

## Clinton

### 3Q/2014 Plant Inspection Findings

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## Initiating Events

**Significance:** G Sep 30, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

### **FAILURE TO UPDATE THE FINAL SAFETY ANALYSIS REPORT (FSAR) - SD STRUCTURAL INTEGRITY FUNCTION**

The inspectors identified a Severity Level IV Non-Cited Violation of title 10 Code of Federal Regulations (CFR) 50.71(e), 'Periodic Update of the Final Safety Analysis Report' and an associated Green finding for the licensee's failure to update the Final Safety Analysis Report with a description of the basis for the steam dryer structural integrity submitted to the NRC in support of an extended power uprate license amendment. Specifically, the licensee did not update Section 3.9.5.1.1.9. "Steam Dryers," of the FSAR to include analysis and inspections of the steam dryer each refueling outage that provided the basis for steam dryer structural integrity. Consequently, the licensee had not completed an inspection of the steam dryer during the most recent refueling outage. The licensee entered this issue into the corrective action program as issue report IR 02223135 and initiated actions to evaluate the Final Safety Analysis Report for revision to include description of the structural integrity function of the steam dryer.

The inspectors determined that the licensee's failure to update the Final Safety Analysis Report with the basis for steam dryer structural integrity submitted to the NRC was a performance deficiency. the performance deficiency was determined to be more than minor in accordance with Inspection Manual Chapter 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 7, 2012, because, if left uncorrected, the performance deficiency would have the potential to lead a more significant safety concern and is therefore a finding. Failure to update the Final Safety Analysis Report with the basis for steam dryer structural integrity could result in a failure to maintain the structural integrity of the steam dryer. Specifically, insufficient steam dryer inspections could result in failure to detect structurally significant cracking and result in a steam dryer failure which generates debris that adversely affect the function of safety-related components (e.g. MSIVs). Additionally, the failure to update the Final Safety Analysis Report with the basis for steam dryer structural integrity was more than minor because it was associated with the Initiating Events Cornerstone attribute of Equipment Performance and adversely affected the Cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions. Violations of 10 CFR 50.71(e) are dispositioned using the traditional enforcement process because they are considered to be violations that potentially impede or impact the regulatory process. This violation was also associated with a finding that has been evaluated by the significance determination process (SDP) and communicated with SDP color reflective of the safety impact of the deficient licensee performance. The SDP, however, does not specifically consider regulatory process impact. Thus, although related to a common regulatory concern, it is necessary to address the violation and finding using different processes to correctly reflect both the regulatory importance of the violation and the safety significance of the associated finding.

Using Manual Chapter 0609, Attachment 4 "Initial characterization of Findings," and Appendix A "The Significance Determination Process for findings at Power" the finding was screened against the initiating events cornerstone and determined to be of very low safety significance (Green) because the finding did not cause a reactor trip and the loss of mitigating equipment relied upon to transition from the onset of the trip to a stable. The performance deficiency associated with this finding did not reflect current licensee performance; therefore, no cross cutting aspect was identified with this finding.

Additionally, in accordance with Section 6.1.d.3 of the NRC Enforcement Policy, this violation was categorized as Severity Level IV because the licensee's failure to update the FSAR as required by 10 CFR 50.71(e) had not yet resulted in any unacceptable change to the facility or procedures.

Inspection Report# : [2014004](#) (*pdf*)

**Significance:**  Sep 30, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

### **MODIFICATION TO STEAM DRYER TIE BARS 28 AND 30 WITHOUT A 10 CFR 50.59 SAFETY EVALUATION**

The inspectors identified a Severity Level IV non-cited violation of 10 CFR 50.59(d)(1), "Changes, Test, and Experiments" for the licensee's failure to perform a written evaluation, which provided the bases for the determination that a change did not require a license amendment. Specifically, the licensee made a change pursuant to 10 CFR 50.59 (c) with the installation of 1/2 inch holes adjacent to welds attaching tie bars 28 and 30 to the steam dryer vane assembly and did not provide a written evaluation to provide a basis for the determination that this change would not result in a more than minimal increase in the likelihood of occurrence of a malfunction of an system structure or component important to safety (e.g. MSIVs). The licensee entered this finding into the corrective action program as issue report IR 02223135 and identified an action to secure a detailed assessment of these degraded tie bar locations from the steam dryer vendor. The licensee also consulted with the steam dryer vendor and made a qualitative assessment that the additional unflawed and unaltered portion of the fillet welds present at the end of the tie bar 28 and 30 locations provided a reasonable basis to conclude that these tie bars would not fail and affect the operability of safety-related components.

