

Clinton

3Q/2008 Plant Inspection Findings

Initiating Events

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Significance: Sep 30, 2008

Identified By: Self-Revealing

Item Type: FIN Finding

FAILURE TO PERFORM ADEQUATE POST MAINTENANCE TESTING RESULTED IN HIGH REACTOR VESSEL WATER LEVEL (LEVEL 8) SCRAM

The inspectors identified a finding of very low safety significance associated with a self-revealed event that resulted in a Unit 1 reactor scram. The licensee failed to perform adequate post maintenance testing following replacement of the feedwater level control system dynamic compensator card during the Cycle 10 refueling outage that concluded in February 2006. This resulted in ineffective response from the feedwater level control system and a subsequent reactor scram following the unexpected loss of a reactor recirculation pump. The ineffective feedwater level control system response has not been corrected; however, the licensee entered this issue into its corrective action program for evaluation. No violation of regulatory requirements was identified.

The finding was of more than minor significance because this issue was associated with the Equipment Performance attribute of the Initiating Events cornerstone and adversely affected the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions during power operations. Specifically, inadequate post maintenance testing resulted in ineffective response from the feedwater level control system during a loss of a reactor recirculation pump transient and caused a reactor scram. The finding was of very low safety significance because the issue: (1) did not contribute to the likelihood of a primary or secondary system loss-of-coolant-accident initiator, (2) did not contribute to both the likelihood of a reactor trip 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 did not identify a cross-cutting area component related to this finding.

Inspection Report# : [2008004](#) (*pdf*)

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Significance: Sep 30, 2008

Identified By: Self-Revealing

Item Type: FIN Finding

FAILURE TO EVALUATE AN UNEXPECTED AND UNKNOWN CAUSE FOR STRAY VOLTAGE IN THE END-OF-CYCLE RECIRCULATION PUMP TRIP CIRCUIT DURING POST MODIFICATION TESTING RESULTED IN A REACTOR RECIRCULATION PUMP TRIP

The inspectors identified a finding of very low safety significance associated with a self-revealed event that resulted in the unexpected loss of a reactor recirculation pump. The licensee failed to evaluate an unexpected and unknown cause for stray voltage in the End-of-Cycle Recirculation Pump Trip (EOC-RPT) circuit during post modification testing during the Cycle 11 refueling outage that concluded in February 2008. This resulted in the unexpected loss of a reactor recirculation pump and the subsequent plant transient that led to a reactor scram. As an immediate and interim corrective action, the licensee implemented a design change to the EOC-RPT circuitry that should prevent inadvertent relay actuation causing recirculation pumps trips due to the stray voltage problem. No violation of regulatory requirements was identified.

The finding was of more than minor significance because this issue was associated with the Equipment Performance attribute of the Initiating Events cornerstone and adversely affected the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions during power operations. Specifically, the failure to evaluate an unexpected and unknown cause for stray voltage in the EOC-RPT circuit during post modification testing resulted in the unexpected loss of a reactor recirculation pump and the subsequent plant transient that led to a reactor scram. The finding was of very low safety significance because the issue: (1) did not contribute to the likelihood of a primary or secondary system loss-of-coolant-accident initiator, (2) did not contribute to both the likelihood of a reactor trip AND the likelihood that mitigation equipment for 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, the licensee failed to appropriately incorporate risk insights in investigating and resolving an unexplained source of voltage in a circuit that had a high risk consequence (i.e., reactor recirculation pump trip). (IMC 0305 H.3(a))

Inspection Report# : [2008004](#) (*pdf*)

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Significance: Mar 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW APPROVED FIRE PROTECTION PROGRAM PROCEDURES CONCERNING CONTROL OF TRANSIENT COMBUSTIBLE MATERIAL.

The inspectors identified a performance deficiency involving a Non-Cited Violation (NCV) of Clinton Power Station Operating License NPF-62, Section 2.F for failure to implement the fire protection program in accordance with program requirements. The inspectors identified

multiple instances of the licensee's failure to follow approved fire protection program procedures concerning control of transient combustible material. Corrective actions for this issue included removing the unattended combustible material, initiating transient combustible permits, and/or initiating compensatory measures.

