

## Clinton

### 3Q/2012 Plant Inspection Findings

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#### Initiating Events

**Significance:** G 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:** G 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*)

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## Mitigating Systems

**Significance:** TBD Sep 30, 2012

Identified By: NRC

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.

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

**Significance:** **G** 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.

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

**Significance:** **G** 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*)

**Significance:**  Dec 31, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

**FAILURE TO PROPERLY APPLY AN APPROVED ASME CODE CASE**

The inspectors identified a finding of very low safety significance with an associated Non-Cited Violation of 10 CFR 50.55a due to the licensee's failure to adequately apply American Society of Mechanical Engineers Section XI Code Case N-513-3 when it evaluated a degraded section of safety related shutdown service water system piping for operability. Specifically, the licensee failed to perform required daily walkdowns to confirm its analysis of conditions used in its operability evaluation remained valid. After this issue was identified by the inspectors, the licensee promptly resumed the daily compensatory action to verify the leak rate until the piping system was repaired.

The finding was of more than minor significance because it was associated with the Protection Against External Factors attribute of the Mitigating Systems Cornerstone, and it directly affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Additionally, if left uncorrected, improper application of an approved code case would become a more significant safety concern in that it could result in the failure to identify inoperable safety related piping. The finding was a licensee performance deficiency of very low safety significance because it did not result in an actual loss of safety function of a single train for greater than its Technical Specification allowed outage time. The inspectors concluded that there was no specific performance characteristic that was a significant cause to the performance deficiency in this instance; therefore no cross-cutting aspect was identified.

Inspection Report# : [2011005](#) (*pdf*)

## Barrier Integrity

**Significance:**  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)

**Significance:**  Dec 31, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

**FAILURE TO CONTROL THE WORK HOURS OF A COVERED WORKER.**

The inspectors identified a finding of very low safety significance with an associated Non-Cited Violation of 10 CFR 26.205(c) and (d) for the licensee's failure to schedule and control the work hours of a covered worker performing surveillance testing on containment isolation valves during the refueling outage. Specifically, an engineer performing local leak rate testing during the refueling outage was scheduled for successive 12-hour shifts and was inappropriately excluded from the work hour limits specified in 10 CFR 26.205(d)(1) and 10 CFR 26.205(d)(2). The licensee removed the engineer from covered work activities for the remainder of the refueling outage and reviewed the work activities of other engineers to ensure that any engineer performing covered work appropriately met work hour limits.

The finding was of more than minor significance since the failure to schedule and control the work hours of a worker performing covered work, if left uncorrected, would become a more significant safety concern because it could reasonably result in human performance errors that could affect the function of safety-related structures, systems, and components. Since the issue involved leak rate testing on containment isolation valves performed during the refueling outage, the inspectors concluded that this issue was associated with the Barrier Integrity Cornerstone. The finding was a licensee performance deficiency of very low safety significance because it did not represent an actual open pathway in the physical integrity of the reactor containment. The inspectors concluded that this finding affected the cross-cutting area of human performance. Specifically, the engineer did not meet expectations regarding the performance of covered work activities because he did not challenge directions given to him by the leak rate test team supervisor and the leak rate test team supervisor did not meet expectations to ensure that the engineer was in compliance with the 10 CFR 26.205 (a) work requirements. Therefore, the inspectors concluded that the licensee's work practices which support human performance were less than effective. (IMC 0310, H.4(b))

Inspection Report# : [2011005](#) (pdf)

**Significance:** G Dec 31, 2011

Identified By: NRC

Item Type: NCV NonCited Violation

**UNACCEPTABLE PRECONDITIONING OF REACTOR CORE ISOLATION COOLING SYSTEM 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 reactor core isolation cooling turbine exhaust check valve. Specifically, the surveillance test procedure resulted in unacceptable preconditioning of the valve prior to an as-found leak rate test measurement. The licensee entered this issue into its corrective action program for evaluation and initiated a corrective action to revise the test procedure.