The inspectors determined that the failure to provide a written evaluation, which provided the basis for the determination that a change did not require a license amendment, was a performance deficiency. Specifically, the licensee failed to provide a basis for not applying for a license amendment associated with increased likelihood of a SD failure that impacts safety-related equipment due to reduced structural support available at tie bars 28 and 30. The performance deficiency was determined to be more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 7, 2012, because it was associated with the Initiating Events cornerstone attribute of equipment performance and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. In addition, the associated violation was determined to be more than minor because the inspectors could not reasonable determine if the changes to the SD at tie bars 28 and 30 would have required NRC prior approval.

Violations of 10 CFR 50.59 are dispositioned using the traditional enforcement process instead of the SDP because they are considered to be violations that potentially impede or impact the regulatory process. However, if possible, the underlying technical issue is evaluated under the SDP to determine the severity of the violation. In this case, the inspectors used Manual Chapter 0609, Attachment 4 "Initial characterization of Findings," and Appendix A "The Significance Determination Process for findings a Power" the finding was screened against the initiating events cornerstone and determined to be of very low safety significance (Green) because the finding did not cause a reactor trip and the loss of mitigating equipment relied upon to transition from the onset of the trip to a stable. The performance deficiency associated with this finding did not reflect current licensee performance; therefore, no cross cutting aspect was identified with this finding.

In accordance with Section 6.1.d.2 of the NRC Enforcement Policy, this violation was categorized as Severity Level IV because the resulting changes were evaluated by the SDP as having very low safety significance.

Inspection Report# : [2014004](#) (*pdf*)

**Significance:** G Jul 11, 2014

Identified By: NRC

Item Type: FIN Finding

**FAILURE TO IDENTIFY A LEVEL 1 TEST CRITERION FAILURE**

The inspectors documented a self-revealing Green finding associated with the failure to follow procedures when performing power ascension testing on the digital feedwater (DFW) system. Specifically, contrary to procedure CPS 2894.01, "Digital FWLC [feedwater level control system] Modifications Test - Power Ascension," Section 9.1, the licensee did not declare a Level 1 criterion failure when unacceptable oscillations were noted during a transition in the power ascension test. This resulted in the licensee declaring the test successful and returning the system to service without taking the appropriate corrective actions to address the oscillations. This contributed to the subsequent scram caused by reactor water level oscillations.

The failure to follow procedures when performing power ascension testing on the digital feedwater system was a performance deficiency. The performance deficiency was more than minor because it was associated with the design control attribute of the Initiating Events Cornerstone and adversely 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 and is therefore a finding. Using IMC 0609, Attachment 4 "Initial Characterization of Findings," and Appendix A "The Significance Determination Process for Findings at Power," issued June 19, 2012, the finding was determined to be of very low safety significance (Green) because it did not cause a reactor trip with a coincident loss of mitigating equipment. The inspectors determined this finding affected the conservative bias aspect of the of human performance cross-cutting area described as being present when the organization uses decision making practices that emphasize prudent choices over those that are simply allowable. Specifically, the licensee used non-conservative assumptions when determining whether the condition identified during the power ascension test was allowable (H.14). This finding does not involve enforcement action because no violation of regulatory requirements was identified.

Inspection Report# : [2014008](#) (*pdf*)

**Significance:** G Jun 30, 2014

Identified By: NRC

Item Type: FIN Finding

**ELECTRO HYDRAULIC CONTROL SYSTEM LEAK RESULTS IN MANUAL SCRAM**

The inspectors documented a self-revealing, Green finding associated with a failure to provide adequate work instructions to perform repairs to the shutoff valve for 1TGCV4 main turbine control valve. Specifically, contrary to station procedure MA-AA-716-010, "Maintenance Planning," Revision 21, the work instructions generated to install the shutoff valve failed to reference the appropriate cap screw size, lubricate the cap screws and install lock washers on the cap screws used to attach the shut off valve to the control valve. This allowed the cap screws to loosen and ultimately fail due to fatigue resulting in a leak of electro hydraulic control fluid of sufficient rate to require a manual scram of Unit 1 on April 26, 2013. The valve was replaced and successfully tested and the unit was restarted. The licensee documented this issue in the corrective action program (CAP) as Issue Report (IR) 01506929.

The performance deficiency was more than minor because it was associated with the procedure quality attribute of the Initiating Events Cornerstone and adversely 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 and is therefore a finding. Using Manual Chapter 0609, Attachment 4 "Initial Characterization of Findings," and Appendix A "The Significance Determination Process for Findings at Power", issued June 19, 2012, the finding was screened against the initiating events cornerstone and determined to be of very low safety significance (Green) because the finding did not cause a reactor trip with a coincident loss of mitigating equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. The inspectors determined that no cross cutting aspect will be assigned to this performance deficiency since it occurred in 2008 and is not indicative of current plant performance.

