Duane Arnold
1Q/2009 Plant Inspection Findings

Initiating Events

Significance: G Mar 31, 2009
Identified By: Self-Revealing
Item Type: FIN Finding
COOLING TOWER RISER BREAK LEADS TO MANUAL REACTOR SCRAM.
A finding of very low safety significance was self revealed when the Operators exceeded the operational limit of the cooling tower riser by failing to secure one of the two running circulating water pumps prior to securing flow to the 'A' cooling tower. The inspectors determined that the Operators exceeding the operational limit of the 'B' cooling tower west riser was contrary to the guidance for safe operation of plant equipment contained in Administrative Control Procedure (ACP) 110.1, "Conduct of Operations," and therefore was a performance deficiency. No violation of regulatory requirements occurred. The licensee entered this issue into their corrective action program (CAP) as CAP 063426. The 'B' cooling tower riser was repaired, structural support was added to all four cooling tower risers, and operating procedures were revised to preclude operators from operating two circulating water pumps with only one cooling tower in operation.

The finding was determined to be more than minor because the finding was associated with the reactor safety cornerstone attribute of procedure quality and affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown. Specifically, operating the plant in an inappropriate configuration resulted in the loss of the normal plant heat sink, which required the operators to manually scram the reactor and rely on safety related equipment to cool the plant down. The inspectors determined the finding was of very low safety significance (Green) because the finding only resulted in a reactor scram and did not contribute to the likelihood that mitigation equipment or functions would not be available. This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action, because the licensee did not take appropriate corrective actions to address safety issues and adverse trends in a timely manner. Specifically, maintenance and operations personnel failed to adequately address a known deficiency with a plugged pressure transmitter, which resulted in the control room allowing throttling of the 'A' cooling tower riser valves until they were fully shut, thus exceeding the operational limit of the cooling tower.
Inspection Report# : 2009002 *(pdf)*

Mitigating Systems

Significance: G Mar 31, 2009
Identified By: NRC
Item Type: NCV NonCited Violation
FAILURE TO PERFORM REQUIRED ACTIONS FOR EXISTING LCO CONDITIONS DURING IN-VESSEL FUEL MOVEMENTS.
A finding of very low safety significance and associated non-cited violation of Technical Specifications (TSs) was identified by the inspectors for the operators failing to perform required actions for existing limiting condition for operation (LCO) conditions, involving TS equipment declared inoperable, during in-vessel fuel movements. The inspectors determined that the failure to perform TS LCO required actions during in-vessel fuel movement was contrary to Refueling Operations TS required actions and therefore was a performance deficiency. The licensee entered this issue into their corrective action program as CAP 064489. The core alterations were suspended to comply with the TSs until the issue was resolved. Actions were taken to ensure that the control rods with the inoperable rod position indicators were fully inserted, and to electrically disarm the control rod drives. Once the required actions

were completed, the fuel shuffle was recommenced.

The performance deficiency was determined to be more than minor because the finding was associated with the Mitigating Systems cornerstone attribute of human performance and adversely 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, when changes in plant conditions affect previously performed required actions for equipment declared inoperable, the failure to perform the TS LCO required actions for the new plant conditions, could lead to a more significant safety concern by unknowingly exceeding allowed outage times established for specific LCOs. This human error could, in turn, challenge mitigating systems' availability, reliability and capability to respond to initiating events. The inspectors determined that this finding only degraded the reactivity control function of the mitigating systems cornerstone, and only affected the safety of a reactor during refueling operations after the entry conditions had been met and shutdown cooling had been initiated. Using IMC 0609, Appendix G, "Shutdown Operations SDP," and Checklist 7, "BWR Refueling Operation with RCS Level > 23'," contained in Attachment 1, the inspectors determined that the finding did not require a quantitative assessment. Using Figure 1, this finding screened as very low safety significance (Green). The inspectors also determined that this finding has a cross-cutting aspect in the area of Human Performance, Decision Making, because the licensee did not adopt a requirement to demonstrate that the proposed action was safe in order to proceed rather than a requirement to demonstrate that it is unsafe in order to disapprove the action. Specifically, the requirements of RFP-403 and IPOI-8 to verify readiness to commence in-vessel fuel movements did not adequately provide for a review of inoperable TS equipment completed LCO actions to ensure core alteration TSs for reactivity control were met during the fuel movements.
Inspection Report# : 2009002 *(pdf)*

