

Waterford 3

4Q/2012 Plant Inspection Findings

Initiating Events

Significance: G Sep 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to adequately access and manage risk before performing maintenance activities associated with non-standard lifts

The inspectors identified a non-cited violation of 10 CFR 50.65(a)(4) because the licensee did not assess and manage the overall on line risk involved with maintenance activities that lifted heavy loads over safety related equipment. Specifically, the licensee did not assess and manage the integrated plant risk prior to performing heavy load lifts in the train B dry cooling tower fan area when installing a temporary work platform to support the steam generator replacement project. As a result, the licensee did not implement additional risk management actions as required by their procedure EN-WM-104, "OnLine Risk Assessment." The licensee entered this condition into the corrective action program as CR-WF3-2012-4195 and CR-WF3-2012-4489. The immediate corrective action taken to restore compliance was to re-evaluate and change the integrated risk classification from a normal risk to a high-risk level and implement the required risk management actions.

The failure to adequately assess and manage overall plant risk prior to performing maintenance activities that lifted heavy loads over the train B dry cooling tower fan area was a performance deficiency. The performance deficiency was more than minor because it was associated with the human performance attribute of the Initiating Events cornerstone and 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, the licensee's failure to identify non-standard lifts over safety related equipment as high risk prevented the licensee from taking additional risk management actions to limit the likelihood of an event that would upset plant stability. The inspectors used NRC Inspection Manual 0609, Attachment 4, "Initial Characterization of Findings," to evaluate this issue. The initial screening directed the inspectors to use Appendix K "Maintenance Risk Assessment and Risk Management Significance Determination Process" to determine the significance of the finding. In accordance with NRC Inspection Manual Chapter 0609, Appendix K, a senior reactor analyst determined that the finding was very low safety significance (Green) because the bounding risk deficit was approximately 1E-7/year. The inspectors concluded that the finding reflected current licensee performance and involved a cross-cutting aspect in the decision making component of the human performance area because the licensee did not make safety significant or risk significant decisions using a systematic process to ensure safety was maintained.

Inspection Report# : [2012004](#) (pdf)

Significance: G Sep 24, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Ensure Operator Knowledge of Equipment Status

The team identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for a failure to follow Procedure EN-OP-115, "Conduct of Operations". Specifically, the licensee failed to ensure that control room operators knew the status of equipment at all times. While interviewing the person responsible for tracking plant deficiencies, the inspectors discovered that the licensee had two separate governing procedures. These two instructions had different definitions for categories of plant deficiencies and different databases for tracking them. The inspectors then interviewed the on-shift operators in the control room and reviewed both databases. The inspectors identified several issues, including lack of knowledge by the control room operators about which procedure to use, failure to track deficiencies in both databases, and inadequate classification of deficiencies. The inspectors determined that in March 2010, the licensee changed their process for tracking deficiencies to be consistent with their fleet reporting process. However, the licensee did not revise the procedure and did not train all

affected personnel on the new process. As a result, control room operators did not have a complete and accurate knowledge of all plant deficiencies. This finding was entered into the licensee's corrective action program as Condition Report CR-WF3-2012-03732.

The failure to ensure that operators were aware of the status of all plant equipment was a performance deficiency. The performance deficiency was more than minor because it was associated with the procedure quality attribute of the Initiating Events Cornerstone and affected 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 failed to implement a procedure designed to ensure operators were aware of deficiencies in the instrumentation, controls, and operation of nuclear plant systems. In accordance with NRC Inspection Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," the issue was determined to affect the Initiating Events Cornerstone. In accordance with NRC Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings at Power," the issue was determined to have very low safety significance (Green) because it did not cause a reactor trip and did not cause the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. This finding had a cross-cutting aspect in the human performance area, work practices component, in that the licensee failed to define and effectively communicate expectations regarding procedural compliance, and personnel did not follow procedures. Inspection Report# : [2012008](#) (pdf)

Significance:  Sep 24, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Develop Effective Corrective Actions to Preclude Repetition

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," because the licensee failed to determine the cause of a significant condition adverse to quality and take corrective actions to preclude repetition. Specifically, the licensee failed to assure that the cause of the condition was determined and corrective action taken to preclude repetition related to a contractor's non-compliance with site procedural requirements. The corrective actions include developing additional training and provisions to provide additional contractor oversight. This finding was entered into the licensee's corrective action program as Condition Reports CR-WF3-2012-03769 and CR-WF3-2012-03772.

