Waterford 3
2Q/2011 Plant Inspection Findings

Initiating Events

Significance: SL-IV Jun 30, 2011
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Update the FSAR following Modifications to the Reactor Coolant Pump Vapor Seals.
The inspectors identified a Severity Level IV non-cited violation of 10 CFR 50.71(e) because the licensee did not revise the final safety analysis report (FSAR) as updated with information consistent with plant conditions. Specifically, the licensee did not update Section 5.4.1.3 of the FSAR for Waterford Steam Electric Station, Unit 3 following modifications to the reactor coolant pump vapor seals in 2007 and 2009, respectively. As a result, the licensee did not promptly identify and correct FSAR noncompliance. The licensee entered this issue into their corrective action program for resolution as CR-WF3-2010-7421. The planned corrective actions include revising the FSAR as updated and replacing the degraded reactor coolant pump seals during the next two refueling outages.

The inspectors considered this issue to be within the traditional enforcement process because it has the potential to impede or impact the NRC's ability to perform its regulatory function. The inspectors used the NRC Enforcement Policy to evaluate the significance of this violation. The inspectors concluded that the violation is more than minor because the longstanding and incorrect information in the FSAR as updated had a material impact on safety and licensed activities. The material impact is that the modifications created a reactor coolant pump seal loss of coolant accident likelihood inside containment, which could have potentially impacted licensed activities. The inspectors determined the violation is a Severity Level IV (very low safety significance) since the erroneous information not updated in the FSAR was not used to make an unacceptable change to the facility nor impacted a licensing or safety decision by the NRC. The inspectors determined there is a cross-cutting aspect in the corrective action component of the problem identification and resolution area. Specifically, the licensee did not thoroughly evaluate and take adequate actions in a timely manner to update the FSAR to be consistent with plant conditions [P.1.c of IMC 0310] (Section 1R18).

Inspection Report# : 2011003 *(pdf)*

Significance: G Jun 30, 2011
Identified By: Self-Revealing
Item Type: FIN Finding
Failure to Implement Work Order Instructions to Restore a Feedwater Heater Drain Valve.
A self-revealing finding occurred because maintenance personnel did not follow written procedures during the calibration of a level switch that controls feedwater heater drain valve FHD703A. Specifically, the licensee did not perform concurrent verification checks as required by documented work order instructions (WO-00180716) to ensure that personnel restore manipulate components to the correct position following maintenance. As a result, the feedwater heater drain valve remained in a closed manipulate state, which caused a spurious isolation of a string of feedwater heaters. The isolation of the feedwater heaters caused operators to down power the reactor to approximately 72 percent. The licensee entered this issue into their corrective action program for resolution as CR-WF3-2009-7420. The immediate corrective actions included restoring the feedwater heater drain valve to its proper position.

The finding is more than minor because it is associated with the human performance attribute of the Initiating Events cornerstone and affects 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. Specifically, the human error caused an event that upset plant stability during power operation. The inspectors evaluated this finding using IMC 0609 Attachment 4, “Phase 1 – Initial Screening and Characterization of Findings.” The inspectors determined that the finding is of very low safety significance (Green) because it does not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available. The finding has a cross-cutting aspect in the work practices component of the human performance area because the licensee’s personnel proceed in the face

of uncertainty or unexpected circumstances [H.4.a of IMC 0310] (Section 4OA2.3).

Inspection Report# : 2011003 *(pdf)*

Significance: G Mar 31, 2011
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to follow Operability Determination Process for a Degraded and Non-Conforming condition Related to Reactor Coolant Pump N9000 Seals
The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” because the licensee did not adequately implement the operability determination process requirements in accordance with EN-OP-104, “Operability Determination Process.” Specifically, the licensee did not monitor a degraded and non-conformance condition associated with the reactor coolant pump N-9000 stage seals as required by EN-OP-104. As a result, the licensee did not perform a new operability determination after assumptions and compensatory measures identified in the original operability determination changed. This also led to compliance issues with technical specifications and missed maintenance rule functional failures. The licensee entered this issue into their corrective action program for resolution as CR-WF3-2011-1965. The immediate corrective actions included revising the operability determination to account for the current configuration. The planned corrective actions included the licensee replacing the degraded reactor coolant pump seals during the next two refueling outages.

