Calvert Cliffs 1
3Q/2006 Plant Inspection Findings

Initiating Events

Significance: G Mar 31, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to establish adequate physical boundaries for RCP maintenance
Green. A self-revealing non-cited violation of Technical Specification 5.4.1 occurred when requirements contained in plant procedure NO-1-112, Safety Tagging, were not adequately implemented prior to maintenance on the 12A reactor coolant pump. Specifically, on February 22, 2006, while in Mode 5, a component cooling water system containment isolation valve was stroked open while performing a surveillance test which resulted in a level decrease of about 20 inches in the component cooling water head tank. The cause of the event was due to an incomplete tagout boundary which had been established for the 12A reactor coolant pump seal replacement maintenance activity. The licensee documented this performance deficiency in their corrective action program for resolution. The inspectors determined that a contributing cause of this finding was related to the cross-cutting area of human performance in that licensed operators did not establish adequate tagout boundaries.
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This finding was more than minor because it was associated with the Initiating Event Cornerstone attribute of configuration control and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown operations. The event did not involve an actual loss of shutdown cooling (SDC). As a result, this finding was determined to be of very low safety significance (Green) in accordance with a risk assessment performed using the NRC Inspection Manual Chapter (IMC)0609, "Significance Determination Process," Appendix G, "Shutdown Operations". (Section 1R20)

Inspection Report# : 2006002*(pdf)*

Significance: G Oct 26, 2005
Identified By: NRC
Item Type: NCV NonCited Violation
Failure To Establish Adequate Clearance Order Boundaries
The inspectors identified a non-cited violation of Technical Specification 5.4.1.a. "..., written procedures shall be established, implemented,.." because plant procedural requirements were not implemented while establishing boundaries to perform maintenance activities. Specifically, on October 26, 2005, while hanging a clearance to support the replacement of 1-SV-3828, 11 shutdown cooling (SDC) outlet control valve (CV) solenoid valve, component cooling water flow to the Unit 1 containment components was reduced which adversely impacted the reactor coolant pumps due to the increased temperatures associated with the upper and lower guide bearings as well as the lower reactor coolant pump (RCP) seal. A misunderstanding as to how this clearance interacted with a previously established clearance lead to this event. The licensee restored component cooling water flow and corrected the sequencing of these clearances and maintenance activities to ensure plant stability was maintained. The licensee documented this occurrence in their corrective action program.

This finding is greater than minor because it was associated with the Initiating Events Cornerstone configuration control attribute and affected the cornerstone's objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. This finding was determined to be of very low safety significance (Green), because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. The inspectors identified that a contributing cause of this finding was related to the cross-cutting area of human performance. Specifically, the licensed operators did not follow plant procedures and determine if boundaries specified in the clearance order were adequate for the maintenance activity based on the actual plant conditions that existed at the time the clearance was to be implemented. (Section 1R04)
Inspection Report# : 2005005*(pdf)*

Mitigating Systems

Significance: G 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 Technicial 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: G 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)*

Significance: G Jun 30, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to establish reference values or reconfirm previous values following maintenance that affected reference values of the AFW and ECCS pumps
The inspectors identified a non-cited violation of 10 CFR 50.55a, Codes and Standards, because the licensee did not establish new reference values or reconfirm the previous reference values following maintenance that affected hydraulic or mechanical parameters on the auxiliary feedwater (AFW) and emergency core cooling system (ECCS) pumps as required by the American Society of Mechanical Engineers (ASME) Operation and Maintenance (OM) Code for inservice testing. The licensee entered this issue into their corrective action program as IRE-014-764. The planned corrective action include a review of maintenance and IST data to determine whether new reference values are needed or reconfirm existing reference

values for the AFW and ECCS pumps.

This finding is more than minor because the same issue affected a number of safety-related pumps tested and the issue was repetitive. The finding has a very low safety significance because the condition did not result in an actual failure of the AFW and ECCS pumps, or result in systems being declared inoperable for greater than their allowed technical specification outage time. A contributing cause of the finding is related to the cross-cutting aspect in the area of problem identification and resolution because the licensee did not periodically trend and assess information to identify programmatic and common cause problems.