Inspection Report# : [2014003](#) (*pdf*)

**Significance:**  Jun 30, 2014

Identified By: NRC

Item Type: FIN Finding

**FAILURE TO IMPLEMENT ENGINEERING CHANGE RESULTS IN MANUAL REACTOR SCRAM**

The inspectors documented a self-revealing, Green finding associated with a failure to implement engineering change (EC) 380150 “Upgrade Feed Water Level Control and Turbine Speed.” Specifically, contrary to station procedure CC-AA-256, “Process for Managing Plant Modifications Involving Microprocessor Technology,” Revision 2, the licensee failed to identify, evaluate and mitigate software component critical parameters in the engineering change that installed the digital feed water system. This resulted in nonlinear reactor water level oscillations when transferring from the motor driven feed pump to the turbine driven feed pump that required the reactor operator to manually scram the reactor prior to reaching the level 8 automatic scram set point. The licensee documented this issue in the corrective action program as IR 1596987.

The performance deficiency was more than minor because it was associated with the design control attribute of the Initiating Events Cornerstone and adversely 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 and is therefore a finding. Using Manual Chapter 0609, Attachment 4 “Initial Characterization of Findings,” and Appendix A “The Significance Determination Process for Findings at Power”, issued June 19, 2012, the finding was screened against the initiating events cornerstone and determined to be of very low safety significance (Green) because the finding did not cause a reactor trip with a coincident loss of mitigating equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. The inspectors determined this finding affected the cross cutting area of human performance in the aspect of documentation where the organization creates and maintains complete, accurate and up-to date documentation. Specifically, the contractors failed to create complete documentation to be use by the licensee when evaluating the critical parameters.

Inspection Report# : [2014003](#) (*pdf*)

**Significance:**  Feb 14, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Correct Identified Combustibles**

The inspectors identified a finding of very low safety significance and associated NCV of License Condition 2.F for the failure to remove an identified combustible. Specifically, the failure to remove a piece of wood located directly under a safety-related cable tray for a period in excess of three years was a failure to take corrective action as required by the licensee’s Quality Assurance Program. The licensee entered the issue into their Corrective Action Program and removed the piece of wood by the end of the inspection.

The finding was determined to be more than minor because the combustible material was located directly beneath a safety-related cable tray and, as such, represented a credible fire scenario. The finding was determined to be of very low safety significance (i.e., Green) because the impact of the fire would be largely limited to one train/division of equipment important to safety. The inspectors determined that the finding has a cross-cutting aspect in the area of human performance because the licensee did not ensure sufficient resources were available to support nuclear safety. Specifically, the failure to remove the identified combustible was due to a lack of resources to schedule and accomplish removing the material.

Inspection Report# : [2014007](#) (*pdf*)

## Mitigating Systems

**Significance:**  Sep 30, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

### **EXCEEDED TECHNICAL SPECIFICATION ALLOWED OUTAGE TIME FOR ELECTRICAL POWER SYSTEMS DUE TO AUXILIARY EQUIPMENT OUT OF SERVICE**

The inspectors identified a non-cited violation of Technical Specification 3.8.4, "DC Sources - Operating" and Technical Specification 3.8.9, "Distribution Systems - Operating" for failing to enter the technical specifications and complete the associated actions prior to the completion time when auxiliary equipment required to support electrical power system safety function was out of service. Specifically, the licensee removed the division 1 safety related portion of the switchgear cooling system from service to perform maintenance and failed to enter the applicable technical specifications that the was required to support system safety function. The licensee documented this issue in the corrective action program as Issue Report (IR) 01674754.