The finding is more than minor because it is associated with the equipment performance attribute of the initiating events cornerstone and affects 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. Specifically, the licensee did not frequently and regularly review a degraded and nonconforming condition that had the potential to lead to a small loss of coolant accident. The inspectors evaluated this finding using IMC 0609 Attachment 4, “Phase 1 – Initial Screening and Characterization of Findings.” The inspectors determined that the finding is of very low safety significance (Green) because it is not a design or qualification deficiency, did not represent a loss of a safety function of a system or a single train greater than its technical specification completion time, and did not screen as potentially risk significant due to external events. The finding has a cross-cutting aspect in the corrective action program component of the problem identification and resolution area because the licensee did not thoroughly evaluate problems such that the resolutions address causes and extent of conditions, as necessary. This includes properly classifying, prioritizing, and evaluating for operability and reportability conditions adverse to quality.

Inspection Report# : 2011002 *(pdf)*

Mitigating Systems

Significance: G Jun 30, 2011
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Evaluate and Adequately Monitor Activities Associated with the Internal Conditions of the Condensate and Refueling Water Storage Pool Structures.
The inspectors identified a non-cited violation of 10 CFR 50.65(a)(3) because the licensee did not evaluate or adequately monitor activities associated with the condition of the condensate and refueling water storage pools structures. Specifically, the licensee did not evaluate the internal condition of the storage pools through the performance of appropriate preventive maintenance activities and did not evaluate these activities at least every refueling cycle, where practical, for industry-wide operating experience. As a result, there is no preventive maintenance developed for this activity when previous industry-wide operating experience documented previous issues of concrete deterioration due to contact with boric acid over a long period of time. The licensee entered this issue into their corrective action program for resolution as CR-WF3-2011-1168. The planned corrective actions include the development of appropriate preventive maintenance activities to examine the internal conditions of the storage pool structures during the refuel outages.

The finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems Cornerstone and affects the cornerstone objective to ensure the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, with no preventive maintenance to monitor the internal conditions of the storage pools, this would impact the reliability of the structures. The inspectors evaluated this finding using IMC 0609 Attachment 4, “Phase 1 – Initial Screening and Characterization of Findings.” The inspectors determined that the finding is of very low safety significance (Green) because the finding is not a design or qualification deficiency, did not represent a loss of a safety function of a system or a single train greater than it technical specification completion time, and did not screen potentially risk significant due to external events. The finding has a cross-cutting aspect in the operating experience component of the problem identification and resolution area because the licensee did not implement and institutionalizes operating experience through changes to station processes, procedures, equipment, and training programs [P.2.b of IMC 0310] (Section 1R12).

Inspection Report# : 2011003 *(pdf)*

Significance: G Jun 30, 2011
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Failure to Implement Written Procedures for Restoring a Time Delay Relay Associated with the 'A' Emergency Diesel Generator Output Breaker.
A self-revealing non-cited violation of Technical Specification 6.8.1.a occurred because the licensee did not implement written procedures and instructions. Specifically, maintenance personnel did not follow procedure ME-007-005, “Time Delay Relay Setting Check, Adjustment, and Functional Test”, during the lifting leads process for restoration of a time delay relay (EG EREL2327-C) associated with the ‘A’ emergency diesel generator (EDG) maintenance activity. As a result, the ‘A’ EDG output breaker did not automatically close during technical specification surveillance testing because the leads on the relay were wired incorrectly. The licensee entered this issue into their corrective action program for resolution as CR-WF3-2011-3190. The immediate corrective action included the re-wiring of the relay.