The inspectors determined that this issue was more than minor because the identified transient combustibles were in a combustible free zone required for separation of redundant trains. This finding was of very low safety significance because the transient combustible materials identified by the inspectors were not combustibles of significance. The inspectors determined that this finding was cross-cutting in the area of Problem Identification and Resolution. Specifically, the licensee implements a corrective action program with a low threshold for identifying issues. The licensee identifies such issues completely, accurately, and in a timely manner commensurate with their safety significance (P.1 (a)).

Inspection Report# : [2008002](#) (*pdf*)

Significance:  Mar 31, 2008

Identified By: NRC

Item Type: FIN Finding

THE LICENSEE DISCOVERED THAT THE WRONG COMPONENT WAS INSTALLED IN THE B TURBINE DRIVEN REACTOR FEED PUMP OIL PRESSURE SENSING LOGIC.

A finding of very low safety significance was self-revealed by the automatic runback of the turbine driven reactor feed pump during post outage power ascension. The licensee discovered that the wrong component was installed in the B turbine driven reactor feed pump oil pressure sensing logic. The inspectors determined that the licensee failed to perform an adequate post maintenance test in accordance with procedures. This issue resulted in an unexpected power change from 54 percent power to 46 percent power. The licensee entered the issue into the corrective action program, performed tailgate discussions with technicians and work planners on the oil pressure switches were up to date in the materials and work management computer system.

The inspectors determined this issue was more than minor because it was associated with the Human Performance attribute of the Initiating Events Cornerstone and affected the cornerstone objective of limiting the frequency of those events that upset plant stability. Specifically, the failure to perform adequate post maintenance testing of pressure switch 1PS-FW 135 permitted the wrong component to be installed and placed in service. This deficiency ultimately resulted in an unplanned plant transient. The finding was of very low safety significance because this issue did not increase the likelihood that mitigation equipment or fundctions would not be available. The inspectors also concluded that the failure of the technician to properly follow calibration procedure 8801.01 during the initial calibration of this switch represented a cross-cutting issue in the area of Human Performance, Work Practices (H.4(b)), because licensee personnel failed to follow procedures in regard to pressure switch calibration.

Inspection Report# : [2008002](#) (*pdf*)

Significance:  Mar 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

DURING THE PERFORMANCE OF NRC FINAL DRYWELL CLOSEOUT, THE INSPECTORS NOTED THAT FOREIGN MATERIAL/HOUSEKEEPING SOCK HAD NOT BEEN REMOVED FROM THE DRYWELL FLOOR DRAINS.

The inspectors identified a finding and an associated NCV of 10 CFR Part 50, Appendix B, Criteria V, "Instructions, Procedures, and Drawings," having a very low safety significance during drywell closeout inspections. Specifically, during the performance of the NRC final drywell closeout, the inspectors noted that foreign material/housekeeping socks had not been removed from the drywell floor drains. This issue could have resulted in the drywell leak detection system being inoperable following a reactor event. The licensee proedures for drywell closeout directed licensee staff to remove all loose material and devices associated with the licensee material condition and housekeeping program. The licensee's corrective actions for this issue included removing the floor drain socks and incorporating a work activities item for sock removal in the outage schedule template.

The inspectors determined that this issue was more than minor because, if left uncorrected, it could result in a more significant safety concern. Failure to remove drain socks from drywell floor drains could result in the inability to readily detect and track unidentified leakage following a reactor event. The finding was of very low safety significance because this finding did not result in exceeding the Technical Specification limit for reactor coolant system (RCS) leakage nor did it affect other mitigating systems resulting in a total loss of their safety function. The inspectors also concluded that this issue was a result of no work item in the outage schedule to remove the socks, and therefore represented a cross-cutting issue in the are of Human Performance, Work Control (H.3(b)).

Inspection Report# : [2008002](#) (*pdf*)

Significance:  Dec 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to implement fire protection program in accordance with program requirements

Identified a performance deficiency involving a NCV of Clinton Power Station Operating License NPF-62, Section 2.F for failure to implement fire protection program in accordance with program requirements. Inspectors identified multiple instances of the licensee failure to follow program procedures concerning control of Transient Combustible Material and Fire Protection Impairment Reporting. Corrective actions included removing the unattended combustible material and repairing latches on the fire doors.