Inspection Report# : 2006003*(pdf)*

Significance: G Mar 31, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Perform Evaluation for Repetitive Functional Failures
The inspectors identified a non-cited violation (NCV) of 10CFR50.65 ("the Maintenance Rule") paragraph (a)(2) in that the licensee failed to demonstrate that the performance of service water turbine building isolation valves were being effectively controlled through preventive maintenance. The licensee did not fully evaluate repetitive valve test failures and their impact on the performance demonstration that justified monitoring under paragraph (a)(2) of the Maintenance Rule. Upon evaluation, the licensee determined that the repetitive functional failures should have caused the effected valves to be monitored in accordance with Maintenance Rule paragraph (a)(1) requirements. The licensee entered the performance deficiency regarding Maintenance Rule program implementation into their corrective action program for resolution. Specific corrective actions were taken to address the individual valve test failures when they occurred. The inspector identified that a contributing cause of this finding was related to the cross-cutting area of human performance due to the incorrect performance determination by plant staff.

This finding is greater than minor, because it affected the reliability objective of the Equipment Performance attribute under the Mitigating Systems Cornerstone. Specifically, the licensee did not demonstrate effective control of the performance of the isolation valves by failing to place the affected structure, system, component (SSC) in a Maintenance Rule (a)(1) category due to its failure to demonstrate acceptable performance. The finding is of very low safety significance, because the isolation valve failures did not result in a loss of operability, did not represent a loss of a system or train safety function, and did not involve an external event. Specifically, the service water isolation capability was maintained due to the operability of redundant isolation valves that are in series with the valves that failed. (Section 1R12)

Inspection Report# : 2006002*(pdf)*

Significance: W Mar 24, 2006
Identified By: Self-Revealing
Item Type: VIO Violation
Failure to Adequately Control the Design of the Setpoints for “1A” EDG Feeder Breaker for Essential EDG Support Systems
A violation of 10 CFR 50, Appendix B, Criterion III (Design Control) was identified involving the failure to ensure an adequate trip setpoint for the electrical circuit breaker that supplies the “1A” EDG support systems. An SDP Phase 3 risk analysis determined that the failure to account for possible combinations of “1A” EDG support equipment operation in the short-time over-current trip setpoint for the supply breaker to 1MCC123 was preliminarily of low to moderate safety significance. Specifically, the short-time over-current trip setpoint was set too low and it did not account for the in-rush current associated with the possible combinations of equipment that could start and operate to support the “1A” EDG following a loss of offsite power (LOOP). This low setpoint, combined with normal setpoint drift, resulted in substantial periods where the “1A” EDG would not have been able to perform its safety function, because the support system supply circuit breaker would have tripped open inappropriately. Calvert Cliffs took immediate action to correct the breaker setpoint and evaluate other potential deficiencies of a similar nature. This issue was entered into the corrective action program at Calvert Cliffs for resolution.

The finding was more than minor because it affected the Mitigating Systems Cornerstone objective to ensure the availability and reliability of systems (i.e., emergency AC power) that respond to initiating events to prevent undesirable consequences, and its related attribute for design control. The "0C" Station Blackout Diesel Generator (a non-safety related, but risk-important power source) and the breaker for its support systems were similarly affected by the performance deficiency. SDP Phase 1, Phase 2, and Phase 3 assessments were used to evaluate the risk significance of this finding. The Phase 1 screening required performance of a Phase 2 evaluation because the finding represented a loss of safety function of a single train, for greater than its allowed outage time. The Technical Specification (TS) allowed outage time is 14 days for a single EDG. To assess the full significance both the Phase 2 and Phase 3 analyzes assumed a 5407 hour exposure for the “1A” EDG being unable to perform its safety function and an additional 6.7 hours where both the “1A” EDG and the “0C” DG would not have been able to perform their required functions (the “0C” EDG had less instrument drift). The Region I senior reactor analyst (SRA) conducted a Phase 3 Risk Assessment, to refine the Phase 2 analysis and to incorporate external events and recovery credit. The Phase 3 analysis for internal and external initiating events, using the above assumptions and licensee risk information, determined a ?CDF of approximately 1 in 150,000 years of operation (mid E-6 per year range) for both internal and external events, with no associated increase in large early release frequency (LERF). The risk of the “1A” EDG exposure time dominated the analysis by several orders of magnitude over the risk of the concurrent “1A” EDG and “0C” DG exposure time. A large fire in the turbine building, which causes a loss of offsite power, was the dominating initiating event.

Inspection Report# : 2006012*(pdf)*

Significance: G Nov 18, 2005
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to identify and correct unavailability problems for the turbine drive AFW pump.
The NRC identified a Green non-cited violation (NCV) of Technical Specification (TS) 5.4.1 due to an inadequate procedure for installation and adjustment of packing for the 22 turbine-driven auxiliary feedwater (TDAFW) pump, which led to premature pump shutdown during a quarterly surveillance test. During the test, operators secured the pump when they noticed a burning smell and observed smoke coming from the pump’s inboard packing gland. Investigation found the inboard packing gland had lost adequate leak off flow along its inner diameter. The licensee entered the deficiency with the pump overhaul procedure into their corrective action (CA) program for resolution.