The finding is more than minor because it is associated with the human and equipment performance attributes of the Mitigating Systems Cornerstone and affects the cornerstone objective to ensure the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the licensee did not ensure the availability, reliability and capability of the ‘A’ EDG through human error prevention techniques. The senior resident inspector performed the initial significance determination for the diesel generator output breaker failure. The inspector used the NRC IMC 0609, Attachment 0609.04, “Phase 1 – Initial Screening and Characterization of Findings.” The finding screened to a Phase 2 significance determination because it involved a potential loss of one train of safety related equipment for longer than the technical specification allowed outage time. A Region IV senior reactor analyst performed a Phase 2 significance determination and used the pre-solved worksheet from the “Risk Informed Inspection Notebook for the Waterford-3 Nuclear Power Plant,” Revision 2.01a. The senior reactor analyst considered the output breaker a part of the emergency diesel generator component boundary. Assuming a one year exposure period, the finding was potentially Yellow, which warranted further review. Therefore, the senior reactor analyst performed a bounding Phase 3 significance determination. The analyst determined that the finding was of very low safety significance (Green). The bounding change to the core damage frequency was approximately 5.4E-7/year. The dominant core damage sequences included loss of offsite power events, failure of the output breaker recovery action, independent failure of the other emergency diesel generator and failure to recover offsite power in 4 hours. Equipment that helped mitigate the risk included the ability of an operator to recover the output breaker. The finding has a cross-cutting aspect in the work practices component of the human performance area because the licensee did not communicate human performance error prevention techniques, such as self and peer checking, and proper documentation of activities [H.4.a of IMC 0310] (Section 1R19).

Inspection Report# : 2011003 *(pdf)*

Significance: G Dec 31, 2010
Identified By: Self-Revealing
Item Type: NCV NonCited Violation

Failure to Conduct Timely Corrective Actions to Replace Degraded Diodes in Safety Related Inverters
A self-revealing non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion XVI, “Corrective Action,” occurred because the licensee did not promptly correct a condition adverse to quality that affected static uninterruptible power supply inverters used to power vital and safety related loads. Specifically, the licensee did not conduct timely corrective actions following identification of degraded diodes in static uninterruptible power supplies A and B, respectively. As a result, this led to another failure of the static uninterruptible power supply A. The licensee entered this issue into their corrective action program (CAP) for resolution as CR-WF3-2010-6760. The immediate corrective actions following the additional failure included installation of newly tested diodes from a different batch, new fuses and a new silicon controlled rectifier. The planned corrective actions included implementation of an increased condition based testing preventive maintenance frequency and a maintenance activity to perform pre-installation testing on all new diodes and rectifiers.

This finding is greater than minor because it is associated with the equipment performance attribute of the Mitigating System cornerstone and affects the cornerstone objective to ensure the availability and reliability of static uninterruptible power supply inverters that respond to initiating events to prevent undesirable consequences in that these inverters supply power to vital and safety related loads. The inspectors evaluated the significance of this finding using Phase 1 of the IMC 0609, Appendix A, “Significance Determination of Reactor Inspection Findings for At-Power Situations” given the importance of the system and the fact that this condition affects both static uninterruptible power supplies A and B. The inspectors determined that the finding was of very low safety significance (Green) because it is not a design or qualification deficiency, did not represent a loss of a safety function of a system or a single train greater than it Technical Specification allowed outage time, and did not screen as potentially risk significant due to external events. This finding has a crosscutting aspect in the decision-making component of human performance because the licensee did not make safety-significant or risk-significant decisions using a systematic process, especially when faced with uncertain or unexpected plant conditions, to ensure safety is maintained.

Inspection Report# : 2010005 *(pdf)*

Barrier Integrity

Significance: G Mar 31, 2011
Identified By: NRC
Item Type: NCV NonCited Violation
Control Room Envelope Preconditioning
The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XI, “Test Control,” because the licensee did not conduct required technical specification surveillance testing on equipment in an as-found condition. Specifically, the licensee performed corrective maintenance (preconditioning) on the system to achieve better results, prior to completing the surveillance. The licensee entered this issue into their corrective action program for resolution as CR-WF3-2011-1927. The immediate corrective action included the performance of the control room envelope tracer gas test.

The finding is more than minor because it is associated with the barrier performance attribute of the barrier integrity cornerstone and affects the cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, the licensee did not properly perform testing on equipment to evaluate barrier performance. The inspectors evaluated this finding using IMC 0609 Attachment 4, “Phase 1 – Initial Screening and Characterization of Findings.” The inspectors determined that the finding is of very low safety significance (Green) because the finding doesn’t represent a degradation of the radiological barrier, or the smoke and toxic gas barrier functions provided for the control room. The finding has a cross-cutting aspect in the work control component of the human performance area because the licensee did not appropriately plan work activities by incorporating the need for planned contingencies, compensatory actions, and abort criteria [H.3.a of IMC 0310] (Section 1R22).

Inspection Report# : 2011002 *(pdf)*

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

Last modified : October 14, 2011