This issue was more than minor because it could be a precursor to a significant event. A fire had potential of impacting safety related equipment used for safe shutdown purposes. This finding was of very low safety significance because the transient material identified by the inspectors were not combustibles of significance, and the licensee maintained fire suppression systems in the areas where the fire door latches were not functional. This finding was cross-cutting in the area of P.1(a) because the licensee failed to identify these issues in their corrective action program.

Inspection Report# : [2007005](#) (*pdf*)

Mitigating Systems

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Significance: Sep 30, 2008

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO PERFORM ADEQUATE PREVENTIVE MAINTENANCE ON SHUTDOWN SERVICE WATER VALVE 1SX014A RESULTED IN SIGNIFICANT DEGRADATION AND GROSS SEAT LEAKAGE

A finding of very low safety significance with an associated Non-Cited Violation of Technical Specification (TS) 5.4.1.a was self-revealed. The licensee failed to perform adequate preventive maintenance on shutdown service water system valve 1SX014A. This resulted in significant degradation of the valve body by corrosion due to prolonged exposure to raw service water that went undetected until gross seat leakage was discovered while attempting to establish conditions for surveillance testing. The licensee replaced the valve and has established a preventive maintenance schedule for internal valve inspections.

The finding would become a more significant safety concern if left uncorrected and was therefore more than a minor concern. Specifically, the failure to adequately perform preventive maintenance could reasonably result in significantly degraded or inoperable safety related equipment. Because the shutdown service water system was primarily associated with long term decay heat removal following certain design basis accidents, the inspectors concluded that this issue was associated with the Mitigating Systems cornerstone. The finding was of very low safety significance because the issue: (1) was not a design or qualification deficiency; (2) did not represent an actual loss of safety function of a system; (3) did not represent an actual loss of safety function of a single train for greater than its TS allowed outage time; (4) did not represent an actual loss of safety function of one or more non-TS trains of equipment designated as risk significant; and (5) did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The inspectors concluded that this finding affected the cross-cutting area of human performance. Specifically, the licensee's investigation determined that internal valve inspections were not performed because the component category was incorrectly classified. (IMC 0305 H.3(b))

Inspection Report# : [2008004](#) (*pdf*)

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Significance: Sep 30, 2008

Identified By: NRC

Item Type: FIN Finding

FAILURE TO RECOGNIZE THE SAFETY RELATED SYSTEM FUNCTION OF THE 1B RESIDUAL HEAT REMOVAL PUMP SEAL COOLER WHEN EVALUATING PAST OPERABILITY OF THE PUMP.

The inspectors identified a finding of very low safety significance associated with the licensee's failure to recognize the safety related system function of the 1B residual heat removal pump seal cooler when initially evaluating the past operability of the pump after unacceptable results were obtained during service water system flow balance testing. No analysis was performed to ensure that the pump's safety function would be fulfilled with less than minimum design flow to the cooler until the inspectors challenged the licensee's original conclusion. The licensee re-performed the past operability evaluation and determined that sufficient margin existed such that the pump would have been able to fulfill its safety function with significantly less than design flow to the seal cooler as measured during the test. No violation of regulatory requirements was identified.

The finding would become a more significant safety concern if left uncorrected and was therefore more than a minor concern. Specifically, the failure to correctly recognize the safety related functions of systems or components when performing operability or past operability evaluations could reasonably result in an unrecognized condition of a system failing to fulfill its safety related function. In addition, based on review of examples of minor issues in Inspection Manual Chapter 0612, "Power Reactor Inspection Reports," Appendix E, "Examples of Minor Issues," evaluation errors resulting in a reasonable doubt about the operability of a system or component are generally not considered to be of minor significance. Because the residual heat removal system was primarily associated with long term decay heat removal following certain design basis accidents, the inspectors concluded that this issue was associated with the Mitigating Systems cornerstone. The finding was of very low safety significance because the issue: (1) was not a design or qualification deficiency; (2) did not represent an actual loss of safety function of a system; (3) did not represent an actual loss of safety function of a single train for greater than its Technical Specification (TS) allowed outage time; (4) did not represent an actual loss of safety function of one or more non-TS trains of equipment designated as risk significant; and (5) did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. Subsequent evaluation was able to determine that sufficient margin in flow existed for the time period in question. The inspectors did not identify a cross-cutting area component related to this finding.