The failure to enter the technical specifications and complete the associated actions prior to the completion time when auxiliary equipment required to support electrical power system safety function was out of service was a performance deficiency. The performance deficiency was more than minor because it was associated with the equipment performance attribute of the mitigating systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences and is therefore a finding. Using Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," issued June 19, 2012, Exhibit 2 for the Mitigating Systems Cornerstone. The inspectors answered "Yes" to the screening question under the Mitigating Systems Cornerstone "Does the finding represent an actual loss of function of at least a single train for > its Tech Spec Allowed Outage Time OR two separate safety systems out-of-service for > its Tech Spec Allowed Outage Time?," since the finding represented an actual loss of function of at least a single Train for > its Tech Spec Allowed Outage time. Therefore, a detailed risk evaluation was performed using IMC 0609, Appendix A. The Senior Reactor Analysts (SRAs) evaluated the finding using the Clinton Standardized Plant Analysis Risk (SPAR) model version 8.17, Systems Analysis Programs for Hands-on Integrated Reliability Evaluations (SAPHIRE) version 8.1.0. For switchgear cooling, independent redundant cooling trains are provided for each of the three divisional switchgear areas with one train being non-safety related and the other safety related. In order to characterize the risk significance, the SRAs assumed that during a loss of offsite power (LOOP) event, the non-safety related switchgear cooling train that is normally in operation would become unavailable. The safety-related cooling train, should it be undergoing maintenance, would be unavailable as well. The exposure time for this issue was taken to be 235 hours based on the licensee documentation. Post-processing rules were used to credit an additional 4.0 hours of time to recover offsite power (to allow recovery of the non-safety cooling train) in core damage sequences when the safety-related cooling train for Division 1 equipment was undergoing maintenance during a LOOP. The SRAs also gave credit in the SPAR Model for local operator action to provide alternate switchgear room cooling during a LOOP. The licensee produced Alarm Response Procedure CPS 5050.03, Rev 30c, which directed operators to Procedure CPS 3412.01, "Essential Switchgear Heat Removal (VX)...," Revision 15. These procedures directed operators to locally open doors, set up portable blowers, or lower electrical loads to help cool the room as necessary. The SRAs used the SPAR-H Human Reliability Analysis Method (NUREG/CR-6883) to estimate the human error probability for identifying and executing the local actions. The performance drivers were "time" (extra time) and "stress" (high) for diagnosis. The performance drivers were "stress" (high) and "ergonomics" (poor) for action. The resultant human error probability using these assumptions was 0.022. Using the above information, the CDF during the exposure time is 1.7E-08/yr. The dominant sequences were station blackout sequences, with initial success of RCIC and HPCS, but later failure of those systems and decay heat removal and all injection due to failure to vent containment and its subsequent failure. Based on the detailed risk evaluation, this finding is best characterized as a finding of very low safety-significance (Green.) The inspectors

determined this finding affected the cross-cutting area of human performance in the aspect of avoid complacency where individuals recognize and plan for mistakes, latent issues, and inherent risk, even while expecting successful outcomes. Specifically, the licensee has removed the division 1 or 2 safety related switchgear cooling system fans or condensing units from service numerous times and failed to consider the components inoperable under technical specification definition for operable. (IMC 0310 H.12)

Inspection Report# : [2014004](#) (pdf)

**Significance:**  Sep 30, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

### **PROGRAMMATIC FAILURE TO COMPLETE OPERABILITY AND FUNCTIONALITY DETERMINATIONS**

The inspectors identified a non-cited violation of 10 CFR 50 Appendix B, Criterion V, Instructions, Procedures and Drawings, "Procedures," for the failure to accomplish station procedure OP-AA-108-115, "Operability Determinations" Revision 14. Specifically, on multiple occasions operations personnel failed to complete or documented incomplete operability or functionality of safety related or related to safety equipment used at the site. The licensee documented this issue in the corrective action program as Issue Report (IR) 01693256.

The failure to complete or provided incomplete operability or functionality determinations used to determine the operability or functionality of safety related or related to safety equipment used at the site is a performance deficiency. The performance deficiency was determined to be more than minor because if left uncorrected, the performance deficiency has the potential to lead to a more significant safety concern and is therefore a finding. Specifically, if operations personnel continue to fail to complete or provide incomplete operability or functionality determination the station could have safety or safety related equipment inoperable without taking appropriate actions for the equipment being inoperable (e.g. entering appropriate technical specification limited condition for operation). Using Manual Chapter 0609, Attachment 4 "Initial Characterization of Findings," and Appendix A "The Significance Determination Process for Findings at Power" the finding was screened against the mitigating systems cornerstone and determined to be of very low safety significance (Green) because the finding was/did not: 1) a deficiency affecting the design or qualification of a mitigating structure, system or component, 2) represent a loss of system and/or function, 3) represent an actual loss of function of a single train for greater than its technical specification allowed outage time, 4) represent an actual loss of function of one or more non-technical specification trains of equipment designated as high safety-significant for greater than 24 hours and 5) did not involve the loss or degradation of equipment or function specifically designed to mitigate a seismic, flooding or serve weather event. The inspectors determined this finding affected the cross-cutting area of human performance in the aspect of Training, where the organization provides training and ensures knowledge transfer to maintain a knowledgeable, technically competent workforce and instill nuclear safety values. Specifically, personnel performing the reviews believed existing training provided sufficient knowledge without the use of additional resources material and current training to operators does not cover this activity. (IMC 0319 H.9)

Inspection Report# : [2014004](#) (pdf)

**Significance:**  Sep 30, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

### **FAILURE TO ESTABLISH SURVEILLANCE PROCEDURE FOR REACTOR CORE ISOLATION COOLING PUMP DUE TO UNACCEPTABLE PRECONDITIONING**

