

# Clinton

## 3Q/2006 Plant Inspection Findings

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### Initiating Events

**Significance:**  Sep 30, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

**THE INSPECTORS DETERMINED THAT THE FAILURE TO APPROPRIATELY IDENTIFY AND CORRECT THE CAUSE OF THE DIVISION 4 NSPS INVERTER IN MARCH WAS A PERFORMANCE DEFICIENCY.**

A finding of very low safety significance and a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion XVI, was self revealed following a reactor scram on August 27, 2006, due to the licensee's failure to identify and correct a condition adverse to quality in March 2006. The licensee determined and corrected the actual cause of the failure and revised procurement procedures to disallow purchase of parts manufactured under the same process as the failed board. Additionally, the licensee commenced a common cause evaluation to assist in planning and developing additional corrective actions to address whether there are issues involving the licensee proficiency in identifying causes of operational occurrences.

The finding was more than minor because it resulted in a reactor scram and was associated with the equipment performance attribute of the initiating events cornerstone. The finding was of very low safety significance because it would not affect the availability of a mitigating system. The finding was also determined to affect the cross-cutting area of problem identification and resolution in that the actual cause of the March 26, 2006 failure was not properly identified, resulting in the corrective action not addressing the cause, and a more significant failure occurring in August 2006.

Inspection Report# : [2006007\(pdf\)](#)

**Significance:**  Mar 20, 2006

Identified By: Self-Revealing

Item Type: FIN Finding

**INADEQUATE WORKMANSHIP RESULTED IN GENERATOR TRIP AND REACTOR SCRAM.**

The inspectors considered the failure to adequately tighten terminal screws in the main generator output current transformer circuit a performance deficiency. This issue was caused by inadequate workmanship. The inspectors determined it was more than minor because the finding affected the reactor safety/initiating events cornerstone objective of limiting the likelihood of those events that upset plant stability. The finding also affected the cross-cutting area of human performance because the contract workers failed to tighten the terminal screws of the current transformer and the licensee failed to ensure the GE workers were using the appropriate lifted and landed leads documents to aid in performance of this job. Although this failure occurred in C1R08 in April, 2002, the inspectors determined this deficiency to be reflective of recent licensee performance because, up to the March 2006 scram event, there was no procedure or process in place to ensure GE followed the licensee's lifted and landed lead procedures. As a result of the root cause for this event, the licensee initiated a corrective action to revise the GE quality control check-list to confirm that requirements similar to wire removal/jumper installation procedures are incorporated. Although this finding did contribute to the likelihood of a reactor trip, it did not affect the function or availability of any mitigation equipment. Therefore, the inspectors concluded that this issue was a finding of very low safety significance (Green).

Inspection Report# : [2006004\(pdf\)](#)

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### Mitigating Systems

**Significance:**  Mar 31, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

**INADEQUATE DESIGN CONTROL DURING REVIEW OF ENGINEERING CHANGE PACKAGE 356820 "SHUTDOWN COOLING HEADER LEAK-OFF LINE".**

In February 2006, a finding of very low safety significance involving a Non-Cited Violation of 10 CFR 50, Appendix B, Criteria III, "Design Control," was identified. During a review of Engineering Change Package 356820, "Shutdown Cooling Header Leak-off line," the inspectors identified that the design change, as installed, would adversely impact the functionality of both the Division 2 residual heat removal system's water leg (keep-fill) pump and the C residual heat removal pump. This adverse condition would be caused by the introduction of high temperature water on the suction side of both pumps. The design change was being installed to prevent pressurization of the shutdown cooling header due to leakage through the reactor coolant system pressure isolation valves.

This issue was more than minor because the finding affected the Mitigating Systems cornerstone objective of ensuring the availability of mitigating systems to prevent undesirable consequences (Design Control attributes). The finding was of very low safety significance because, with the expected operator actions, this condition would not result in a loss of operability. This conclusion was made based on the flow limiting characteristics of the leak-off line orifice with the suction cooling header volume at saturated conditions in conjunction with the subsequent operator alarm response requirements. Corrective actions by the licensee included procedure revisions and local monitoring of the C residual heat removal suction line temperature once the leak-off line was placed in service.

