

Clinton

4Q/2009 Plant Inspection Findings

Initiating Events

Significance:  Dec 31, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO CORRECTLY TORQUE VALVE PACKING GLAND NUTS RESULTED IN VALVE PACKING FAILURE AND UNPLANNED PLANT SHUTDOWN

A finding of very low safety significance with an associated Non-Cited Violation of 10 CFR 50, Appendix B, Criteria V, "Instructions, Procedures, and Drawings," was self-revealed on September 29, 2009, when a steam leak developed from the reactor core isolation cooling (RCIC) system inboard steam isolation valve (1E51F0063) stem packing. This resulted in a plant shutdown due to a greater than 2 gallon-per-minute increase in unidentified reactor coolant system (RCS) leakage within the previous 24 hours. The licensee failed to correctly tighten the valve packing gland nuts to the as-left torque valve from original packing installation when performing scheduled maintenance to verify the as-found torque value. The licensee replaced the 1E51F0063 valve stem packing during the subsequent forced outage and tightened the gland nuts to the correct torque value.

The finding was of more than minor significance because it was associated with the Equipment Performance attribute of the Initiating Events Cornerstone and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the failure to correctly tighten the valve stem packing gland nuts resulted in stem packing failure and a subsequent plant shutdown due to exceeding the Technical Specification (TS) limit for an increase in unidentified RCS leakage. Although the finding resulted in exceeding the TS limit for RCS leakage, it was determined to be of very low safety significance during a Phase 2 Significance Determination Process review because there was no loss of mitigation capability for any safety system and therefore no resultant change in core damage frequency. Because the performance issue was associated with maintenance performed in February 2006, it did not necessarily reflect current licensee performance and no cross-cutting aspect was identified.

Inspection Report# : [2009005](#) (*pdf*)

Mitigating Systems

Significance:  Dec 31, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO CORRECTLY INSTALL RELAYS INSIDE OF THE DIVISION 3 DIESEL GENERATOR CONTROL PANEL

A finding of very low safety significance with an associated Non-Cited Violation of 10 CFR 50, Appendix B, Criteria V, "Instructions, Procedures, and Drawings," was self-revealed on September 23, 2009, when the Division 3 diesel generator (DG) was found to have had two components installed incorrectly. Electrical maintenance technicians had incorrectly replaced time delay relays K-8A and K-32 on September 24, 2007, essentially swapping the locations of the two relays. This rendered the Division 3 DG inoperable for about 2 years and resulted in a loss of safety function for the Division 3 DG and high pressure core spray system under a certain sequence of initiating events. The licensee restored the two time delay relays in the correct configuration and immediately verified that the remaining time delay relays inside the Division 3 DG Control Panel were in their proper locations.

The finding was of more than minor significance because, if left uncorrected, it would potentially lead to a more significant safety concern (i.e., the inoperability of risk-significant plant safety systems). In addition, based on review

of Example 5c in IMC 0612, "Power Reactor Inspection Reports," Appendix E, "Examples of Minor Issues," the issue would not be considered to be of minor significance because the incorrect relays were installed in the control panel. Although the finding resulted in a loss of safety function for the Division 3 DG and high pressure core spray system, it was determined to be of very low safety significance during a Phase 2 Significance Determination Process Review considering the very limited conditions (i.e., only 45 seconds following shutdown of the engine concurrent with a design basis accident) when the Division 3 DG was incapable of performing its safety function. The resultant exposure time was estimated to be about 27 minutes during the 2-year period. The inspectors concluded that this finding affected the cross-cutting area of human performance because the licensee did not effectively communicate expectations regarding procedural compliance and, as a result, maintenance technicians did not follow their procedures by installing nonconforming components and restoring the safety system to service. (IMC 0305 H.4(b))
Inspection Report# : [2009005](#) (*pdf*)

Significance:  Sep 30, 2009

Identified By: Self-Revealing

Item Type: FIN Finding

INEFFECTIVE CORRECTIVE ACTIONS FOR VIBRATION INDUCED STEM/DISC SEPARATION OF FUEL POOL COOLING SYSTEM TRAIN 'A' FLOW CONTROL VALVE 1FC004A.

A finding of very low safety significance was self-revealed on May 27, 2009, when fuel pool cooling system flow control valve 1FC004A failed closed. The licensee failed to implement effective corrective actions in response to the same failure mode for the valve that occurred on November 21, 2005. This resulted in the failure of 1FC0014A once again and the subsequent loss of inventory from the containment upper pool and inoperability of the suppression pool makeup system. The licensee entered this issue into its corrective action program to investigate the cause and to identify appropriate corrective actions. No violation of regulatory requirements was identified.

The finding was of more than minor significance because it was associated with the Equipment Performance attribute of the Mitigating Systems Cornerstone and directly affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the May 2009 valve failure resulted in a loss of inventory from the containment upper pool and inoperability of the suppression pool makeup system, therefore impacting its availability for certain initiating events. The finding was of very low safety significance because the issue: (1) was not a design or qualification deficiency; (2) did not represent an actual loss of safety function of a system; (3) did not represent an actual loss of safety function of a single train for greater than its Technical Specification (TS) allowed outage time; (4) did not represent an actual loss of safety function of one or more non-TS trains of equipment designated as risk significant; and (5) did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The inspectors did not identify a cross-cutting area component related to this finding.