The inspectors determined that the failure to establish a surveillance procedure to test the RCIC system due to unacceptable preconditioning is a performance deficiency. The performance deficiency was more than minor because it was associated with the procedure quality attribute of the mitigating systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability and capability to respond to initiating events to prevent

undesirable consequences and is therefore a finding. Using Manual Chapter 0609, Attachment 0609.04 "Initial Characterization of Findings," and Appendix A "The Significance Determination Process for Findings at Power" the finding was screened against the mitigating systems cornerstone and determined to be of very low safety significance (Green) because the finding was/did not: 1) a deficiency affecting the design or qualification of a mitigating structure, system or component, 2) represent a loss of system and/or function, 3) represent an actual loss of function of a single train for greater than its technical specification allowed outage time, 4) represent an actual loss of function of one or more non-technical specification trains of equipment designated as high safety-significant for greater than 24 hours and 5) did not involve the loss or degradation of equipment or function specifically designed to mitigate a seismic, flooding or severe weather event. The inspectors determined this finding affected the cross-cutting area of problem identification and resolution in the aspect of operating experience where the organization systematically and effectively collects, evaluates and implements relevant internal and external operating experience in a timely manner. Specifically, the licensee considered the impact of the operating experience for surveillance testing, but did not consider its impact during normal plant operation. (IMC 0310 P.5)

Inspection Report# : [2014004](#) (*pdf*)

**Significance:** G Jun 30, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

### **FOREIGN MATERIAL IN RELAY PREVENTS EMERGENCY DIESEL GENERATOR OUTPUT BREAKER FROM CLOSING**

The inspectors documented a self-revealing, Green non-cited violation of Clinton Power Station Technical Specification 5.4.1, "Procedures," for a failure to prevent foreign material from entering a relay associated with the Division 1 Diesel Generator. Specifically, contrary to station procedure CPS 8501.05, "CV-2 Relay Inspection and Calibration with Doble Test Equipment," Revision 4, the licensee failed to verify that relay 227-DGIKA, CV-2 AB phase was clean and free of all foreign material. The foreign material prevented the relay from operating and satisfying the permissive logic required to close the Division 1 Diesel Generator output breaker resulting in having to declare the Diesel Generator inoperable. The relay was replaced and successfully tested and the licensee documented this issue in the corrective action program as IR 01600935.

The finding was more than minor because it was associated with the procedure quality attribute of the mitigating systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences and is therefore a finding. Using Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," issued June 19, 2012, Exhibit 2 for the Mitigating Systems Cornerstone, the inspectors answered "Yes" to the screening question under the Mitigating Systems Cornerstone "Does the finding represent an actual loss of function of at least a single Train for > its Tech Spec Allowed Outage Time OR two separate safety systems out-of- service for > its Tech Spec Allowed Outage Time?," since the finding represented an actual loss of function of at least a single Train for > its Tech Spec Allowed Outage Time of 14 days. Therefore, a detailed risk evaluation was performed using IMC 0609, Appendix A. The Senior Reactor Analysts (SRAs) evaluated the finding using the Clinton Standardized Plant Analysis Risk (SPAR) model version 8.17, Systems Analysis Programs for Hands-on Integrated Reliability Evaluations (SAPHIRE) version 8.1.0 and concluded that the risk increase to the plant due to this finding is very low (Green). The inspectors determined this finding affected the cross cutting area of human performance in the aspect of work management where the organization implements a process of planning, controlling and executing work activities such that nuclear safety is the overriding priority. Specifically, the licensee's implementation of their foreign material exclusion process for this maintenance activity lacked sufficient planning, controls and execution to prevent foreign material from entering a risk significant piece of safety related equipment.

Inspection Report# : [2014003](#) (*pdf*)

**Significance:**  Jun 30, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

**FAILURE TO DEVELOP ADEQUATE PROCEDURES FOR PRE-PLANNING AND PERFORMING MAINTENANCE AFFECTING SAFETY-RELATED EQUIPMENT**

