

Clinton

4Q/2012 Plant Inspection Findings

Initiating Events

Significance:  Dec 31, 2012

Identified By: Self-Revealing

Item Type: FIN Finding

FAILURE TO COMPLETE AN ADEQUATE EXTENT CONDITION REVIEW AND TO CORRECT A PREVIOUSLY IDENTIFIED DESIGN PROBLEM RESULTED IN A TRIP OF THE EMERGENCY RESERVE AUXILIARY TRANSFORMER

A finding of very low safety significance was self-revealed when the emergency reserve auxiliary transformer (ERAT) tripped during troubleshooting activities to isolate a direct current system ground following heavy rainfall. The ERAT trip occurred due to the presence of a latent design error identified on seal-in relays in the ERAT's control circuitry and the licensee's failure to adequately evaluate and correct it during its extent of condition review of the problem after it was identified in September 2002. The licensee restored the ERAT to service and implemented a modification to correct the latent design problem. Because the ERAT is not safety related, no violation of regulatory requirements was identified.

The finding was of more than minor safety significance because it was sufficiently similar to several examples in Inspection Manual Chapter 0612, "Power Reactor Inspection Reports," Appendix E, "Examples of Minor Issues," wherein licensees failed to adequately correct conditions adverse to quality and the consequences had some safety impact. The performance deficiency was also associated with the Equipment Performance attribute and adversely affected the Initiating Events Cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, when the ERAT tripped safety related 4160 volt bus 1A1, which had been powered by the ERAT, momentarily lost power. With the momentary loss of power several plant safety systems were affected including a loss of secondary containment differential pressure. The finding was a licensee performance deficiency of very low safety significance because it: (1) did not involve a loss-of-coolant accident initiator; (2) did not cause a reactor trip AND the loss of mitigation equipment; (3) did not involve the complete or partial loss of a support system that contributes to the likelihood of, or cause, an initiating event AND affect mitigation equipment; and (4) did not increase the frequency of a fire or internal flooding initiating event. While the finding did involve a partial loss of a support system (i.e., offsite power) that contributes to the likelihood of an initiating event, mitigation equipment was not adversely affected by the momentary loss of power. The inspectors concluded that because the licensee's missed opportunity to correct the latent design error occurred in 2002 and no other more recent opportunities reasonably existed to identify and correct the problem, this issue would not be reflective of current licensee performance and no cross-cutting aspect was identified.

Inspection Report# : [2012005](#) (*pdf*)

Significance:  Mar 31, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO INCORPORATE OPERATING EXPERIENCE INTO PREVENTIVE MAINTENANCE ACTIVITIES.

A self-revealed finding of very low safety significance was identified with an associated Non-Cited Violation of 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants." The licensee failed to incorporate operating experience into its preventive maintenance practices associated with steam bypass system control circuit cards. Specifically, during two operating experience driven initiatives performed by the licensee in 2001 and 2007, and once again on September 24, 2011, the licensee failed to implement any preventive maintenance activity for critical component circuit cards, which resulted in age-related failure and a reactor scram on November 29, 2011. The licensee initiated corrective actions to replace system circuit cards, perform periodic replacement/refurbishment maintenance activities, and trend circuit card performance during routine calibration.

The finding was of more than minor significance because it was sufficiently similar to Inspection Manual Chapter 0612, "Power Reactor Inspection Reports," Appendix E, "Examples of Minor Issues," Example 7 (c), in that this violation of 10 CFR 50.65(a)(3) had a consequence "...such as equipment problems attributable to failure to take industry operating experience into account when practicable." The finding was a licensee performance deficiency of very low safety significance because it: (1) did not contribute to the likelihood of a loss-of-collant accident initiator, (2) did not contribute to both the likelihood of a reactor scram AND the likelihood that mitigation equipment or functions would not be available, and (3) did not increase the likelihood of a fire or internal/external flooding event. The inspectors concluded that this finding affected the cross-cutting area of human performance. Specifically, in the area of work control, the licensee did not appropriately coordinate work activities by incorporating actions to plan work activities to support long-term equipment reliability by scheduling maintenance as more preventive than reactive. (IMC 0310, H.3(b))
 Inspection Report# : [2012002](#) (pdf)

Mitigating Systems

Significance:  Dec 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO SATISFY 10 CFR 50.73 REPORTING REQUIREMENTS FOR A CONDITION PROHIBITED BY TECHNICAL SPECIFICATIONS.