Significance: G Sep 30, 2008
Identified By: NRC
Item Type: NCV NonCited Violation
INADEQUATE ASSESSMENT OF ECCS ROOM COOLER FAN MOTOR BEARING NONCONFORMING CONDITION.
A finding of very low safety significance and associated NCV of Technical Specification (TS) Section 5.4.1.a, associated with Regulatory Guide 1.33, Revision 2, Appendix A, Section 9, was identified by the inspectors when the licensee failed to adequately evaluate a condition adverse to quality prior to the maintenance activity's Environmental Qualification (EQ) Drop Dead Date (DDD). Specifically, the licensee failed to evaluate the Emergency Core Cooling System (ECCS) room cooler fan motors as operable but non-conforming prior to the EQ DDD as required by Duane Arnold's Preventive Maintenance Program procedure. The licensee entered this condition into their CAP as Corrective Action Process document 060543, and declared the equipment operable but non-conforming.

This issue is more than minor because the finding was associated with the Mitigating Systems Cornerstone attribute of equipment performance and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesired consequences. Specifically, the failure to correctly assess the ECCS room cooler fan motor bearings as nonconforming with their EQ calculation of record had the potential to impact the availability and reliability of the ECCS room coolers. The inspectors evaluated the finding using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 Initial Screening and Characterization of findings," Table 4a, for the Mitigating Systems Cornerstone. Because the finding was a qualification deficiency confirmed not to result in a loss of operability or functionality, the finding screened as Green. This finding has a cross-cutting aspect in the Problem Identification and Resolution (PI&R) component of CAP, because the licensee did not properly classify, prioritize, and evaluate for operability a condition adverse to quality [P.1(c)]. Specifically, the Engineering and Operations Departments failed to classify the ECCS room cooler fan motors as operable but nonconforming.

Inspection Report# : 2008004 *(pdf)*

Significance: G Sep 30, 2008
Identified By: NRC
Item Type: NCV NonCited Violation

FAILURE TO PERFORM A TS SURVEILLANCE REQUIREMENT FOR THE HPCI SYSTEM WITHIN THE SPECIFIED FREQUENCY.
A finding of very low safety significance and associated NCV of 10 CFR 50 Appendix B, Criterion III, "Design Control" was identified by the inspectors for the licensee's failure to assure that applicable regulatory requirements and design basis were correctly translated into specifications, drawings, procedures and instructions. Specifically, following installation of a permanent modification to install a high pressure keep fill system for the high pressure coolant injection (HPCI) system discharge piping, the Surveillance Test Procedure (STP) implemented to document performance of Surveillance Requirement (SR) 3.5.1.1 for the HPCI system did not ensure that the minimum requirements for system operability were met. The licensee entered this issue into their CAP as CAP 060168, and invoked SR 3.0.3 to address the potentially missed SR.

The issue was more than minor because the finding was associated with the Mitigating Systems Cornerstone attribute of design control of permanent modifications and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesired consequences. Specifically, the Operations department did not recognize that the implementation of the surveillance procedure which documented the performance of SR 3.5.1.1 for the HPCI system did not ensure that the minimum requirements for system operability were met and therefore had the potential to impact the availability and reliability of the HPCI system. The inspectors evaluated the finding using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of findings," Table 4a, for the Mitigating Systems Cornerstone. Because the finding does not represent an actual loss of safety function of a single train, and does not screen as risk significant due to an external initiating event, the finding was screened as very low safety significance (Green). The inspectors also determined that this finding had a cross-cutting aspect in the PI&R component of CAP, because the licensee did not properly classify, prioritize, and evaluate for operability a condition adverse to quality [P.1(c)]. Specifically, the Operations and Engineering Departments failed to recognize that the system conditions established during performance of STP 3.5.1-13 had the potential to preclude performance of the SR and allow the condition to go unrecognized.