The failure to determine the cause of a significant condition adverse to quality and take corrective action to preclude repetition was a performance deficiency. The performance deficiency was more than minor because if left uncorrected, it could lead to more significant consequences; therefore, it is a finding. Specifically, failure to determine the cause of a significant condition adverse to quality and take corrective action to prevent recurrence can result in recurrence of the condition. In accordance with NRC Inspection Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," the issue was determined to affect the Initiating Events Cornerstone. In accordance with NRC Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings at Power," the issue was determined to have very low safety significance (Green) because the finding did not cause a reactor trip and the loss of mitigation equipment relied upon to transition the plant from the onset of the trip to a stable shutdown condition. This finding had a cross-cutting aspect in the human performance, work practice component, in that the licensee failed to follow guidance in the root cause evaluation procedure when developing appropriate corrective actions to prevent repetition.

Inspection Report# : [2012008](#) (pdf)

Significance:  Jun 30, 2012

Identified By: Self-Revealing

Item Type: FIN Finding

Failure to establish adequate procedural guidance to control feedwater heater level control valves

A self-revealing finding occurred because the licensee did not establish adequate procedural guidance to control feedwater heater level control valves. Specifically, the procedures used to control the settings for the valves did not contain guidance that properly adjusted the proportional gain and air pressure input to ensure the valves open quickly during a transient. As a result, multiple failures in the feedwater heater drain system resulted in a feedwater pump A

trip and a subsequent reactor power cutback. The licensee entered this condition into their corrective action program as CR-WF3-2012-1729 for resolution. The corrective actions included a revision of the procedure and loop calibration settings for the feedwater heater level control valves.

The failure to provide adequate guidance that properly adjusted the proportional gain to ensure the valves open as designed is a performance deficiency. The performance deficiency is more than minor because it is associated with the procedure quality 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, multiple feedwater heater control valve failures resulted in a reactor power cutback that upset plant stability. The inspectors used the NRC Inspection Manual Chapter 0609, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings," to determine the significance. The inspectors determined that the finding is of very low safety significance (Green) because it only contributed to the likelihood of a reactor trip and not the likelihood that mitigation equipment or functions would not be available. This finding has a cross-cutting aspect in the resources component of the human performance area in that the licensee did not ensure that complete, accurate, and up-to-date design documentation for loop calibration settings was available to assure nuclear safety [H.2(c)].

Inspection Report# : [2012003](#) (*pdf*)

Mitigating Systems

Significance:  Dec 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to promptly identify and correct the cause of repetitive failures associated with train A component cooling water radiation monitor

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, because the licensee did not promptly identify and correct a condition adverse to quality associated with the train A safety-related component cooling water (CCW) radiation monitor (PRMIR7050A). Specifically, the licensee did not identify and correct the cause of repetitive failures of the train A CCW radiation monitor when the monitor experienced erratic radiation spikes and repeat issues with the detector. As a result, the licensee declared the radiation monitor inoperable on several occasions over a span of nine months. The licensee entered this issue into their corrective action program as CR-WF3-2012-4643. The immediate corrective actions taken to restore compliance included the replacement of all susceptible components of the radiation monitor and other associated equipment. Additionally, the licensee adjusted the low-level discriminator voltage and changed the calibration procedure to align testing with vendor recommendations.