Inspection Report# : [2008004](#) (*pdf*)



Significance: Dec 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PERFORM POST MODIFICATION TESTING TO SHUTDOWN SERVICE WATER VACUUM BREAKERS

Identified a NCV of 10 CFR Part 50, App B, Crit XI, Test Controls, having a low safety significance for failure to properly test a permanent plant modification to the Div 1 & 2 SX. This resulted in two of four vacuum breakers that failed the minimal design specification during testing.

It was determined that the issue was more than minor because it is viewed as a precursor to a significant event. Failure to perform modification testing could lead to components within safety-related systems that do not work as designed. Through detailed analysis the licensee concluded that the hydraulic experience with the vacuum breaker not meeting the minimal design specification would not make the shutdown service water system inoperable. This finding had a cross-cutting aspect in the area of H.4(c) because there were multiple opportunities for the licensee engineering staff to identify the need for this testing.

Inspection Report# : [2007005](#) (*pdf*)



Significance: Dec 19, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Continuously Submerged Cables Design Deficiency

The team identified an NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," having very low safety significance involving inadequate cable design. Specifically, the team identified that the licensee failed to incorporate appropriate licensing and design basis requirements reflecting worst case environmental conditions for power and control safety related cables. Incorporation of these requirements would have ensured that the cables were designed for the continuous submerged conditions that are experienced at Clinton. The issue was entered into the licensee's corrective action program to initiate a review of the current cable monitoring programs, and to initiate long-term corrective actions. This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program, because the licensee did not thoroughly evaluate problems such as the resolutions, address causes, and extent of condition (P.1 (c)).

Inspection Report# : [2007008](#) (*pdf*)



Significance: Dec 19, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Division 3 Emergency Diesel Generator Neutral Ground Resistor Design Inadequacy

The team identified an NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," having very low safety significance involving inadequate equipment design. Specifically, the Division 3, emergency diesel generator (EDG) neutral ground resistor was found to be in a non-ventilated enclosure contrary to the USAR, which called for a ventilated housing. The issue was entered into the licensee's corrective action program to address this non-conforming condition and develop a design change to enhance ventilation for the resistor. The team determined that there was no cross-cutting aspect to this finding.

Inspection Report# : [2007008](#) (*pdf*)



Significance: Dec 19, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Design of Emergency Diesel Generator Exhaust

The team identified an NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," having very low safety significance involving inadequate design of the emergency diesel generator (EDG) exhaust sub-systems. Specifically, the licensee failed to properly account for severe weather in the design of the exhaust ducts for the EDGs. Consequently, during severe weather conditions, icing or glazing could potentially result in blockage of the exhaust ducts screens located at the duct outlet and in exceeding the backpressure requirements of the ducts. Once identified, the licensee initiated a prompt operability evaluation to verify system operability and an Issue Report which included appropriate compensatory actions. The team determined that there was no cross-cutting aspect to this finding.

Inspection Report# : [2007008](#) (*pdf*)



Significance: Dec 19, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Residual Heat Removal Pipe Support Calculation Deficiencies

The team identified an NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," having very low safety significance involving a temporary installation that added lead shielding to the Unit 1 residual heat removal (RHR) piping. Specifically, the team identified numerous non-conservative technical errors and calculation omissions in seismic design basis analysis calculations that supported this temporary

installation. Once identified, the licensee initiated a prompt operability evaluation to verify system operability and an Issue Report which included appropriate compensatory actions. The cause of the finding is related to the cross-cutting element of Human Performance Resources, because the licensee did not provide complete, accurate and up-to-date design documentation to assure nuclear safety (H.2(c)). Specifically, the licensee had the temporary installation of lead shielding in place since 2002 and did not formally update the associated pipe support calculations in a timely manner.