Inspection Report# : [2009004](#) (*pdf*)

Significance:  Jun 30, 2009

Identified By: NRC

Item Type: FIN Finding

FAILURE TO EVALUTE SAFETY FUNCTION OF SUPPRESSION POOL MAKEUP SYSTEM

The inspectors identified a finding of very low safety significance associated with the licensee's failure to recognize a potential loss of safety function for the suppression pool makeup system following the loss of upper containment pool inventory when spent fuel pool cooling system flow control valve 1FC004A failed closed. No evaluation was performed to ensure that the suppression pool makeup system's safety function would be fulfilled with less than Technical Specification (TS) minimum containment upper pool level. The licensee subsequently performed an evaluation and determined that sufficient margin existed such that the system would have been able to fulfill its safety function with limited margin. Corrective actions to address the inadequate reportability review included training for licensed senior reactor operators and development of a formal operability/reportability review process template. No violation of regulatory requirements was identified.

The finding would become a more significant safety concern if left uncorrected and was therefore, more than a minor concern. Specifically, the failure to correctly recognize and evaluate a potential loss of a safety function of systems, structures, and components when performing operability or past operability evaluations could reasonably result in an unrecognized condition of a system failing to fulfill its safety-related function. Because the suppression pool makeup

system was primarily associated with long term decay heat removal following certain design basis accidents, the inspectors concluded that this issue was associated with the Mitigating Systems cornerstone. The finding was of very low safety significance because the issue: (1) was not a design or qualification deficiency; (2) did not represent an actual loss of safety function of a system; (3) did not represent an actual loss of safety function of a single train for greater than its TS allowed outage time; (4) did not represent an actual loss of safety function of one or more non-TS trains of equipment designated as risk significant; and (5) did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The inspectors concluded that this finding affected the cross-cutting area of human performance because the licensee did not have a formal process in place with adequate guidance and training to enable licensed senior reactor operators, whose responsibility it was to evaluate a potential loss of safety function, to correctly do so. As a result, senior reactor operators did not adequately review the TS Bases to understand and evaluate whether the system was able to fulfill its safety function. (IMC 0305 H.1(a))

Inspection Report# : [2009003](#) (pdf)

Inspection Report# : [2009005](#) (pdf)

Significance: G Jun 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PERFORM SURVEILLANCE TESTING ON THE DIVISION 3 SHUTDOWN SERVICE WATER PUMP WITH ADEQUATE MEASURING AND TEST EQUIPMENT.

The inspectors identified a finding of very low safety significance with an associated Non-Cited Violation of 10 CFR 50, Appendix B, Criteria XII, "Control of Measuring and Test Equipment," and 10 CFR 50, Appendix B, Criteria XI, "Test Control." The licensee failed to perform surveillance testing on the Division 3 shutdown service water pump with a lake level gage that was properly controlled and adjusted to ensure that it was readable within the range it was used. The licensee subsequently replaced the unreadable lake level gage section with one that was readable and implemented additional corrective actions to address a lapse in operations standards.

The inspectors concluded that this finding would become a more significant safety concern if left uncorrected and it was therefore more than a minor concern. Specifically, the failure to perform surveillance testing with properly controlled and accurate measuring and test equipment could reasonably result in the failure to identify degraded or inoperable safety-related components. Because the shutdown service water system was primarily associated with long term decay heat removal following certain design basis accidents, the inspectors concluded that this issue was associated with the Mitigating Systems Cornerstone. The finding was of very low safety significance because the issue was a design or qualification deficiency confirmed not to result in loss of operability or availability. The inspectors concluded that this finding affected the cross-cutting area of problem identification and resolution because the licensee was not properly maintaining the lake level gage to ensure that it would remain usable and did not correct the degraded level gage in a timely manner after it was identified. As a result, operators accepted the degraded level gage for continued use. (IMC 0305 P.1(d))

Inspection Report# : [2009003](#) (pdf)

Barrier Integrity

Significance: SL-IV Sep 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO UPDATE THE FINAL SAFETY ANALYSIS REPORT.

The inspectors identified a Non-Cited Violation of 10 CFR 50.71, "Maintenance of Records, Making of Reports," associated with the licensee's failure to correctly update the Updated Final Safety Analysis Report (UFSAR) when modifying Technical Specification (TS) requirements for the Control Room ventilation system during implementation of Improved Standard Technical Specifications. Specifically, the licensee failed to change the specified safety function description for the system to maintain positive pressure within the Control Room envelope with respect to adjacent areas during all operating modes except when the system is in the recirculation mode or when the system is in the maximum outside air purge mode. This directly contributed to the licensee's failure to correctly evaluate the operability of Control Room ventilation system Train 'B' when the system was unable to maintain the Control Room envelope at a positive pressure relative to adjacent areas while operating in the normal mode. Subsequent evaluation

by the inspectors determined that the safety function description in the UFSAR was inaccurate and the system was operable with the degraded/nonconforming condition. The licensee entered this violation into its corrective action program to investigate the cause and to identify appropriate corrective actions.

