Waterford 3
3Q/2016 Plant Inspection Findings

Initiating Events

Significance: G Oct 03, 2015
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Properly Pre-Plan and Perform Maintenance on the Core Element Assembly Calculators
The inspectors reviewed a self-revealing, Green, non-cited violation of Technical Specification 6.8.1.a associated with the licensee's failure to properly pre-plan and perform maintenance in accordance with EN-DC-153, "Preventative Maintenance Component Classification." The licensee entered this condition into their corrective action program as condition report CR-WF3-2015-06438. In their review of the event, the licensee found that, as part of a maintenance-optimization program in 2008, they had changed the classification of the CEACs from "High Critical" to "Low Critical." Consequently, the licensee discontinued the preventive-maintenance programs that had previously affected the CEACs, and had begun replacing them only as required. The licensee restored compliance by properly classifying the components as High Critical in accordance with EN-DC-153, Revision 2, and by initiating development of appropriate preventative-maintenance for the CEACs. In addition, the licensee initiated work to improve the reliability of the CEACs, including reviewing card refurbishments to enhance circuit card reliability.

The failure to pre-plan and perform preventative maintenance on CEAC components as required by EN-DC-153 step 5.2[6](c)(4) was a performance deficiency which was reasonably within the licensee's ability to foresee and correct. The performance deficiency is more than minor, and therefore is a finding, because it is associated with the Equipment Performance attribute of the Initiating Events Cornerstone 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. Specifically, inappropriate preventative maintenance on the circuit cards associated with the CEACs ultimately contributed to a plant trip on October 3, 2015. The inspectors screened the finding in accordance with NRC Inspection Manual Chapter (IMC) 0609, "Significance Determination Process." Using IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," the inspectors determined that the finding was of very low significance (Green) because the finding did not cause a trip and the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition.

Because the performance deficiency occurred in 2008, the inspectors concluded that the finding does not reflect current licensee performance and therefore did not assign a cross-cutting aspect.

Inspection Report# : 2015004 *(pdf)*

Mitigating Systems

Significance: G Jun 30, 2016
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Properly Pre-Plan and Perform Maintenance on the Cable Vault and Switchgear Ventilation System

The inspectors identified a non-cited violation of Technical Specification 6.8, “Procedures and Programs,” associated with the licensee’s failure to properly pre-plan and perform maintenance on safety-related components in accordance with EN-DC-335, “Preventative Maintenance Basis Template.” Specifically, the licensee did not follow the required preventive maintenance basis template for the safety-related cable vault and switchgear ventilation system, and was performing vibration monitoring of these components on an 18-month frequency instead of the required 3-month frequency. As a result, the licensee was deviating from the industry standard preventive maintenance recommendations without documented technical bases, and the required preventive maintenance tasks on these safety-related components were not performed. The licensee entered this condition into their corrective action program as condition report CR-WF3-2016-02353. The licensee restored compliance by assigning the proper preventive maintenance activities for the components in this system and instituting the appropriate frequency. In addition, a maintenance scope review is being performed.
The performance deficiency was more than minor because it affected the Equipment Performance attribute of the Mitigating Systems cornerstone and its objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, actions to detect, preclude and address degradation of the safety-related components were delayed. The inspectors screened the finding in accordance with NRC Inspection Manual Chapter (IMC) 0609, “Significance Determination Process.” Using IMC 0609, Appendix A, “The Significance Determination Process for Findings At-Power,” the inspectors determined that the finding was of very low significance (Green) because all the screening questions in Exhibit 2 – “Mitigating Systems Screening Questions” were answered ‘No’.
The finding had an Identification cross-cutting aspect in the area of Problem Identification and Resolution because individuals did not identify issues completely, accurately, and in a timely manner in accordance with the corrective action program. Specifically, during previous vibration tests, the licensee had opportunities to identify the incorrect classification of the preventive maintenance task but did not do so [P.1].
Inspection Report# : 2016002 *(pdf)*