This finding was greater than minor because it adversely affected the availability of a safety-related TDAFW pump which affected the equipment performance attribute of the Mitigating Systems Cornerstone because the pump was unavailable until the degraded packing had been replaced and the pump was satisfactorily retested. The finding was determined to be of very low safety significance (Green) in accordance with IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," because an engineering analysis determined that the pump would have remained operable, and was capable of performing its intended safety function. (Section 4OA2.2)

Inspection Report# : 2005007*(pdf)*

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Significance: G Mar 31, 2006

Identified By: NRC
Item Type: NCV NonCited Violation
Failure to properly control access to a high radiation area
Green. A self-revealing non-cited violation (NCV) associated with the alternate access control requirements established in accordance with 10 CFR 20.1601 (c), was identified. Specifically, the licensee failed to control and properly post a high radiation area with dose rates greater than 1,000 millirems per hour. On January18, 2006, a nondestructive examination (NDE) worker's electronic personnel dosimeter unexpectedly alarmed when the worker was exposed to unanticipated radiation levels of up to approximately 3,000millirems per hour. The area was not adequately surveyed by a radiation protection technician to establish the dose rate levels in the area and to properly post the area, and the worker was not made aware of the actual dose rate levels prior to entry into the area while wearing an alarming electronic personnel dosimeter. The licensee determined that the worker received less than ten millirems. This performance deficiency was entered into the licensee's corrective action program for resolution. The inspectors determined that a contributing cause of this finding was related to the cross-cutting area of human performance in that access to a high radiation area was not properly controlled.

This finding is more than minor because it is associated with the Occupational Radiation Safety attribute of exposure control and affected the cornerstone objective in that not controlling the locked high radiation area could increase personal exposure. Using the Occupational Radiation Safety Significance Determination Process, the inspectors determined that the finding was of very low safety significance (Green) because it did not involve: (1)as low as is reasonably achievable planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. (Section 2OS1)

Inspection Report# : 2006002*(pdf)*

Public Radiation Safety

Significance: G Dec 21, 2005
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to perform an adequate survey for radioactivity
The inspectors identified a non-cited violation of 10 CFR 20.1501 for failure to make surveys of the radioactivity in a "sink hole" to assure compliance with 10 CFR 20.1301(a)(1) regarding the total effective dose equivalent limit for individual members of the public from licensed operations, specifically regarding assessing dose for batch releases of liquid radioactive waste and assessing annual dose.

This violation is more than minor because it is associated with the cornerstone attribute of maintaining a program and process to estimate offsite dose due to abnormal releases and to record and report on such releases and because it affected the Radiation Safety/Public Radiation Safety Cornerstone's objective to ensure the adequate protection of public health and safety from exposure to radioactive materials released into the public domain. The violation is of very low significance because, while it did impair the licensee's ability to assess the timing of dose consequence and the accuracy of the batch and annual effluent release dose records and reports due to the large difference in transit times for the permitted and non-permitted discharge pathways to the bay, the licensee did account for all released radioactivity and did assess the cumulative doses from their effluent releases. Additionally, the violation is of very low significance because the involved radioactivity had been addressed in licensee permits prior to release, the unanalyzed non-permitted pathway (i.e., via groundwater to the bay) did not impact private property, the dose consequences would not differ significantly from those calculated in the licensee's release permits, and the assessed doses did not exceed the dose values in Appendix I to 10 CFR 50.

Inspection Report# : 2006003*(pdf)*

Physical Protection

Physical Protection information not publicly available.

Miscellaneous

Significance: N/A Nov 18, 2005
Identified By: NRC
Item Type: FIN Finding
Identification and Resolution of Problems
The team determined that Constellation's Calvert Cliffs (CC) Units 1 and 2 Nuclear Power Plants were effective at identifying problems and entering them into the corrective action program (CAP). Relatively few deficiencies were identified by external organizations (including NRC) that had not been previously identified by the licensee. Audits and self-assessments were generally thorough. Once entered into the CAP, issues were screened and prioritized in a timely manner using established criteria. Items entered into the CAP were also properly evaluated commensurate with their safety significance. The causal evaluations for equipment and performance issues were complete, and proposed corrective actions that addressed the identified causes. Corrective actions were generally effective and typically implemented in a timely manner. On the basis of interviews conducted during the inspection, workers at the station felt free to raise safety issues and were willing to enter them into the corrective action program. However, an ineffective maintenance procedure adversely impacted the availability of an auxiliary feedwater pump.
Inspection Report# : 2005007*(pdf)*

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