The failure to promptly identify and correct the cause of repetitive failures associated with erratic radiation spikes and a repeat issue with the radiation monitor detector was a performance deficiency. The performance deficiency was more than minor because it was associated with the equipment performance attribute of the Mitigating System Cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the erratic radiation spikes and issues with the detector challenged the availability and reliability of the train A CCW radiation monitor used to alert operators of radiation leaks from the reactor coolant system. The inspectors used the NRC Inspection Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," to evaluate this issue. The inspectors determined that the finding was very low safety significance (Green) because it did not affect the design or qualification of a mitigating SSC, represent a loss of system function, or an actual loss of function of at least a single train for greater than its Tech Spec allowed outage time, and did not involve the loss or degradation of equipment or function specifically designed to mitigate a seismic, flooding, or severe weather initiating event. The inspectors concluded that the finding reflected current licensee performance and involved a cross-cutting aspect in the corrective action program component of the problem identification and resolution area in that the licensee did not thoroughly evaluate the problem such that the resolutions address causes and extent of conditions.

Inspection Report# : [2012005](#) (*pdf*)

Significance: G Sep 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to establish procedural controls to ensure that licensed operators could perform immediate and time critical operator actions associated with security and fire events

The inspectors identified a non-cited violation of Waterford Steam Electric Station, Unit 3, Technical Specification 6.8.1.a because the licensee did not establish procedural controls to ensure that the assigned minimum staff of licensed operators could perform immediate and time critical operator actions associated with a security or fire event.

Specifically, the licensee did not establish procedural guidance to restrict licensed operators from leaving the PA. As a result, the licensee could not ensure that operators would respond in a timely manner to perform immediate and time critical operator actions required by a fire or security event. The licensee entered this issue into their corrective action program as CR-WF3-2012-3815. The immediate corrective actions taken to restore compliance included the issuing of a standing instruction to instruct the assigned minimum staff of licensed operators to remain in the PA unless officially relieved of their duties.

The failure to establish procedural controls to ensure that licensed operators could perform immediate and time critical steps associated with security and fire events was a performance deficiency. The performance deficiency was more than minor because it was associated with the procedure quality attribute of the Mitigating System Cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee would have been challenged to complete immediate and time critical steps with licensed operators being outside the PA. The inspectors used NRC Inspection Manual 0609, Attachment 4, "Initial Characterization of Findings," to evaluate this issue. The finding required a detailed analysis because it could be risk significant for external events. Therefore, the senior reactor analyst performed a bounding detailed risk evaluation. The analyst determined that the finding was of very low safety significance (Green) because the bounding change to the core damage frequency was less than 4.0 E-7/year. The risk important sequences included control room fires that required a control room evacuation. The short duration of the operator being outside the PA helped to reduce the risk significance. The inspectors concluded that the finding reflected current licensee performance and involved a cross-cutting aspect in the operating experience component of the problem identification and resolution area in that the licensee did not implement and institutionalizes operating experience through changes to station processes and procedures.

Inspection Report# : [2012004](#) (pdf)**Significance:** G Sep 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to identify and correct degraded conditions associated with the auxiliary component cooling water heat exchanger outlet temperature control valve

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI because the licensee did not promptly identify and correct conditions adverse to quality related to the header A auxiliary component cooling water heat exchanger outlet temperature control valve ACC-126A. Specifically, the licensee did not promptly identify and correct degraded conditions associated with the valve's shaft bushings, a pneumatic transducer that controls the valve actuator, and its soft seat. As a result, the licensee declared the valve inoperable on several occasions. The licensee entered this issue into their corrective action program as CR-WF3-2012-03280. The immediate corrective actions taken to restore compliance included the replacement of all the degraded components.

The failure to promptly identify and correct multiple degraded conditions associated with the auxiliary component cooling water heat exchanger outlet temperature control valve ACC-126A was a performance deficiency. The performance deficiency was more than minor because it was associated with the equipment performance attribute of the Mitigating System Cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the degraded components challenged the closed safety function of the valve and its ability to maintain an adequate water inventory for the wet cooling tower following a loss of coolant accident. The inspector used NRC Inspection Manual 0609, Attachment 4, "Initial Characterization of Findings," to evaluate this issue. The finding required a detailed analysis

because it involved a potential loss of one train of safety related equipment for longer than the technical specification allowed outage time. Therefore, the senior reactor analyst performed a bounding detailed risk evaluation. The analyst determined that the finding was of very low safety significance (Green) because the bounding change to the core damage frequency was less than 4.2E-7 per year. The inspectors concluded that the finding reflected current licensee performance and involved a cross-cutting aspect in the corrective action program component of the problem identification and resolution area in that the licensee did not thoroughly evaluate problems such that the resolutions address causes and extent of conditions, as necessary.