Significance: G Jun 30, 2016
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Properly Assess and Manage Risk When Performing Dry Cooling Tower Maintenance
The inspectors identified a non-cited violation of 10 CFR 50.65, “Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants,” section (a)(4) because the licensee did not properly assess and manage risk associated with maintenance on the dry cooling tower fans train B. Specifically, the licensee failed to adequately assess risk and take appropriate risk management actions when replacing a logic card associated with the dry cooling tower train B fans. As a result, an electrical transient occurred that caused unexpected valve movements in component cooling water and auxiliary component cooling water train B systems, an unexpected start of the auxiliary component cooling water pump train B, and the unexpected shutdown of essential chiller train AB. The licensee entered this issue into their corrective action program as condition report CR-WF3-2016-04084. Corrective actions included reassessing the risk associated with the maintenance and identifying appropriate risk management actions to use when performing similar maintenance activities in the future.
The inspectors determined that the performance deficiency was more than minor because it was associated with the Configuration Control attribute of the Mitigating Systems 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. Specifically, the failure to take appropriate risk management actions resulted in unexpected valve movements, an unexpected start of auxiliary component cooling water pump B, and an unplanned entry into Technical Specification 3.7.4, “Ultimate Heat Sink.” The inspectors used Inspection Manual Chapter 0609, Appendix K, “Maintenance Risk Assessment and Risk Management Significance Determination Process,” dated May 19, 2005, Flowchart 2, “Assessment RMAs,” and determined the need to calculate the incremental core damage probability to determine the significance of this issue. The Waterford probabilistic risk assessment model yielded an incremental core damage probability, or actual increase in risk during this work window, of 1.5x10-8. In accordance with Flowchart 2 in Appendix K, because the incremental core damage probability was less than 1x10-6, the finding

screened as having very low safety significance (Green).
This finding had a Procedure Adherence cross-cutting aspect in the area of Human Performance because individuals did not follow processes, procedures and work instructions. Specifically, the licensee did not assess and manage the risk associated with the maintenance in accordance with EN-WM-104, "On Line Risk Assessment" [H.8].
Inspection Report# : 2016002 *(pdf)*

Significance: G Jun 30, 2016
Identified By: Self-Revealing
Item Type: NCV Non-Cited Violation
Failure to Account for Starting Air Design Features in Emergency Diesel Operating Procedures
A self-revealing, Green, non-cited violation of Technical Specification 6.8, "Procedures and Programs," occurred because the licensee did not establish adequate procedures for the operation of the emergency diesel generators. Specifically, prior to July 7, 2015, the licensee's procedure for operating the emergency diesel generators allowed lube oil pressure to be maintained low enough to activate a design feature of the starting air system that injects starting air into the diesel cylinders, which could damage the emergency diesel generator turbocharger. The licensee entered this issue into their corrective action program as condition report CR-WF3-2015-04459. The corrective action taken to restore compliance was to increase the procedure requirement for operating lube oil pressure from 35 psig to 45 psig. The inspectors concluded that 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. Specifically, the procedural allowance to run the emergency diesel generator lube oil pressure at the starting air injection setpoint could have resulted in the failure of the emergency diesel generators when they were called upon to perform their safety function. The inspectors used NRC Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process for Findings At-Power," to determine the significance of the finding. The inspectors determined that the finding required a detailed risk evaluation because it represented the loss of a system or function. The detailed risk evaluation determined that the finding is of very low safety significance (Green). The senior reactor analyst estimated the increase in core damage frequency to be 4.6E-7/year and the increase in large early release frequency to be 3.9E-8/year. Dominant core damage sequences were medium break losses of coolant accidents and steam generator tube ruptures with associated losses of off-site power. Core damage was mitigated by the remaining emergency diesel generator.
This finding had an Evaluation cross-cutting aspect in the area Problem Identification and Resolution, because the licensee did not thoroughly evaluate issues to ensure that resolutions address causes and extent of conditions commensurate with their safety significance. Specifically, the licensee's previous evaluation performed for operating the emergency diesel generators with low lube oil pressures did not thoroughly evaluate the risk associated with the starting air system [P.2].
Inspection Report# : 2016002 *(pdf)*

Significance: G Mar 31, 2016
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Assess and Manage the Increase in Risk from Emergent Maintenance Activities
The inspectors identified a non-cited violation of 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," section a(4), for the licensee's failure to assess and manage the increase in risk during an auxiliary component cooling water system work window. Specifically, the licensee failed to re-asses risk when a dry cooling tower fan in the component cooling water system was declared unavailable during the ongoing auxiliary component cooling water system work window. As a result, for approximately 6 hours, on-line risk was maintained as Green when it should have been elevated to Orange, which would have required additional risk management actions. The licensee entered this issue into their corrective action program as Condition Report CR-WF3-2016-0660. Corrective actions included restoring the dry cooling tower fan to available status such that risk

returned to Green and sending a communication to operations supervisors to re-emphasize the requirements to adequately address unavailability of plant components.