The inspectors identified a finding of very low safety significance (Green) with an associated Severity Level IV Non-Cited Violation of the NRC's reporting requirements in 10 CFR 50.73, "Licensee Event Report System." The licensee failed to submit a required Licensee Event Report (LER) within 60 days after the discovery of an event that was reportable in accordance with 10 CFR 50.73(a)(2)(i)(B) as a condition which was prohibited by the plant's Technical Specifications (TS) and 10 CFR 50.73(a)(2)(v)(B) as a condition that could have prevented the fulfillment of a safety function. The condition involved an inoperable diesel generator (DG) for longer than the TS completion time for restoration. The licensee subsequently submitted the required LER.

Because this violation of the NRC's reporting requirements affected the NRC's ability to perform its regulatory function, the inspectors evaluated the violation using the traditional enforcement process in accordance with the NRC Enforcement Policy and assessed the significance of the underlying issue using the Significance Determination Process. The finding was of more than minor significance because the NRC relies on licensees to identify and report conditions or events meeting the criteria specified in the TS and the regulations in order to perform its regulatory function and, therefore if left uncorrected it could lead to a more significant safety concern. The inspectors previously determined that the underlying issue (i.e., the failure to correctly assemble a DG ventilation system damper that resulted in an inoperable DG) was a finding of very low safety significance during a detailed risk evaluation. Consistent with the guidance in Section 6.9, Paragraph d.9, of the NRC Enforcement Policy, the violation associated with this finding was determined to be a Severity Level IV Violation. This finding affected the cross-cutting area of human performance. Specifically, the licensee's decision making process while evaluating the reportability of the condition with respect to the reporting requirements in 10 CFR 50.73 was inadequate. IMC 0310 H.1(a))

Inspection Report# : [2012005](#) (pdf)

Significance:  Sep 30, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO CORRECTLY ASSEMBLE DIESEL GENERATOR VENTILATION SYSTEM DAMPER RESULTED IN INOPERABLE DIESEL GENERATOR

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 March 1, 2012 when the Division 1 diesel generator (DG) ventilation system supply damper was discovered failed closed with the ventilation supply fan running during a Division 1 DG surveillance test. The damper failure occurred due to the licensee's failure to establish an adequate

procedure to perform maintenance. Specifically, the maintenance procedure did not contain an appropriate verification step to ensure that locknuts on the damper hydramotor coupling were tightly fastened. As a result, vibration of the coupling during operation over time caused the coupling to separate such that the damper would not open. The licensee entered this issue into its corrective action program for evaluation, repaired the damper, and initiated corrective actions to revise the maintenance procedure.

The finding was of more than minor significance since it was associated with the Procedure Quality attribute and adversely affected the Mitigating Systems 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, the damper failure rendered the Division 1 DG inoperable. Although the finding involved an actual loss of function of a single train for greater than its Technical Specification allowed outage time, it was determined to be of very low safety significance during a detailed quantitative Significance Determination Process review since the delta core damage frequency and delta large early release frequency were both determined to be negligible based upon crediting operator recovery actions to restore DG room ventilation. The inspectors concluded that this finding affected the cross-cutting area of human performance since adequate licensee resources involving personnel and procedures did not support successful human performance. Specifically, the maintenance procedure did not contain adequate instruction to ensure that locknuts on the damper hydramotor coupling were tightly fastened. (IMC 0310, H.2(a))

Inspection Report# : [2012004](#) (pdf)

Significance:  Sep 30, 2012

Identified By: NRC

Item Type: FIN Finding

FAILURE TO PERFORM ADEQUATE PAST OPERABILITY EVALUATIONS FOR EMERGENCY CORE COOLING SYSTEM RELIEF VALVES

The inspectors identified a finding of very low safety significance associated with the licensee's failure to correctly evaluate the past operability of two emergency core cooling system (ECCS) relief valves that failed bench testing following replacement during the C1R13 refueling outage. No violation of regulatory requirements was identified because revised evaluations by the licensee determined that the valves would have satisfied their safety functions. The licensee entered this issue into its corrective action program for evaluation and initiated corrective actions to revise the past operability evaluations to correct gross errors in the original evaluations.