Inspection Report# : [2006002\(pdf\)](#)

**Significance:**  Mar 31, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

**INADEQUATE TEST CONTROL DURING THE REVIEW OF THE LICENSEE'S SURVEILLANCE TEST TO DETERMINE OPERABILITY OF THE SHUTDOWN SERVICE WATER SYSTEM.**

On February 2, 2006, the inspectors identified a finding involving a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion XI, "Test Controls." During a review of the licensee's surveillance test to determine the operability of the shutdown service water system, the inspectors identified that the system's leakage could exceed both the administrative and operability limits established by design basis documents, without the test detecting the actual leak rate. This condition was caused by an inadequate test connection.

This issue was more than minor because the finding affected the Mitigating Systems cornerstone objective of ensuring the availability of mitigating systems to prevent undesirable consequences. An adverse condition would have been masked by leakage that exceeded both administrative and operability limits, and would not have been identified under testing conditions mandated by the licensee's testing program. The finding was of very low safety significance because the actual measured leakage was well below the capability of accurately being measured, and this issue did not result in a system operability concern. As part of the corrective actions, the licensee planned to performed an extent of condition review to ensure that no other system leakage tests were affected by this issue.

Inspection Report# : [2006002\(pdf\)](#)

**Significance:**  Dec 31, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

**FAILURE TO PROVIDE ADEQUATE MAINTENANCE AND WORK INSTRUCTION IS A PERFORMANCE DEFICIENCY**

A self-revealing finding involving a non-cited violation (NCV) of Technical Specification 5.4.1 "Procedures," was identified. On September 30, 2005, the Division III emergency diesel generator failed to properly run following maintenance activities, due to the inadequate maintenance instructions. The inadequate maintenance instructions resulted in air being trapped in the governor oil system during the replacement of the governor's servo booster motor. The licensee determined that this issue was the result of a maintenance planner's failure to follow administrative guidelines for technical review during the development of the maintenance instructions. This issue resulted in extended outage and unavailability time for the emergency diesel generator.

The inspectors determined that despite the fact that the issue involved work in progress, this issue was more than minor because the finding affected the Mitigating Systems Cornerstone objective of ensuring the availability of mitigating

systems to prevent undesirable consequences. The issue resulted in the emergency diesel generator being unavailable for longer than expected by the plant staff. Following the initial maintenance run of the diesel generator, operators declared that the diesel generator was available for use if needed to respond to an event. Corrective actions by the licensee included developing lesson-learned information to share with other maintenance planners. Additionally, the licensee planned to add technical guidance related to venting air from the diesel governor to the diesel maintenance training material. The finding also affected the cross cutting area of human performance since the licensee's maintenance personnel failed to request technical guidance from the site engineering staff as directed by the licensee's administrative procedures.

Inspection Report# : [2005009\(pdf\)](#)

**G**

**Significance:** Dec 31, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

**FAILURE TO CORRECTLY IDENTIFY AND CORRECT THE CAUSE OF THE 2005 125 VDC CIRCUIT FAILURE WAS A PERFORMANCE DEFICIENCY.**

The inspectors identified a finding involving a non-cited violation for inadequate corrective action. The licensee's failure to properly identify and correct a degraded electrical circuit in 2004, involving a high resistance connection on a fuse holder, resulted in the Division II emergency diesel generator subsystem being vulnerable to electrical circuit failure if called upon to complete its support function. The high resistance connection was caused by degraded grease-like material and dirt. This issue also resulted in the Division II diesel generator failure during a subsequent surveillance test.

The inspectors determined that the finding was greater than minor because the finding affected the Mitigating Systems Cornerstone objective of ensuring the availability, reliability, and capability of mitigating systems to prevent undesirable consequences. The Division II emergency diesel generator 125 VDC system is a backup to the AC oil system in case of a loss of offsite power. Offsite power was not lost, therefore, there was not an actual loss of safety function for the diesel. Corrective actions by the licensee included replacing the fuse and fuse holder and expediting actions to address the extent of condition relative to the as-found condition of the fuse and fuse holder. The finding also affected the cross cutting area of problem identification and resolution since the licensee failed to adequately address the degraded circuit condition in a timely manner.