Inspection Report# : [2012004](#) (pdf)

Significance:  Sep 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to identify and correct a torn diaphragm of a safety-related air operated valve associated with the emergency feedwater system

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI because the licensee did not promptly identify and correct a condition adverse to quality associated with the B emergency feedwater backup control valve EFW-223B. Specifically, the licensee did not promptly identify and correct internal leakage from tears in the EFW-223B actuator diaphragm. As a result, these internal tears in the diaphragm caused excessive leakage that affected two nitrogen accumulators used to operate EFW-223B and other safety related valves. The licensee entered this issue into their corrective action program as CR-WF3-2012-0860. The immediate corrective actions taken to restore compliance included the replacement of the diaphragm and to determine the extent of condition for other air-operated valves with the same type, make, and model diaphragm. The planned corrective action included the revision of the air operated valve program post maintenance tests to identify similar problems.

The failure to promptly identify and correct tears in the internal actuator diaphragm of the B emergency feedwater backup control valve EFW-223B was a performance deficiency. The performance deficiency was more than minor because it was associated with the equipment performance attribute of the Mitigating System Cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the internal leakage of EFW-223B affected two safety-related nitrogen accumulators and their ability to provide nitrogen gas to other connected safety related valves following a loss of offsite power event. The inspector used the NRC Inspection Manual 0609, Attachment 4, "Initial Characterization of Findings," to evaluate this issue. The finding required a detailed analysis because it involved a potential loss of one train of safety related equipment for longer than the technical specification allowed outage time. Therefore, a senior reactor analyst performed a bounding detailed risk evaluation. The analyst determined that the finding is of very low safety significance (Green) because the bounding change to the core damage frequency is less than 1E-9 per year. The inspectors concluded that the finding reflected current licensee performance and involved a cross-cutting aspect in the corrective action program component of the problem identification and resolution area in that the licensee did not thoroughly evaluate problems such that the resolutions address causes and extent of conditions, as necessary.

Inspection Report# : [2012004](#) (pdf)

Significance:  Sep 24, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Promptly Determine the Operability of the Emergency Diesel Generators

The team identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for a failure to follow the Operability Determination Process. Specifically, the licensee failed to determine the operability of the emergency diesel generators immediately upon discovery without delay and in a controlled manner using the best information available in response to NRC Information Notice 2010-04. The licensee completed an evaluation of the information notice that indicated that Waterford 3 was vulnerable and susceptible to the issue, but the licensee failed to issue a condition report as required by their procedure. The failure to

initiate a condition report resulted in the licensee's failure to perform an operability determination of the emergency diesel generators as required by, EN-OP-104," Operability Determination Process," Revision 6. In the evaluation, the licensee considered the fact that they had an "Action Request" in their system to add routine thermography inspections within the voltage regulator cabinets to their preventative maintenance program as being adequate. The action request was not completed when the inspection team reviewed the issue. The inspectors questioned whether there was an operability concern for the emergency diesel generators. The licensee recognized their failure to perform an operability determination. They performed a prompt operability determination based on no observed degradation in performance and declared the emergency diesel generators operable. In addition, they plan to conduct the thermography inspections during the next scheduled emergency diesel generator surveillance. This finding was entered into the licensee's corrective action program as Condition Report CR-WF3-2012-03761.