The finding was of more than minor significance since it was associated with the Procedure Quality Cornerstone 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. 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 did not involve an actual open pathway in the physical integrity of the reactor containment. The inspectors concluded that this finding affected the cross-cutting area of problem identification and resolution. Specifically, the licensee did not implement operating experience into station processes, procedures, and training in that the licensee did not update/revise the surveillance test procedure consistent with NRC guidance and its corporate technical position to prevent unacceptable preconditioning of the check valve. (IMC 0310, P.2(b))

Inspection Report# : [2011005](#) (pdf)

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## Emergency Preparedness

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## Occupational Radiation Safety

**Significance:** G Dec 31, 2011

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**FAILURE TO IMPLEMENT APPROPRIATE RADIOLOGICAL CONTROLS FOR THE REMOVAL OF INSULATION IN A POSTED HIGH CONTAMINATION AREA**

A self-revealed finding of very low safety significance and an associated Non-Cited Violation of Technical Specification 5.4.1.a was identified. Specifically, the licensee failed to implement appropriate radiological controls for the removal of insulation in a posted high contamination area. The issue was entered in the licensee's corrective action program as AR 01297713. The licensee's immediate corrective actions placed the job on hold, assessed the radiological significance for the issue, and suspended qualifications for the radiation protection technician (RPT)

involved.

The finding is more than minor because the performance deficiency is associated with the Program and Process attribute of the Occupational Radiation Safety Cornerstone and adversely affected the cornerstone objective to ensure the adequate protection of the worker's health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. Specifically, the failure to implement the radiological controls established in the radiation worker permit (RWP) as-low-reasonably-achievable (ALARA) file caused workers to receive additional, unplanned dose to the workers. The finding was assessed using the Occupational Radiation Safety, Public Radiation Safety and was determined to be of very-low safety significance because this was not related to ALARA, did not result in an overexposure, or a substantial potential for overexposure, nor was the ability to assess dose compromised. The radiological controls specified in RWP 10012059 for this activity were not implemented because the RPT assumed the scope of work and failed to review the RWP ALARA requirements before the briefing. Consequently, the inspectors determined that the cause of this incident involved a cross-cutting component in the human performance area for work practices. Specifically personnel work practices did not support human performance. (IMC 0310, H.4(a))

Inspection Report# : [2011005](#) (*pdf*)

**Significance:**  Dec 31, 2011

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**FAILURE TO IMPLEMENT APPROPRIATE RADIOLOGICAL CONTROLS AFTER RADIATION PROTECTION IDENTIFIED THAT A WORKER WAS POTENTIALLY CONTAMINATED DUE TO INAPPROPRIATE PROTECTIVE CLOTHING.**

A self-revealed finding of very low safety significance and an associated Non-Cited Violation of Technical Specification 5.4.1.a was identified. Specifically, the licensee failed to implement appropriate radiological controls after radiation protection identified that the worker was potentially contaminated due to the inappropriate protective clothing. This issue was entered in the licensee's corrective action program as AR 01017724. The licensee's corrective actions included the replacement of all contamination monitors used at the site. The new contamination monitors have a radon subtract feature designed to mitigate the large number nuisance alarms caused by radon interference at this site.

The finding is more than minor because if left uncorrected the performance deficiency would have the potential to lead to a more significant safety concern. Specifically, bypassing every level of defense could result in additional dose to worker outside the radiological control area. The finding was assessed using the Significance Determination Process and was determined to be of very-low safety significance because these radioactive material control issues were not related to transportation and dose to members of the public was less than 0.005 rem. The inspectors observed the operation of the new contamination monitors and response of radiation protection technicians assigned to monitor authorized exit points during a refueling outage. The new monitors did not exhibit nuisance alarms and the technicians treated every alarm as a potential contamination event until proven otherwise with another instrument. Furthermore, these technicians informed the inspectors the briefing received before the outage by the radiation protection manager about alarm response expectations. The inspectors determined that the events involved in this performance deficiency are not indicative of current performance. Consequently, the inspectors did not assess the performance deficiency for cross-cutting aspects.

Inspection Report# : [2011005](#) (*pdf*)

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## Public Radiation Safety

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## 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.

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## Miscellaneous

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