Because the issue affected the NRC's ability to perform its regulatory function, the violation was reviewed under the traditional enforcement process; however, the underlying technical issue was evaluated using the Significance Determination Process. The finding would become a more significant safety concern if left uncorrected and was therefore more than a minor concern. Specifically, the failure to correctly evaluate a degraded/nonconforming condition potentially affecting the operability of a system, structure, or component (SSC) required to be operable by TS could reasonably result in an unrecognized condition of an SSC failing to fulfill a safety-related function. Because the Control Room ventilation system supports the radiological barrier function to protect operators inside the Control Room following certain design basis accidents, the inspectors concluded that this issue was associated with the Barrier Integrity Cornerstone. The finding was of very low safety significance because it involved only a degradation of the radiological barrier function provided for the Control Room. The inspectors did not identify a cross-cutting aspect related to this finding.

Inspection Report# : [2009004](#) (*pdf*)

Significance:  Sep 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO ADEQUATELY IMPLEMENT REQUIREMENTS OF THE LEAKAGE REDUCTION AND MONITORING PROGRAM.

The inspectors identified a finding of very low safety significance with an associated Non-Cited Violation of 10 CFR 50, Appendix B, Criteria V, "Instructions, Procedures, and Drawings," regarding the licensee's failure to adequately implement periodic visual inspection requirements to monitor and minimize leakage from piping systems connecting to the reactor coolant system. The licensee entered this violation into its corrective action program to investigate the cause and to identify appropriate corrective actions.

The finding would become a more significant safety concern if left uncorrected and was therefore more than a minor concern. Specifically, the failure to adequately implement required leakage reduction and monitoring program controls to minimize leakage from reactor coolant sources outside of containment that could contain highly radioactive fluids during a serious transient or accident could reasonably result in higher doses to plant workers and higher potential offsite release levels. Because the leakage reduction and monitoring program is intended to contain highly radioactive fluids within piping systems outside containment, which supports the radiological barrier functions to protect plant workers and the public following serious transients or accidents, the inspectors concluded that this issue was associated with the Barrier Integrity Cornerstone. The finding was of very low safety significance because it involved only a degradation of the radiological barrier function provided for the Auxiliary Building. The inspectors concluded that this finding affected the cross-cutting area of human performance because the licensee did not provide adequate procedural guidance and training to enable operators to correctly perform and document piping system visual inspections to implement its leakage reduction and monitoring program. As a result, the licensee did not have appropriate objective quality evidence to demonstrate that the program requirements were met. (IMC 0305 H.2(c))
Inspection Report# : [2009004](#) (*pdf*)

Emergency Preparedness

Significance: SL-IV Nov 20, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Implementation of a Change which Decreased the Effectiveness of the Emergency Plan

The inspectors identified a NCV of 10 CFR 50.54(q) associated with 10 CFR 50.47(b)(2) because the licensee failed to obtain prior NRC approval for a change made to its emergency plan that decreased the effectiveness of the plan. Specifically, the licensee removed staffing and capabilities from the minimum on-shift emergency response staffing requirements from the Clinton Power Station Emergency Plan Annex, Section 2, Table B-1. The licensee entered this issue into their corrective action program and replaced staffing back on-shift as required by the 1998 emergency plan

annex.

This finding was more than minor and of very low safety-significance using IMC 0609, Appendix B, because the finding was associated with the Emergency Preparedness Cornerstone attribute of emergency response organization readiness for minimum on shift emergency response staffing. Because the finding affected the NRC's ability to perform its regulatory function, the inspectors evaluated the significance using the traditional enforcement process. This finding was determined to be a Severity Level IV violation because the licensee failed to meet an emergency planning requirement not directly related to assessment and notification. The inspectors determined that this finding had a cross-cutting aspect in the area of Human Performance, decision making because the licensee did not initially recognize that the removal of minimum on-shift emergency response staffing decreased the effectiveness of the emergency plan (H.1.(b)).

Inspection Report# : [2009502](#) (*pdf*)

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

Significance: N/A Apr 17, 2009

Identified By: NRC

Item Type: FIN Finding

Biennial PI&R Inspection Summary

The inspectors concluded that the implementation of the corrective action program (CAP) at Clinton was generally good. The licensee had a low threshold for identifying station problems and entering them into the CAP. In addition, the station was effective at incorporating operating experience reports into the CAP. The inspectors determined that issues were generally effectively screened and prioritized in a timely manner using established criteria based on plant risk and uncertainty. Casual evaluations sampled were of sufficient depth, considered extent of condition, generic issues, and previous occurrences. Corrective actions program assignments were generally completed in a timely and accurate manner. The team noted that station effectiveness reviews, audits, and self assessment were generally thorough and effective at identifying unrecognized weakness. The inspectors concluded that station employees appeared to be willing to express safety concerns through established processes and a healthy safety conscious work environment (SCWE) existed at the station.

Inspection Report# : [2009007](#) (*pdf*)

Last modified : March 01, 2010