The inspectors documented a self-revealing, Green non-cited violation (NCV) of Clinton Power Station Technical Specification 5.4.1, "Procedures" for a failure to develop adequate procedures for properly pre-planning and performing maintenance affecting the performance of safety-related equipment which resulted in the subsequent failure of the Division 3 Diesel Room Ventilation damper hydramotor on August 15, 2013. Specifically, during pre-scheduled performance testing of the Division 3 (High Pressure Core Spray System) Emergency Diesel Generator Room Ventilation Damper hydramotor, the ventilation supply air intake damper, 1VD01YC, failed to open as a result of Damper Hydramotor 1TZVD003A experiencing an age-related degradation failure. This was due in part to the licensee's failure to properly pre-plan and perform the appropriate preventive maintenance for the hydramotor due to inadequate procedures. Procedure WC-AA-113, "Predefine Database Revisions," Revision 2, did not provide adequate instructions appropriate to the circumstances to properly pre-plan and perform maintenance affecting the performance of safety-related equipment. This resulted in a loss of safety function of the HPCS Diesel Generator and its supported High Pressure Core Spray system because of the low confidence that diesel room temperature would be maintained to support the diesel during an event when it would be required to perform its function. The licensee subsequently replaced the hydramotor, tested the new hydramotor successfully and restored the diesel ventilation system to operable. They documented this issue in the corrective action program as IR 1546973 and IR 1547294.

The performance deficiency was more than minor because it was associated with the equipment performance attribute of the mitigating systems cornerstone attribute and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences and is therefore a finding. Using Manual Chapter 0609, Appendix A, "The SDP for Findings At-Power," issued June 19, 2012, Exhibit 2 for the Mitigating Systems Cornerstone. The inspectors answered "Yes" to the screening question under the Mitigating Screening Cornerstone "Does the finding represent a loss of system and/or function?" since the finding resulted in a loss of safety function. Therefore, a detailed risk evaluation was performed using IMC 0609, Appendix A. The SRAs evaluated the finding using the Clinton SPAR model version 8.17, SAPHIRE version 8.1.0 and concluded that the risk increase to the plant due to this finding is very low (Green). The inspectors determined that no cross-cutting aspect will be assigned to this performance deficiency since it occurred in 2005 and is not indicative of current plant performance

Inspection Report# : [2014003](#) (*pdf*)

**Significance:**  Dec 31, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**FAILURE TO IMPLEMENT REQUIREMENTS OF STATION SCAFFOLD INSTALLATION PROCEDURE.**

Inspectors identified a NCV of 10 CFR 50, Appendix B, Criterion V, Instructions, Procedures and Drawings for the failure to follow station procedure MA AA-796-024, "Scaffold Installation, Inspection, and Removal," Revision 8, to obtain engineering approval for seismic scaffolds not complying with specific requirements of approved station procedures during the C1R14 outage. Specifically, seismic scaffolds identified during walkdowns by the inspectors did not meet procedural requirements for required clearances from or tie off to safety-related components and did not have the required engineering evaluation and approval for acceptability. The licensee documented this issue in the corrective action program (CAP) as Issue Report (IR) 01574003 and completed the required engineering review and approval.

The inspectors determined that the licensee's failure to follow the station procedure for scaffold installation,

inspection, and removal was a performance deficiency. The performance deficiency is more than minor because it was associated with the protection against external factors attribute of the Mitigating Systems (MS) cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Using IMC 0609, Attachment 4 “Initial Characterization of Findings,” and Appendix G “Shutdown Operations Significance Determination Process,” the finding was screened against Attachment 1, Checklist 8 and found to be of very low safety significance (Green) because the finding did not: 1) increase the likelihood of a loss of reactor coolant system (RCS) inventory, 2) degrade the licensee’s ability to terminate a leak path or add RCS inventory when needed, 3) significantly degrade the licensee’s ability to recover decay heat removal once it is lost, 4) result in one or less safety relief valves being available to establish a heat removal path to the suppression pool with the vessel head on. The finding was determined to have a cross-cutting aspect in the area of human performance, associated with the resources component, in that the licensee ensures that personnel, equipment, procedures and other resources are available and adequate to assure nuclear safety. Specifically, the licensee failed to ensure that the scaffold coordinator and superintendents had the required training to assure nuclear safety while erecting seismic scaffolds. [H.2(b)]

Inspection Report# : [2013005](#) (pdf)

**Significance:**  Dec 31, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**FAILURE TO ASSESS AND MANAGE RISK ASSOCIATED WITH THE PERFORMANCE OF SURVEILLANCE TESTING ON AVERAGE POWER RANGE MONITORS**

Inspectors reviewed a self-revealing NCV of 10 CFR 50.65(a)(4) for failing to manage risk when the Division 4 Nuclear System Protection System (NSPS) inverter unexpectedly transferred from its normal direct current (DC) power source to its alternate alternating current (AC) power source during the Average Power Range Monitor (APRM) ‘D’ surveillance test. Specifically, the installed operational barrier failed to protect a fuse block when a test cable connector was inadvertently dropped. This caused a momentary electrical short and resulted in the inverter to transfer power sources. The licensee documented this issue in the CAP as IR 01476647 and performed (1) a stand-down with instrument maintenance craftsmen to discuss the event and lessons learned, (2) changes to the licensee’s risk/hazards assessment process to include a checklist designed to aid in challenging jobsite conditions, (3) conduct of paired observations by maintenance department managers on use of the checklist, and (4) a case study with the maintenance shops using this event to highlight determining risk perception and robust protective barriers.