The failure to promptly perform an operability determination of the emergency diesel generators in response to NRC Information Notice 2010-04 was a performance deficiency. The performance deficiency was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee failed to promptly determine the operability of the diesel generators after obtaining information of a potential condition adverse to quality. In accordance with NRC Inspection Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," the issue was determined to affect the Mitigating Systems Cornerstone. In accordance with NRC Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings at Power," the issue was determined to have very low safety significance (Green) because it was not a deficiency affecting the design or qualification of the system, it did not represent a loss of system or function, and it was a Technical Specification system, but did not represent an actual loss of function of a single train for greater than it allowed outage time. Specifically, the licensee performed an operability determination in response to the inspectors' questions and determined the emergency diesel generators were operable based on a review of surveillance data and maintenance records. This finding had a cross-cutting aspect in the problem identification and resolution area, operating experience component, in that the licensee failed to systematically collect, evaluate, and communicate to affected internal stakeholders in a timely manner relevant internal and external operating experience.

Inspection Report# : [2012008](#) (*pdf*)

G

Significance: Sep 24, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Take Corrective Action Associated with Emergency Feedwater Pump AB

The team identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the failure to take timely corrective action for a condition adverse to quality. Specifically, from May 2011, through August 2012, the licensee failed to restore a degraded condition, which included a corrective action to perform a new design analysis for the emergency feedwater pump AB after the removal of heat trace circuit 1-8C, despite having a reasonable amount of time to complete it. Currently, plant operators are required once per shift to perform temperature verifications of the heat trace to ensure condensation does not form in the steam supply pipe to the turbine driven pump and to maintain emergency feedwater pump AB in an operable but degraded status until the design analysis is complete. This finding was entered into the licensee's corrective action program as Condition Report CR-WF3-2012-03754.

The team determined that the failure to complete the corrective action of performing a new design analysis to determine if emergency feedwater pump AB required a design modification based on the analysis in a timely manner was a performance deficiency. The performance deficiency was more than minor because it affected the equipment performance attribute of the Mitigating Systems Cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, failure to implement this corrective action could result in reduced reliability of the emergency feedwater pump AB. In accordance with NRC Inspection Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," the issue was determined to affect the Mitigating Systems Cornerstone. In accordance with NRC Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings at Power," the issue was determined to have very low safety significance (Green) because it affected the design or qualification of mitigating systems, structures, and components; however, the systems, structures, and components maintained operability. This finding

had a cross-cutting aspect in the human performance area, resources component, in that the licensee failed to minimize a long-standing equipment issue adequately to assure nuclear safety.

Inspection Report# : [2012008](#) (pdf)

Significance:  Sep 24, 2012

Identified By: NRC

Item Type: VIO Violation

Failure to Take Timely Corrective Action to Establish a Basis for Flood Control Measures

The team identified a cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control", for the failure to establish measures to assure that applicable regulatory requirements and the design basis as defined in 10 CFR 50.2 are correctly translated into procedures. Specifically, the licensee has not determined a basis for the level at which flood control measures are initiated, two years after receiving a non-cited violation for the same deficiency. As an interim compensatory measure for a previous violation of inadequate technical specifications, the licensee modified their flooding procedure to include an action to start shutting flood control doors at a river level of 24 feet instead of 27 feet. The licensee recognized the need to establish a basis for initiating these actions at 24 feet, and issued a corrective action to track completion. The licensee extended the due date several times and had not completed it by the arrival of the inspection team. The inspection team questioned why the licensee had not completed the calculation to justify their basis for their compensatory measures, noting that it had been over two years since the original violation was identified. The inspectors verified through walk-downs, procedure reviews, and historical data that the licensee's use of 24 feet did not represent an immediate operability concern, and that the current river level was sufficiently low to allow time for the licensee to correct the deficiency. This finding was entered into the licensee's corrective action program as condition report CR-WF3-2012-03752.

The failure to complete the corrective action to establish a basis for flood control measures in a timely manner was a performance deficiency. The performance deficiency was more than minor because it was associated with the protection from external events attribute of the Mitigating Systems Cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee failed to verify through calculations or analysis that the actions taken to secure flood doors could be completed in time to protect safety-related equipment from flooding due to a levee failure. In accordance with NRC Inspection Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," the issue was determined to affect the Mitigating Systems Cornerstone. In accordance with NRC Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings at Power", the issue was determined to have very low safety significance (Green) because it did not involve the loss or degradation of equipment or function specifically designed to mitigate a seismic, flooding, or severe weather initiating event. Specifically, the inspectors confirmed that the licensee could reasonably ensure the flood control doors could perform their safety function. This finding had a cross-cutting aspect in the human performance area, resources component in that the licensee failed to maintain long term plant safety by maintenance of design margins and ensuring engineering backlogs low enough to support safety.

