

Clinton

2Q/2009 Plant Inspection Findings

Initiating Events

Significance:  Dec 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO CONTROL TRANSIENT COMBUSTIBLE MATERIALS IN ACCORDANCE WITH FIRE PROTECTION PROGRAM.

GREEN. The inspectors identified a finding of very low safety significance with an associated Non-Cited Violation of the Clinton Power Station Unit 1 Operating License (NPF-62, Section 2.F). The licensee failed to implement the fire protection program in accordance with program requirements by failing to follow approved fire protection program procedures for the control of transient combustible materials. The licensee promptly removed transient combustible materials found by the inspectors and subsequently completed a detailed walk down of the plant's transient combustible free zones to identify and remove any additional transient combustible materials.

The inspectors concluded that this finding could be reasonably viewed as a precursor to a significant event (i.e., a fire affecting more than one train of safe shutdown equipment). Specifically, the presence of transient combustible materials in a combustible free zone could reasonably result in degradation of the fire protection defense-in-depth elements in place to prevent fires from starting and mitigate the consequences of fires. In addition, based on review of Example 4k in Inspection Manual Chapter (IMC) 0612, "Power Reactor Inspection Reports," Appendix E, "Examples of Minor Issues," the issue would not be considered to be of minor significance because the identified transient combustibles were found in a combustible free zone required for separation of redundant trains. The finding was of very low safety significance because the items found in the combustible free zone would not be considered transient combustibles of significance as defined in IMC 0609, Appendix F, "Fire Protection Significance Determination Process," Attachment 2, "Degradation Rating Guidance Specific to Various Fire Protection Program Elements," and therefore the issue was assigned a "low degradation" rating. The inspectors concluded that this finding affected the cross-cutting area of problem identification and resolution. Specifically, the licensee missed an opportunity to identify and remove the transient combustible materials while implementing corrective actions for previously inspector identified findings involving the control of transient combustible materials. (IMC 0305 P.1 (a))
Inspection Report# : [2008005](#) (*pdf*)

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*)

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*)

Mitigating Systems

Significance:  Jun 30, 2009

Identified By: NRC

Item Type: FIN Finding

FAILURE TO EVALUTE SAFETY FUNCTION OF SUPPRESSION POOL MAKEUP SYSTEM

The inspectors identified a finding of very low safety significance associated with the licensee's failure to recognize a potential loss of safety function for the suppression pool makeup system following the loss of upper containment pool inventory when spent fuel pool cooling system flow control valve 1FC004A failed closed. No evaluation was performed to ensure that the suppression pool makeup system's safety function would be fulfilled with less than Technical Specification (TS) minimum containment upper pool level. The licensee subsequently performed an evaluation and determined that sufficient margin existed such that the system would have been able to fulfill its safety function with limited margin. Corrective actions to address the inadequate reportability review included training for licensed senior reactor operators and development of a formal operability/reportability review process template. 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 and evaluate a potential loss of a safety function of systems, structures, and 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. Because the suppression pool makeup 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 because the licensee did not have a formal process in place with adequate guidance and training to enable licensed senior reactor operators, whose responsibility it was to evaluate a potential loss of safety function, to correctly do so. As a result, senior reactor operators did not adequately review the TS Bases to understand and evaluate whether the system was able to fulfill its safety function. (IMC 0305 H.1(a))

Inspection Report# : [2009003](#) (*pdf*)

Significance:  Jun 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PERFORM SURVEILLANCE TESTING ON THE DIVISION 3 SHUTDOWN SERVICE WATER PUMP WITH ADEQUATE MEASURING AND TEST EQUIPMENT.

The inspectors identified a finding of very low safety significance with an associated Non-Cited Violation of 10 CFR 50, Appendix B, Criteria XII, "Control of Measuring and Test Equipment," and 10 CFR 50, Appendix B, Criteria SI, "Test Control." The licensee failed to perform surveillance testing on the Division 3 shutdown service water pump with a lake level gage that was properly controlled and adjusted to ensure that it was readable within the range it was used. The licensee subsequently replaced the unreadable lake level gage section with one that was readable and implemented additional corrective actions to address a lapse in operations standards.

The inspectors concluded that this finding would become a more significant safety concern if left uncorrected and it was therefore more than a minor concern. Specifically, the failure to perform surveillance testing with properly controlled and accurate measuring and test equipment could reasonably result in the failure to identify degraded or inoperable safety-related components. 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 was a design or qualification deficiency confirmed not to result in loss of operability or availability. The inspectors concluded that this finding affected the cross-cutting area of problem identification and resolution because the licensee was not properly maintaining the lake level gage to ensure that it would remain usable and did not correct the degraded level gage in a timely manner after it was identified. As a result, operators accepted the degraded level gage for continued use. (IMC 0305 P.1(d))

Inspection Report# : [2009003](#) (*pdf*)

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*)

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*)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

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

Significance: N/A Apr 17, 2009

Identified By: NRC

Item Type: FIN Finding

Biennial PI&R Inspection Summary

The inspectors concluded that the implementation of the corrective action program (CAP) at Clinton was generally good. The licensee had a low threshold for identifying station problems and entering them into the CAP. In addition, the station was effective at incorporating operating experience reports into the CAP. The inspectors determined that issues were generally effectively screened and prioritized in a timely manner using established criteria based on plant risk and uncertainty. Casual evaluations sampled were of sufficient depth, considered extent of condition, generic issues, and previous occurrences. Corrective actions program assignments were generally completed in a timely and accurate manner. The team noted that station effectiveness reviews, audits, and self assessment were generally thorough and effective at identifying unrecognized weakness. The inspectors concluded that station employees appeared to be willing to express safety concerns through established processes and a healthy safety conscious work environment (SCWE) existed at the station.

Inspection Report# : [2009007](#) (*pdf*)

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