The inspectors determined that the licensee’s failure to adequately manage the risk associated with performance of surveillance testing for APRM ‘D’ was a performance deficiency. The performance deficiency is more than minor because it was associated with the configuration control attribute of the MS cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The performance deficiency involved the licensee’s assessment and management of risk associated with performing maintenance in accordance with 10 CFR 50.65(a)(4); therefore the inspectors used IMC 0609, Attachment 4 “Initial Characterization of Findings,” and Appendix K, “Maintenance Risk Assessment and Risk Management Significance Determination Process,” and determined that a detailed risk evaluation would be required since the issue represented an actual loss of safety function of a system. The Region III Senior Reactor Analyst (SRA) completed a detailed risk evaluation using the NRC’s Standardized Plant Analysis Risk (SPAR) model for Clinton Power Station (CPS), Version 8.17 and SAPHIRE Version 8.09 to calculate an Incremental Core Damage Probability Deficit (ICDPD) for the unevaluated condition. The SRA ran the SPAR model conservatively assuming that High Pressure Core Spray System (HPCS) was unavailable during the 6-hour time. The result was an ICDPD of less than 2E-08/year. In accordance with IMC 0609, Appendix K, because the ICDPD was not greater than 1E 06/year, the finding was determined to be of very low safety significance (i.e., Green). The finding was determined to have a cross cutting aspect in the area of human performance, associated with the work practices component, in that personnel work practices are used commensurate with the risk of the assigned task, such that work activities are performed safely. Specifically, the technicians did not perform adequate self or peer checks after

installation of the barrier to ensure the barrier would provide protection from shorting. [H.4(a)]

Inspection Report# : [2013005](#) (*pdf*)

**Significance:**  Dec 19, 2013

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**Insulation Resistance Testing for Unit Substation Transformers Was Incorrectly Performed**

A finding of very low safety significance (Green) and associated non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” was self-revealed from an event that resulted in a reactor scram. Specifically, during troubleshooting of the Unit Substation “A” transformer failure on December 08, 2013, it was identified that the licensee incorrectly measured the resistance between the transformer windings instead of the winding and ground. The licensee entered this concern into its Corrective Action Program as AR 01594794, and satisfactorily re-measured the insulation resistance for the un-faulted transformer 1AP11E.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating 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. The finding screened as very low safety significance (Green), because the inspectors answered NO to all Mitigating Systems Screening questions in Exhibit 2 of Appendix A of IMC 0609. The finding was determined to have a cross-cutting aspect in the area of human performance, associated with the work control component, in that the licensee failed to ensure supervisory and management oversight of work activities, including contractors, such that nuclear safety is supported. H.4(c).

Inspection Report# : [2013009](#) (*pdf*)

**Significance:**  Dec 19, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate Acceptance Criteria in the Insulation Resistance Test Procedure**

The inspectors identified a finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” for the failure to have adequate acceptance criteria in testing procedure. Specifically, the minimum acceptable insulation resistance for transformers as specified in Procedure CPS 8440.01 did not meet the minimum vendor recommended values in accordance with the vendor manual. The licensee entered this concern into its Corrective Action Program as IR 01596730 and IR 01598375.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems cornerstone attribute of design control and affected the cornerstone objective of ensuring capability and reliability of systems that respond to initiating events to prevent undesirable consequences. The finding screened as very low safety significance (Green), because the inspectors answered NO to all Mitigating Systems Screening questions in Exhibit 2 of Appendix A of IMC 0609. The inspectors identified the finding had a cross-cutting aspect in the area of problem identification and resolution, associated with the corrective action program component because the licensee failed to ensure issues potentially impacting nuclear safety are promptly identified. (P.1(a))

Inspection Report# : [2013009](#) (*pdf*)

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## Barrier Integrity

**Significance:**  Dec 31, 2013

Identified By: NRC

Item Type: FIN Finding

### **FAILURE TO IDENTIFY EMBEDDED OPERATOR CHALLENGE**

Inspectors identified a finding of very low safety significance associated with the licensee's failure to identify an embedded operator challenge. Specifically, the licensee proceduralized compensatory actions which were necessary in order to maintain a negative pressure (-0.25 in. H<sub>2</sub>O) inside the fuel building when opening the inner railroad bay door. The licensee documented this issue in the CAP as IR 1589104 and subsequently screened this issue as an operator challenge.