Inspection Report# : [2007008](#) (*pdf*)

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Significance: Dec 19, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Inappropriate SX Pump Test Acceptance Criteria

The team identified an NCV of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," having very low safety significance, in that, the shutdown service water (SX) pump tests conducted did not appropriately demonstrate that the SX pumps met design basis accident requirements. Specifically, the pump test acceptance criteria allowed the pump performance to degrade below the performance assumed by the design analysis. Once identified, this finding was entered into the licensee's corrective action program and the licensee completed an evaluation and retesting that demonstrated the pumps' capacity to perform required safety functions. The team determined that there was no cross-cutting aspect to this finding.

Inspection Report# : [2007008](#) (*pdf*)

Barrier Integrity

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Significance: Mar 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO EVALUATE HYDRAULIC POWER UNIT PIPING FOR IMPACT WITH CONTAINMENT ATMOSPHERE MONITORING LINE.

The inspectors identified a finding and an associated NCV of 10 CFR Part 50, Appendix b, Criterion XVI, "Corrective Actions," having very low safety significance, in that, inevaluating whether the reactor recirculation flow control valve "A" hydraulic power unit (HPU) piping was adequately supported in response to concerns raised in two condition reports, the licensee did not adequately address that the as-build support configuration had not been properly verified from a design standpoint. In particular, the licensee did not consider the safety related classification of nearby containment/drywell atmosphere monitoring tubing and that this tubing could be impacted if the HPU piping failed during a postulated design basis seismic event. Hence, the licensee did not implement the additional evaluation/calculations required to demonstrate the HPU piping met more stringent design requirements and was adequately supported. The primary cause of the violation was related to the cross-cutting component of Human Performance, Resources (H.2(c)) because the licensee failed to maintain complete, accurate, and up-to-date design documentation. Subsequently, the licensee performed evaluations/calculations demonstrating that the HPU piping will not adversely impact the safety related containment monitoring tubing during a design basis seismic event. The licensee entered the finding in the corrective action program as Action Request 723620.

The finding was more than minor because it was associated with the Barrier Integrity Cornerstone and affected the cornerstone objective of maintaining functionality of containment due to the potential impact on the safety related containment atmosphere monitoring system which was needed to monitor and to take actions to mitigate challenges to containment integrity. The finding was of very low safety significance because the licensee's preliminary results based on conservative calculation indicated that the design basis requirements were met, and hence field modifications were not necessary.

Inspection Report# : [2008002](#) (*pdf*)

Emergency Preparedness

Occupational Radiation Safety

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Significance: Mar 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO BARRICADE AND LOCK A LOCKED HIGH RADIATION AREA.

The inspectors identified a finding of very low safety significance and an associated NCV of Technical Specification 5.7.2 for failure to barricade, lock, or continuously guard a high radiation area with dose rates greater than 1000 millirem per hour. On January 24, 2008, licensee staff failed to properly barricade and lock or guard three entrances to the under vessel area of the drywell. As corrective actions, the licensee suspended access to the Radiologically controlled Area (RCA) for the personnel involved and initiated a prompt investigation, including assessment of the extent of conditon plant-wide. The licensee entered the issued into the corrective action program as IR 726499.

The finding was more than minor because it was associated with the Program/Process attribute of the Occupational Radiation Safety Cornerstone and affected the cornerstone objective to ensure worker health and safety from exposure to radiation, in that, failure to follow procedures for control of locked high radiation areas could result in unplanned exposure. the finding was determined to be of vey low safety significance because the finding did not involve As-Low-As-Is-Reasonably-Achievable (ALARA) planning, collective dose was not a factor, it did not involve an overexposure, there was not a substantial potential for a worker overexposure, and the licensee's ability to assess worker dose was not compromised. Additionally, this finding has a cross cutting aspect in the the area of Human Performance because radiation protection staff did not appropriately follow procedures (H.4(b)) which governed control of access into locked high radiation areas.

Inspection Report# : [2008002](#) (*pdf*)

Public Radiation Safety

Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Last modified : November 26, 2008