Calvert Cliffs 2
3Q/2007 Plant Inspection Findings

Initiating Events

Significance: G 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: G Jun 28, 2007
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Adequately Maintain the RCS Reduced Inventtory 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: G 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

Significance: G Sep 27, 2007
Identified By: NRC
Item Type: NCV NonCited Violation
Lack of Acceptance Limits for Thermal Performance Testing of Component Cooling Water Heat Exchangers
The inspectors identified an NCV of 10 CFR 50, Appendix B, Criterion XI, Test Control, for Units 1 and 2 because Constellation did not incorporate acceptance limits contained in the design basis calculation into the thermal performance test procedure for the component cooling heat exchangers (CCHXs) or evaluate test results once the 11 CCHX exceeded the acceptance limits. The inspectors determined that the 11 CCHX exceeded the fouling factor for the tests performed in 2004 and 2006 but Constellation failed to evaluate those conditions for acceptability. Constellation's immediate corrective actions included performing an assessment to verify the operability of the 11 CCHX and entering this issue into the corrective action program (CAP).

The finding is greater than minor because it is associated with the procedure quality attribute of the Mitigating Systems cornerstone and affects the cornerstone objective of ensuring the capability, availability, and reliability of the CCHXs to remove their design basis heat load under accident conditions. In addition, if left uncorrected, this finding would result in a more significant safety concern because the fouling factor for the 11 CCHX could exceed its acceptance limit prior to the next tube cleaning and cause the heat exchanger to become inoperable. The inspectors determined that the finding is of very low safety significance (Green) because the finding was confirmed not to result in a loss of operability. The finding has a cross-cutting aspect in the area of problem identification and resolution because Constellation did not identify the issue in a timely manner in that the inadequate test procedure was not identified nor was a CR initiated once the limiting fouling factor was exceeded (P.1.a per IMC 0305).

Inspection Report# : 2007004 *(pdf)*

Significance: G Sep 27, 2007
Identified By: NRC
Item Type: NCV NonCited Violation
Inoperable LRNI Channel Due to IncorrectCircuit Card Installation
A Green, self-revealing, NCV of TS 3.3.1, "Reactor Protection System (RPS) Instrumentation," was identified because Constellation entered Modes 1 and 2 without the TS required number of linear range nuclear instrumentation (LRNI) channels operable. On April 2, 2007, while in Mode 1, during a Unit 2 reactor startup, operators noted that Channel C LRNI did not provide indication on the reactor protective system calibration and indication panel. Constellation determined that a technician error led to the incorrect installation of the circuit card that resulted in the inoperable LRNI channel and post-maintenance testing failed to identify the misplaced circuit card prior to the mode of applicability for the affected channel. Upon discovery of the inoperable LRNI channel, Constellation took immediate corrective action to bypass the inoperable channel in accordance with TS 3.3.1.A. and restored the circuit card to the correct location. Constellation entered this issue into the CAP for resolution.

This finding is greater than minor because it affects the configuration control attribute of the Mitigating System cornerstone to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, proper reactor protection system capability was not maintained as required by TS. The inspectors determined that the finding was 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. This finding has a cross-cutting aspect in the area of Human Performance because Constellation did not use human error prevention techniques, such as self and peer checking, and proper documentation of activities, which resulted in the incorrect installation of a circuit card (H.4.a per IMC 0305).
Inspection Report# : 2007004 *(pdf)*

Significance: G 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)*

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)*

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)*

Significance: G 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)*

Barrier Integrity

Significance: G 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

Last modified : December 07, 2007