The inspectors determined that the licensee's failure to identify an embedded operator challenge was a performance deficiency. This finding was more than minor significance because it was associated with the Barrier Integrity Cornerstone attribute of structure, system and component (SSC) and barrier performance, and adversely affected the cornerstone objective to provide reasonable assurance that the physical design barrier of secondary containment protects the public from radionuclide releases caused by accidents or events. This finding is of very low safety significance due to answering 'no' to all questions under the Barrier Integrity Cornerstone column of IMC 0609, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings." The inspectors concluded that this finding affected the cross-cutting aspect of problem identification and resolution. Specifically, the licensee failed to implement its CAP with

a low threshold for identifying issues and did not identify this challenge to operators completely, accurately, and in a timely manner commensurate with its safety significance. [P.1(a)]

Inspection Report# : [2013005](#) (*pdf*)

## **Emergency Preparedness**

**Significance:**  Sep 30, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

### **INCOMPLETE EVACUATION TIME ESTIMATE SUBMITTALS**

The inspectors determined that Exelon's failure to submit a complete updated ETE for the Clinton Power Station by December 22, 2012 was a performance deficiency. Specifically, the ETE is an input into the development of protective action strategies prior to an accident and to the protective action recommendation decision making process during an accident. Inadequate ETEs have the potential to reduce the effectiveness of public protective actions implemented by the OROs. The performance deficiency was more than minor because it was associated with the procedure quality attribute of the emergency preparedness cornerstone and adversely affected the cornerstone objective to ensure that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency and is therefore a finding. Using IMC 0609, attachment 0609.04 "Initial Characterization of Findings," and Appendix B, "Emergency Preparedness (EP) Significance Determination Process (SDP)," the finding was screened by the inspectors and determined to be of very low safety significance (Green) based upon the following. The performance deficiency was associated with planning standard 10 CFR 50.47 (b)(10), "Green Finding column, provides the following examples "ETEs and updates to the ETEs were not provided to responsible OROs," and "The current public protective action strategies documented in emergency preparedness implementing procedures (EPIPs) are not consistent with the current ETE." The inspectors concluded that the incomplete updated ETE delayed the NRC's approval of the Clinton Power Station ETE, therefore the ETE was not provided to the site OROs nor was it used to inform the site EPIPs as required by 10 CFR 50.47(b)(10), and Section IV, Paragraph 4 of Appendix E to 10 CFR Part 50. The inspectors determined this finding affected the cross-cutting area of human performance in the aspect of documentation where the organization creates and maintains complete,

accurate and up-to-date documentation. Specifically, the Emergency Preparedness organization did not develop the Clinton Power Station ETE as required by the new regulation introduced by the NRC's EP Rule. (IMC 0310 H.7) Inspection Report# : [2014004](#) (*pdf*)

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## Occupational Radiation Safety

**Significance:**  Dec 31, 2013

Identified By: NRC

Item Type: FIN Finding

### **FAILURE TO MAINTAIN RADIATION EXPOSURE ALARA DURING 1R13.**

Inspectors reviewed a self-revealing finding due to the licensee having unplanned and unintended occupational collective radiation dose because of deficiencies in the licensee's Radiological Work Planning and Work Execution Program. Specifically, the licensee failed to properly incorporate as-low-as-reasonably-achievable strategies and insights while planning and executing work activity during the C1R13 refueling outage. During the In-Service Inspection (ISI) examinations performed inside the bio-shield, the dose overage was 28.410 person-rem (68 percent higher than initial estimate). This result was caused by poor radiological planning and work execution of these tasks. The licensee entered this issue into their CAP as IR 01593794 and incorporated the lesson learned into the outage planning.

The inspectors determined that the failure to appropriately plan and coordinate outage activities, together with the failure to properly incorporate ALARA strategies or insights while planning and executing ISI examinations inside the bio-shield during the C1R13 refueling outage was a performance deficiency. The finding was more than minor because it was associated with the program and process attribute of the Occupational Radiation Safety Cornerstone. This issue affected the cornerstone objective of ensuring the adequate protection of worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. The finding is also very similar to IMC 0612, Appendix E, "Examples of Minor Issues," Example 6.i. This example provides guidance that an issue is not minor if the actual collective dose exceeded 5 person-rem and exceeded the planned, intended dose by more than 50 percent. The inspectors determined that this finding was of very low safety significance because CPS's 3-year rolling average collective was less than the 240 person-rem/unit referenced within IMC 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process." This finding did not have a cross cutting aspect due to not being reflective of current performance as exemplified by improvements in the recently completed C1R14 outage.

Inspection Report# : [2013005](#) (*pdf*)

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## 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.

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## **Miscellaneous**

Last modified : November 26, 2014