Inspection Report# : [2005009\(pdf\)](#)

**G**

**Significance:** Dec 02, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

**NON-CONSERVATIVE ACCEPTANCE CRITERIA**

A finding of very low safety significance was identified by the inspectors for a violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control" requirements. Specifically, the licensee failed to incorporate the most restrictive hydraulic conditions into the calculation which established the acceptance criteria for a technical specification surveillance test. This resulted in a HPCS system hydraulic calculation that was non-conservative when determining the pump's minimum acceptance criteria. Once identified, the licensee evaluated operability and entered the finding into their corrective action program to revise the affected documents.

The finding was more than minor because the failure to account for all modes of HPCS system operation in the surveillance test's acceptance criteria could result in unacceptable degradation and could have affected the mitigating systems cornerstone objective. The finding was of very low safety significance because the licensee's analysis showed that adequate design margin existed for the HPCS system and did not represent an actual loss of a safety function.

Inspection Report# : [2005002\(pdf\)](#)

**G**

**Significance:** Dec 02, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

**INADEQUATE HEAT EXCHANGER THERMAL PERFORMANCE TESTING**

A finding of very low safety significance was identified by the inspectors for a violation of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control" requirements. Specifically, in 2000, 2002 and 2003, the licensee failed to recognize that the calculated value for the diesel generator (DG) jacket-water (JW) flow rate, as determined from test data

obtained during thermal performance testing of the Division III DG JW cooler heat exchanger (HX), was significantly higher than the flow rate that could be attained by the engine-driven water pump. Once identified, the licensee entered the finding into their corrective action program as Condition Report (CR) 426459, "NRC SSD&PC Is the Calculated Process Flow Rate Reasonable," dated November 21, 2005, and CR429726, "Discrepancies Not Identified in Corrective Action Process," dated December 2, 2005, to evaluate and/or revise the affected test procedures.

The finding was more than minor because the failure to account for flow rates that were significantly greater than that identified by the equipment's design specification produced equipment performance data that did not accurately demonstrate the HX's availability and reliability. The finding was of very low safety significance because the licensee's evaluation showed that the Division III DG's JW Cooler HX would have performed its safety function and did not represent an actual loss of a safety function. A contributing cause of the finding was related to the cross-cutting element of problem identification and resolution. Specifically, a similar issue was identified during another NRC inspection in 2001; however, the licensee did not properly evaluate and take actions. As a result, testing done in 2002 and 2003 showed the same discrepant flow rates.

Inspection Report# : [2005002\(pdf\)](#)

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## Barrier Integrity

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## Emergency Preparedness

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## Occupational Radiation Safety

**Significance:**  Mar 31, 2006

Identified By: NRC

Item Type: FIN Finding

### **FAILURE TO MAINTAIN COLLECTIVE RADIATION DOSE TO OCCUPATIONAL WORKERS INVOLVED IN REFUEL FLOOR WORK ALARA.**

An inspector-identified finding of very low safety significance was identified for the failure to maintain the collective dose As-Low-As-Is-Reasonably-Achievable (ALARA) for refuel floor non-cavity work that was conducted during the February 2006 refueling outage. The additional, unintended dose was attributable to deficiencies in both work planning and work execution. The actual collective dose for this work activity was approximately 14 person-rem compared to the licensee's initial dose estimate of 4.4 person-rem. A revised dose estimate of about 7 person-rem was determined by the inspectors based on reasonably unexpected changes in radiological conditions and equipment problems. Consequently, the collective dose for this work exceeded 5 rem and exceeded the revised dose projection by more than 50 percent.

The issue was more than minor because it was associated with the Program/Process (ALARA planning) attribute of the Occupational Radiation Safety cornerstone and affected the cornerstone objective to ensure adequate protection of worker health and safety from exposure to radiation. This issue represents a finding of very low safety significance because it involved ALARA planning; however, the Clinton plant's current 3-year rolling average collective dose does not exceed 240 person-rem. The licensee entered this radiological work planning/dose performance problem into its outage lessons learned database to allow the development of measures to better plan and execute refuel floor work during future refueling outages. Inspection Report# : [2006002\(pdf\)](#)

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## Public Radiation Safety

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## **Physical Protection**

[Physical Protection](#) information not publicly available.

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## **Miscellaneous**

Last modified : December 21, 2006