Inspection Report# : [2012008](#) (pdf)

Significance:  Jun 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to provide adequate design control measures for verifying or checking the adequacy of the ultimate heat sink thermal performance analysis

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III because the licensee did not provide adequate design control measures for verifying or checking the adequacy of the ultimate heat sink thermal performance analysis. Specifically, the licensee did not ensure that the design calculation used to determine the required number of wet cooling tower fans needed to operate the plant under normal and design conditions utilized the correct equation. As a result, the incorrect calculation provided reasonable doubt as to the operability of the wet cooling tower fans. The licensee entered this issue into their corrective action program as CR-WF3-2012-1395. The immediate corrective actions taken to restore compliance included a preliminary analysis of the condition and actions to perform a review of the methodology, inputs, and assumptions for the ultimate heat sink thermal performance calculations.

The failure to provide adequate design control measures for verifying or checking the adequacy of the ultimate heat sink thermal performance analysis is a performance deficiency. The performance deficiency is more than minor because it is associated with the design control attribute of the Mitigating System Cornerstone and affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the wet cooling tower fans are required to be operable for heat removal following all accidents and anticipated operational occurrences. The inspectors used the NRC Inspection Manual Chapter 0609, Attachment 4, "Phase 1 - Initial Screening and Characterization of Findings," to determine the significance. The inspectors determined that the finding is of very low safety significance (Green) because it is a design deficiency confirmed not to result in a loss of operability or functionality of the ultimate heat sink. This finding has a cross-cutting aspect in the decision making component of the human performance area in that the licensee did not conduct effectiveness reviews of safety-significant decisions to verify the validity of the underlying assumptions, identify possible unintended consequences, and determine how to improve future decisions [H.1(b)].

Inspection Report# : [2012003](#) (*pdf*)

Significance: G Mar 31, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Develop Preventive Maintenance Tasks for Critical Limit Switches on Component Cooling Water Inlet Isolation Valves

A Green self-revealing, non-cited violation of Waterford Steam Electric Station, Unit 3, Technical Specification 6.8.1.a occurred because the licensee did not establish procedures for performing preventive maintenance tasks on the dry cooling tower component cooling water inlet isolation valves CC-135A and CC-135B limit switches. Specifically, the licensee had not developed preventive maintenance tasks to lubricate or replace critical limit switches that provide a permissive for the operation of the dry cooling tower fans. As a result, on February 4, 2011, the limit switch on valve CC-135A failed to operate as designed and rendered an entire train of fans inoperable. The licensee entered this condition into their corrective action program as CR-WF3-2011-0679 for resolution. The immediate corrective action included the lubrication of the limit switch and the manual stroking of the valve to obtain free and smooth movement of the degraded equipment. The planned corrective actions included the development of a preventive maintenance task to lubricate and replace the limit switches on a scheduled frequency.

The failure to establish procedures for performing preventive maintenance tasks on the dry cooling tower component cooling water inlet isolation valves CC-135A and CC-135B limit switches is a performance deficiency. The performance deficiency 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. Specifically, since there was no preventive maintenance task for lubrication and replacement of the equipment, the limit switches can become stuck and render an entire train of dry cooling tower fans inoperable. The inspectors determined the significance of the finding using the NRC Inspection Manual 0609, Attachment 0609.04, "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 for greater than its technical specification completion time, and did not screen as potentially risk-significant due to an external initiating events. The inspectors also concluded that no cross-cutting aspect is applicable to this finding because the performance deficiency is not reflective of current performance.