The inspectors determined that the performance deficiency was more than minor, and therefore a finding, because it was associated with the configuration control attribute of the Mitigating Systems 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. Specifically, by not ensuring the risk assessment was adequate when an additional component was emergently declared unavailable, the licensee proceeded with a maintenance work window with no understanding of the increased risk associated with a different plant configuration. The inspectors used Inspection Manual Chapter 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process," dated May 19, 2005, Flowchart 1, "Assessment of Risk Deficit," and determined the need to calculate the risk deficit to determine the significance of this issue. The risk deficits were assumed to be equal to the incremental core damage probability (ICDP)actual and incremental large early release probability (ILERP)actual. The Waterford probabilistic risk assessment model yielded an incremental core damage probability (ICDP), or actual increase in risk during this work window, of 6.1x10-8. The regional senior reactor analyst evaluated the licensee's risk significance evaluation and agreed with the results from the licensee's model. The ILERP, screened out as not risk significant. In accordance with Flowchart 1 in Appendix K, because the ICDP was less than 1x10-6 and the ILERP was less than 1x10-7, the finding screened as having very low safety significance (Green).

This finding has a procedure adherence cross-cutting aspect in the area of human performance, because individuals did not follow processes, procedures, and work instructions. Specifically, when the additional dry cooling tower fan was declared unavailable, the licensee did not re-assess risk as soon as practical as specified in site procedures [H.8].
Inspection Report# : 2016001 *(pdf)*

Barrier Integrity

Emergency Preparedness

Significance: G Jun 30, 2016
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Perform Drills Required by the Site Emergency Plan
The inspectors identified a non-cited violation of 10 CFR 50.54(q)(2), which requires a power reactor licensee to follow and maintain the effectiveness of the site emergency plan. Specifically, Waterford Steam Electric Station, Unit 3, failed to conduct two proficiency drills in calendar year 2015 as required by the Site Emergency Plan, Revision 46, Section 8.1.2.4. The licensee has initiated work tracker surveillances to ensure all drills required in 2016 are performed.
The issue is more than minor because the finding was associated with the Emergency Response Organization Performance attribute and adversely affected the Emergency Preparedness cornerstone objective to ensure the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. The finding was evaluated using Inspection Manual Chapter 0609, Appendix B, "Emergency Preparedness Significance Determination Process," dated September 23, 2014, and was determined to be of very low safety significance (Green) because it was a failure to comply with NRC requirements, was not a risk-significant planning standard function, and was not a lost or degraded planning standard function. The inspectors determined that the finding had a Work Management cross-cutting aspect in the area of Human Performance, because the emergency

preparedness department did not properly schedule, oversee, and manage required activities [H.5].
Inspection Report# : 2016002 *(pdf)*

Occupational Radiation Safety

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.

Miscellaneous

Significance: N/A Sep 30, 2013
Identified By: NRC
Item Type: VIO Violation
Failure to Make a Report Required by 10 CFR 21.21
The team identified a violation of 10 CFR 21.21 that occurred when the licensee failed to submit a report or interim report on a deviation in a basic component within 60 days of discovery.

The failure of the licensee to adequately evaluate deviations in basic components and to report defects is a performance deficiency. The NRC's significance determination process (SDP) considers the safety significance of findings by evaluating their potential safety consequences. This performance deficiency was of minor safety significance. The traditional enforcement process separately considers the significance of willful violations, violations that impact the regulatory process, and violations that result in actual safety consequences. Traditional enforcement applied to this finding because it involved a violation that impacted the regulatory process. Supplement VII to the version of the NRC Enforcement Policy that was in effect at the time the violation was identified provided as an example of a violation of significant regulatory concern (Severity Level III), "An inadequate review or failure to review such that, if an appropriate review had been made as required, a 10 CFR Part 21 report would have been made." Based on this example, the NRC determined that the violation met the criteria to be cited as a Severity Level III violation. However, because of the circumstances surrounding the violation, including the removal from service of the affected components by an unrelated manufacturer's recall, the severity of the cited violation is being reduced to Severity Level IV. Cross-cutting aspects are not assigned to traditional enforcement violations.

Inspection Report# : 2013004 *(pdf)*
Inspection Report# : 2014008 *(pdf)*

Last modified : December 08, 2016