The finding was of more than minor significance since the failure to correctly evaluate a degraded/nonconforming condition potentially affecting the operability of structures, systems, and components (SSC) required to be operable by Technical Specifications (TS) would become a more significant safety concern if left uncorrected because it could reasonably result in an unrecognized condition of an SSC failing to fulfill a safety-related function. The finding was a licensee performance deficiency of very low safety significance because it: (1) was not a design or qualification deficiency; (2) did not represent an actual loss of function of a system; (3) did not represent an actual loss of function of a single train or two separate trains for greater than its TS allowed outage time; (4) did not represent an actual loss of function of one or more non-TS trains of equipment designated as high safety 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 since licensee engineering staff failed to thoroughly and correctly evaluate past operability of the two ECCS relief valves due to inattention to detail. Human error prevention techniques were not appropriately employed to support human performance. The most significant concerns were that the independent technical reviewer did not independently validate information contained in the past operability evaluations by reviewing the valve test records and, that neither the independent technical reviewer nor the engineering supervisory reviewer challenged the unwarranted past operability conclusion reached for the 1E12-F025C test failure. (IMC 0310,H.4 (a))

Inspection Report# : [2012004](#) (pdf)

Significance:  Jun 30, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO ESTABLISH INSTRUCTIONS APPROPRIATE FOR INSTALLATION OF SHUTDOWN AND UPSET LEVEL INSTRUMENT REFERENCE LEG PIPE

A finding of very low safety significance with an associated Non-Cited Violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was self-revealed on December 18, 2011, when an automatic reactor scram signal and loss of decay heat removal occurred due to low reactor pressure vessel (RPV) water level while lowering water level to a target level following an RPV hydrostatic pressure test. The licensee failed to establish an adequate procedure to perform reinstallation of common shutdown and upset level instrument reference leg piping. Specifically, inadequacies with the procedure resulted in improper filling and venting of the reference leg piping causing inaccurate indication of RPV level - an error of approximately 108 inches. In addition, the licensee failed to use appropriate acceptance criteria when accepting that the instrument restoration activities had been successfully accomplished. The licensee entered this issue into its corrective action program for evaluation and initiated corrective actions to revise procedures to more rigorously control the evolution and to train personnel.

The finding was of more than minor significance since it was associated with the Mitigating Systems cornerstone attribute of Procedure Quality and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee failed to establish procedures adequate to maintain correct indication of RPV water level upon the reinstallation of permanent shutdown and upset level instrument reference leg piping. The finding was determined to be a licensee performance deficiency of very low safety significance based upon a Phase 3 Significance Determination Process evaluation by the Regional Senior Reactor Analyst with a risk result of approximately 4E-7 for Core Damage Frequency and no Large Early Release Frequency contribution since the event occurred more than 8 days from the beginning of the refueling outage. The inspectors concluded that this finding affected the cross cutting area of human performance. Specifically, in the area of work control, the licensee did not ensure that personnel, equipment, procedures, and other resources were available and adequate. Complete, accurate, and up-to-date procedures and work packages were not available to ensure nuclear safety (IMC 0310 H.2(c))

Inspection Report# : [2012003](#) (*pdf*)

Significance:  Jun 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO ENSURE TORNADO MISSILE PROTECTION FOR SAFETY RELATED COMPONENTS

The inspectors identified a finding of very low safety significance with an associated Non-Cited Violation of 10 CFR 50, Appendix B, Criterion III, "Design Control," when permanently installed tornado missile barrier protection was removed without adequate provisions to assure that appropriate quality standards were specified and included in design documents and that deviation from such standards was controlled. The licensee failed to ensure tornado missile protection for safety related components prior to and during maintenance affecting Control Room Ventilation (VC) Train 'A'. Specifically, when the permanent missile barrier was removed, the licensee failed to ensure protection for two safety related radiation monitors, 1RIX-PR009C and 1RIX-PR009D and did not satisfy requirements in modification documents for protection of VC panel 0PL72JA. The licensee entered this issue into its corrective action program for evaluation and performed immediate corrective actions to resolve the design deficiencies at the time of identification.

The finding was of more than minor significance because it was sufficiently similar to Inspection Manual Chapter 0612, "Power Reactor Inspection Reports," Appendix E, "Examples of Minor Issues," Example 3(a) in that this modification was found to contain errors significant enough that the modification required rework to correctly resolve design basis tornado concerns. The performance deficiency was also associated with the Mitigation Systems cornerstone attribute of Equipment Performance, and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee failed to protect safety related components during work activities that modified the installed missile barrier required by the Clinton Power Station design. The finding was a licensee performance deficiency of very low safety significance because the design deficiency was confirmed to not result in an actual loss of operability or functionality. The inspectors concluded that the finding affected the cross cutting area of human performance. Specifically, in the area of work control, the licensee did not appropriately plan work activities by incorporating job site conditions and the need for adequate planned contingencies. (IMC 0310 H.3(a))

Inspection Report# : [2012003](#) (*pdf*)

Barrier Integrity

Significance: G Dec 31, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO PERFORM PREVENTIVE MAINTENANCE ON STANDBY GAS TREATMENT SYSTEM RELAY 0UAY-VG506D.

