led to inadequate TS actions being taken for these valves when they became inoperable. Constellation entered this issue into their CAP as IRE-021-913. The planned corrective actions included a review of potential reportable conditions and a standing order for operation personnel to enter TS 3.6.3 for all CIVs as appropriate.

This finding is greater than minor because it is associated with the configuration control attribute of the Barrier Integrity cornerstone and affects the cornerstone objective to provide reasonable assurance that physical design barriers such as containment protects the public from radio nuclide releases caused by accidents or events. The inspectors evaluated the significance of this finding using a SDP Phase 1 and Phase 2 analysis, which required evaluation using IMC 0609, Appendix H, because some of the inoperable valves identified in the reportability review involved an actual reduction in the defense-in-depth for the atmospheric pressure control of the reactor containment. Based on the results of the Phase 2 analysis, this finding was determined to have very low safety significance (Green). This finding has a cross-cutting aspect in the area of problem identification and resolution because Constellation did not take actions to address safety issues in a timely manner, commensurate with their significance (P.1.a).

Inspection Report# : [2007003](#) (*pdf*)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

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