Inspection Report# : [2012002](#) (*pdf*)

Significance: G Mar 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Identify and Perform Testing to Demonstrate Performance of Safety-Related Valves

The inspectors identified a Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion XI, because the licensee did not identify and perform testing on a safety-related component to demonstrate that it would perform

satisfactorily in service in accordance with requirements contained in applicable design documents. Specifically, the licensee did not identify and perform proper testing for the essential chiller hot gas bypass valves RFR-106A, B, and C. As a result, the licensee could not demonstrate that the safety-related valves would perform satisfactorily in service without performing a test and operability evaluation. The licensee entered this condition into the corrective action program as CR-WF3-2012-0632 and CR-WF3-2012-0659. The immediate corrective action included testing the hot gas bypass valves to demonstrate the proper performance of their safety function.

The failure to identify and perform testing to demonstrate that a safety-related component would perform satisfactorily in service in accordance with requirements contained in applicable design documents is a performance deficiency. The performance deficiency 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. Specifically, the hot gas bypass valve closure is required to ensure the essential chiller can perform its safety function during all design basis accident conditions. The inspectors determined the significance of the finding using the NRC Inspection Manual 0609, Attachment 0609.04, "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 for greater than its technical specification completion time, and did not screen as potentially risk-significant due to any external initiating events. This finding has a cross-cutting aspect in the resources component of the human performance area in that the licensee did not ensure that complete, accurate, and up-to-date test procedures were available to demonstrate that equipment performance is adequate to assure nuclear safety [H.2(c)]

Inspection Report# : [2012002](#) (pdf)

Significance:  Feb 17, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Adequately Evaluate the Impact of Fire Damage on the Dry Cooling Tower Fans

The team identified a non-cited violation of License Condition 2.C.9 and Appendix R, Section III.G for the failure to adequately evaluate the impact of fire damage on the dry cooling tower fans. Specifically, the failure to adequately evaluate fire damage to the dry cooling tower fans did not ensure one train remained available to achieve and maintain hot shutdown conditions from the alternate shutdown panel. The licensee documented this deficiency in Condition Report 2012-00837.

The failure to adequately evaluate the impact of fire damage on the dry cooling tower fans was a performance deficiency. The performance deficiency was more than minor because it was associated with the protection against external events (fire) attribute of the Mitigating Systems Cornerstone and it adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The team evaluated this deficiency using Inspection Manual Chapter 0609, Appendix F, "Fire Protection Significance Determination Process." The performance deficiency affected the fire protection defense-in depth strategies involving post-fire safe shutdown systems. Since this finding involved a control room abandonment issue, a senior reactor analyst performed a Phase 3 significance determination. The senior reactor analyst determined this finding had very low risk significance based upon a bounding analysis (Green). The dominant core damage sequences involved a fire initiating event, failure of both the component cooling water and auxiliary component cooling water systems, as well as an independent failure of the turbine driven auxiliary feedwater pump. Equipment that helped to mitigate the significance included the unaffected offsite power system, the viable steam generators and the safety related auxiliary feedwater system. Because the original failure to evaluate the impact of fire damage on the dry cooling tower fans had occurred longer than three years prior to this inspection, this finding did not reflect current licensee performance.

Inspection Report# : [2012007](#) (pdf)

Significance:  Feb 17, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Calculate Adequate Cooling Provided to Diesel Generator B within Required Time

The team identified a non-cited violation of License Condition 2.C.9 and the fire protection program for the failure to perform a post-fire safe shutdown analysis design calculation. Specifically, the team determined that the licensee had not calculated the time available to establish component cooling water to prevent damaging the emergency diesel generator when providing power to post fire safe shutdown components. The licensee documented this deficiency in Condition Report 2012 00818.

The failure to perform a design calculation evaluating the ability to remove heat based upon emergency diesel generator loading following a control room fire was a performance deficiency. The performance deficiency was more than minor because it was associated with the protection against external events (fire) attribute of the Mitigating Systems Cornerstone and it adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The team evaluated the significance of this finding using Manual Chapter 0609, Appendix F. The performance deficiency affected the fire protection defense-in depth strategies involving post-fire safe shutdown systems. Using Appendix F, the team assigned this finding a low degradation rating because the system was expected to display nearly the same level of effectiveness and reliability as it would had the degradation not been present. Specifically, the component cooling water system could accommodate the heat in the jacket water system of a lightly loaded diesel generator. This finding screened as very low safety significance (Green) in the Phase 1 evaluation. Because the original failure to perform a design calculation had occurred longer than three years prior to this inspection, this finding did not reflect current licensee performance.