A finding of very low safety significance with an associated Non-Cited Violation of Technical Specification (TS) 5.4.1.a. was self-revealed when the age-related failure of Standby Gas Treatment (VG) system relay 0UAY-VG506D caused the removal of VG Train A electric heater 0VG04AA from operation, an entry into TS 3.5.4.3 due to the inoperability of VG Train A, and an unplanned on-line plant risk condition increase from Green to Yellow. The relay failure occurred due to the licensee's failure to perform any replacement preventive maintenance on the component throughout the history of plant operation. During two separate independent reviews performed by the licensee on July 15, 2011, and on August 24, 2011, the licensee failed to correctly classify the component in accordance with its preventive maintenance procedure. This resulted in no replacement maintenance activity ever being performed for the relay and its eventual failure on August 22, 2012. The licensee initiated corrective actions to replace the relay and put in place the appropriate preventive maintenance actions.

The finding was of more than minor safety significance because it was sufficiently similar to several examples in Inspection Manual Chapter 0612, "Power Reactor Inspection Reports," Appendix E, "Examples of Minor Issues," wherein licensees failed to adequately implement procedural requirements and the consequences had some safety impact. The performance deficiency was also associated with the SSC [Systems, Structures, and Components] and Barrier Performance attribute and adversely affected the Barrier Integrity Cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, the age-related failure of 0UAY-VG506D on August 22, 2012 rendered VG Train A inoperable and caused an unplanned increase in the plant's on-line risk condition from Green to Yellow. The finding was a licensee performance deficiency of very low safety significance because it only represented a degradation of the radiological barrier function provided for the Auxiliary Building and the Fuel Building and was not a complete loss of the barrier function provided by the VG system since VG Train B remained operable. This finding affected the cross-cutting area of human performance. Specifically, in the area of work control, the licensee did not appropriately coordinate work activities by incorporating actions to plan work activities to support longterm equipment reliability by scheduling maintenance as more preventive than reactive. (IMC 0310, H.3(b))

Inspection Report# : [2012005](#) (*pdf*)

Significance: G Mar 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

UNACCEPTABLE PRECONDITIONING OF LOW PRESSURE COOLANT INJECTION FROM RESIDUAL HEAT REMOVAL 'A' CHECK VALVE PRIOR TO LEAK RATE TEST MEASUREMENT

The inspectors identified a finding of very low safety significance with an associated Non-Cited Violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings." The licensee failed to establish an adequate procedure to perform required leak rate testing for the Low Pressure Coolant Injection from Residual Heat Removal 'A' Check Valve. Specifically, the surveillance test procedure resulted in unacceptable preconditioning of the valve prior to a leak rate test measurement due to improper test sequencing. In addition, the licensee failed to correctly evaluate a failed leak rate test of the valve. The licensee entered this issue into its corrective action program for evaluation and initiated corrective actions to revise the test procedure and train engineering personnel.

The finding was of more than minor significance since it was associated with the Procedure Quality attribute for the containment and adversely affected the Barrier Integrity Cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Because the preconditioning altered the as-found condition of the check valve, the data collected through the performance of the surveillance test was not fully indicative of the true valve performance trend. Additionally, the licensee's failure to correctly evaluate the initial failed leak rate test would become a more significant safety concern if left uncorrected because it could reasonably result in an unrecognized condition with a check valve failing to fulfill a safety related

function. Therefore, this performance deficiency had a direct effect on the licensee's ability to fully assess the past operability, as well as the ability to trend as-found data for the purpose of assessing the reliability of the check valve. The finding was a licensee performance deficiency of very low safety significance because it would not result in exceeding the Technical Specification limit for reactor coolant system leakage and would not have likely affected mitigation systems resulting in a loss of safety function. In addition, the finding did not represent an actual open pathway in the physical integrity of the reactor containment. Based on consultation and review with the Regional Senior Reactor Analyst, the inspectors concluded that the finding did not result in an increase in the likelihood of an initiating event such as an inter-system loss-of-coolant accident or a containment bypass event because the redundant isolation valve and closed loop system piping passed leak rate measurement test during the refueling outage with considerable margin. The inspectors concluded that this finding affected the cross cutting area of human performance. Specifically, the licensee did not have adequately trained and knowledgeable personnel available to correctly evaluate the cause of the initial failed leak rate measurement test and to ensure that appropriate actions to correct the test sequence in the procedure were identified.

(IMC 0310,H.2(b))

Inspection Report# : [2012002](#) (*pdf*)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

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