Inspection Report# : 2008004 *(pdf)*

Barrier Integrity

Significance: G Mar 31, 2009
Identified By: NRC
Item Type: NCV NonCited Violation
FAILURE TO CONSIDER DESIGN BASIS LOAD IN EVALUATION FOR CONTINUED OPERATION.
A finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified by the inspectors for the failure to verify the adequacy of the methodology and design inputs used to support licensee decisions to accept non conforming systems, structures, and components for continued operation. The licensee entered this issue into its CAP and was able to demonstrate the Primary Containment system and piping subsystems attached to Drywell penetrations to be operable during design basis accident conditions.

The finding was determined to be more than minor because the omission of a design basis load in engineering evaluations used to justify continued operation resulted in a condition where there was reasonable doubt regarding the operability of the Primary Containment system and piping subsystems attached to Drywell penetrations during accident conditions. The inspectors determined the finding was of very low safety significance because it was a design deficiency that did not result in actual loss of safety function. This finding did not have a cross-cutting aspect.

Inspection Report# : 2009002 *(pdf)*

Significance: G Dec 31, 2008
Identified By: NRC
Item Type: NCV NonCited Violation

HPCI STEAM EXHAUST VACUUM BREAKER PIPING CONFIGURATION NOT IN CONFORMANCE WITH PIPING DESIGN BASIS ANALYSIS OF RECORD.
A finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified by the inspector for the failure of the high pressure coolant injection vacuum breaker piping configuration to be in conformance with the piping design analysis of record. The licensee entered this issue into its corrective action program and was able to demonstrate the vacuum breaker piping to be operable during design basis accident conditions.

The finding was determined to be more than minor because the finding was similar to Inspection Manual Chapter 0612, Appendix E, Example 3a. Specifically, to restore conformance of the high pressure coolant injection vacuum breaker piping to the piping design basis analysis of record, a modification to the existing piping configuration is necessary. The inspector determined the finding was of very low safety significance because it was a design deficiency that did not result in actual loss of safety function. The inspector determined there was no cross cutting aspect associated with this finding.
Inspection Report# : 2008005 *(pdf)*

Significance: SL-IV Dec 31, 2008
Identified By: NRC
Item Type: NCV NonCited Violation
10 CFR 50.59 SAFETY EVALUATION NOT PERFORMED FOR CHANGE IN METHOD OF EVALUATION.
A finding of very low safety significance and associated NCV of 10 CFR Part 50.59, "Changes, Tests, and Experiments," was identified by the inspector for the licensee's failure to provide a documented basis that a change in the method of evaluation for small bore torus attached piping systems as defined in the Plant Unique Analysis Report for torus attached piping did not require prior NRC approval.

Because the issue affected the NRC's ability to perform its regulatory function, this issue was evaluated using the traditional enforcement process. The finding was determined to be more than minor because the inspector could not reasonably determine that the change would not have ultimately required NRC prior approval. The finding was determined to be of very low safety significance by the NRC's significance determination process because it was a design deficiency that did not result in actual loss of safety function. This finding had a cross-cutting aspect in the area of Human Performance, Decision Making, because the licensee failed to use conservative assumptions in decision making to demonstrate that a proposed action is safe to proceed, in that, the licensee did neither verify the validity of their justification to not reevaluate the high pressure coolant injection steam exhaust vacuum breaker piping attached to the modified high pressure coolant injection steam exhaust piping nor identify adverse consequences due to changes in the high pressure coolant injection steam exhaust piping resonant frequency content [H.1(b)].

Inspection Report# : 2008005 *(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 : May 28, 2009