Inspection Report# : [2012007](#) (*pdf*)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Significance:  Oct 23, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to implement control measures to ensure that activated materials were not raised above or brought near the surface of the refueling pool, causing a locked high radiation area

The inspectors reviewed a self-revealing non-cited violation of Technical Specification 6.12.2 which resulted because licensee representatives failed to implement control measures to ensure that activated materials were not raised above or brought near the surface of the refueling pool, causing a locked high radiation area. As immediate corrective action, the workers backed away from the upper guide structure until their dose rate alarms cleared. The upper guide structure lift continued until it was in a safe condition on the stand in the deep end of the refueling pool. Corrective action to prevent recurrence was determined after licensee personnel documented the occurrence in the corrective action program as Condition Report WF3 2012 05571 and performed a root cause evaluation. To address the root cause, the governing procedure will be revised to reflect the establishment of a waterline on the upper guide structure which indicates the highest elevation it can be raised out of the water and maintain an acceptable amount of shielding.

The failure to implement control measures to ensure that activated materials were not raised above or brought near the surface of the refueling pool, causing a locked high radiation area, is a performance deficiency. The performance deficiency is more than minor because it is associated with the Occupational Radiation Safety cornerstone attribute of program and process (exposure control) and adversely affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation, in that it exposed workers to higher than planned dose rates. Using the Occupational Radiation Safety Significance Determination Process, the inspectors determined the finding had very low safety significance because: (1) it was not an as low as is reasonably achievable (ALARA) finding, (2) there was no overexposure, (3) there was no substantial potential for an overexposure because the inspectors concluded there was no way to construct a scenario in which a minor alteration of circumstances would have resulted in a violation of the Part 20 limits, and (4) the ability to assess dose was not compromised. This finding had a cross-cutting aspect in the human performance area, work control component, in that the licensee did not plan work activities appropriately by incorporating risk insights and job site conditions, such as the effects on job site radiation levels when water shielding was reduced.

Inspection Report# : [2012005](#) (*pdf*)

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 24, 2012

Identified By: NRC

Item Type: FIN Finding

Waterford Steam Electric Station, Unit 3 - Identification and Resolution of Problems Summary

The team reviewed approximately 350 condition reports, work orders, engineering evaluations, root and apparent cause evaluations, and other supporting documentation to determine if problems were being properly identified, characterized, and entered into the corrective action program for evaluation and resolution. The team reviewed a sample of system health reports, self-assessments, audits, trending reports and metrics, and various other documents related to the corrective action program.

Based on these reviews, the team concluded that the licensee's corrective action program and its other processes to identify and correct nuclear safety problems were adequate to support nuclear safety. However, the team noted at times the licensee staff did not always use the corrective action program for problems that were perceived as minor. The team also noted several challenges in correcting adverse conditions in a timely manner. Further, the licensee had several long-standing issues, which had been in the corrective action process for over a year without resolution. The licensee appropriately evaluated industry operating experience for relevance to the facility and entered applicable items in the corrective action program. However, there was one example where the licensee failed to enter an information notice into their corrective action program for evaluation of a condition adverse to quality. The licensee used industry operating experience when performing root cause and apparent cause evaluations. The licensee

4Q/2012 Inspection Findings - Waterford 3

performed effective quality assurance audits and self-assessments, as demonstrated by self-identification of poor corrective action program performance and identification of ineffective corrective actions. Finally, the team determined that the station continued to maintain a safety-conscious work environment. Employees felt free to raise nuclear safety concerns to the attention of management without fear of retaliation.

Inspection Report# : [2012008](#) (*pdf*)

Last modified : February 28, 2013