

Waterford 3

4Q/2014 Plant Inspection Findings

Initiating Events

Significance: G Jun 06, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Identify a Cause and Implement Corrective Actions to Prevent Recurrence for a Significant Condition Adverse to Quality

The team identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, for a failure to identify a cause and take corrective actions to prevent recurrence. Specifically, the licensee did not identify a cause or corrective actions to prevent recurrence for a plant trip and equipment failures caused by elevated main feed system vibrations. The licensee replaced the steam generators at Waterford 3 during refueling outage 18 in late 2012. Upon returning to power operations the licensee experienced elevated vibration levels and related equipment failures on the main feedwater system and emergency feedwater system. The most significant of these failures included a plant trip after a loss of instrument air to the feedwater regulating valve actuator. The licensee determined that the plant trip was a significant event, and initiated a root cause evaluation through its corrective action process. This root cause determination identified a possible cause, which by the licensee's program required additional information to confirm or refute. The licensee initiated a proposal to perform modeling of the steam generator flows to provide this information, but later canceled the action. No corrective actions to prevent recurrence were implemented by the licensee. Actions taken to date by the licensee appear to have been effective in mitigating known effects of the vibrations. The licensee documented its failure to determine and document the cause of these vibrations in Condition Report CR-WF3-2014-03238.

The failure to identify the cause of the feedwater vibration-induced problems and to take corrective actions to prevent recurrence as required by 10 CFR Part 50, Appendix B, Criterion XVI is a performance deficiency. The performance deficiency is more than minor because if left uncorrected, it could lead to a more significant safety concern. Specifically, though individual actions were taken to address failures caused by vibrations, no actions were taken to reduce or eliminate the vibrations themselves. Actions that were taken were not treated as corrective actions to prevent recurrence. A lack of corrective actions to prevent recurrence could leave main feedwater components and other components physically connected to the system such as emergency feedwater susceptible to future failures. Using Inspection Manual Chapter 0609, Appendix A, the team determined the issue to have very low safety significance (Green) because the performance deficiency, which affected the initiating events cornerstone, did not result in a reactor trip and the loss of mitigating equipment needed to transition the plant from the onset of the trip to a stable shutdown condition.

This finding has a resources cross-cutting aspect in the human performance area because leaders did not ensure that procedures used at the time the root cause assessment was performed were adequate to support nuclear safety (H.1). The procedure used by the licensee allowed a root cause assessment to have an indeterminate root cause and thus no corrective actions to prevent recurrence.

Inspection Report# : [2014008](#) (*pdf*)

Significance: G Jun 06, 2014

Identified By: NRC

Item Type: FIN Finding

Failure to Evaluate Operating Experience as Directed in Station Procedure

The team identified a finding for the licensee's failure to evaluate industry operating experience as directed in the station operating experience program procedure. Specifically, a vendor supplied Technical Bulletin TB-13-1 "Steam Generator and Pressurizer Closure Gasket Replacement Frequency," which recommended that all Westinghouse-designed steam generator and pressurizer closure gaskets be replaced at a prescribed frequency, was not evaluated in accordance with station procedures. This resulted in the licensee failing to take action to periodically replace affected gaskets to preclude degradation of the pressure boundary. The licensee documented this performance deficiency in Condition Report CR-WF3-2014-03229 to determine what further actions were needed.

The failure to evaluate operating experience information as required by licensee procedure EN-OP-100, "Operating Experience Program," Revision 20, was a performance deficiency. The performance deficiency is more than minor because if left uncorrected it would have the potential to lead to a more safety-significant concern. Specifically, the failure of the licensee to take any action with regard to the technical bulletin recommendation to replace the steam generator gaskets would allow the gaskets to be installed longer than their useful life. The deterioration of gasket material could result in unplanned transients or shutdowns. The finding is therefore associated with the initiating events cornerstone. Using Inspection Manual Chapter 0609, Appendix A, the inspectors determined that the finding was of very low safety significance (Green) because it was not an actual degradation that could have resulted in exceeding a reactor system leak rate for a small LOCA; could not have affected other systems used to mitigate a LOCA; did not cause a reactor trip and the loss of mitigation equipment relied upon to transition the plant to a stable shutdown condition; and did not involve a complete or partial loss of a support system that contributes to the likelihood of, or causes, an initiating event and affected mitigation equipment.

This finding has a conservative bias cross-cutting aspect in the human performance area (H.14). Specifically, the licensee assumed that the technical bulletin was not based on actual failures and because steam generators had just been replaced, opted not to take further actions to evaluate or initiate any preventative maintenance to replace gaskets. Inspection Report# : [2014008](#) (*pdf*)

Mitigating Systems

Significance:  Dec 31, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Identify and Control Potential Tornado-Borne Missile Hazards

The inspectors identified a non-cited violation of Technical Specification 6.8.1.a and Regulatory Guide 1.33, Revision 2, Appendix A, for the licensee's failure to follow procedure OP-901-521, "Severe Weather and Flooding," Revision 312, on two separate instances. Specifically, on both November 16 and December 23, 2014, the licensee entered the off-normal procedure due to a tornado watch but failed to assess and control potential tornado-borne missile hazards on site as required by the procedure. The licensee entered this condition into their corrective action program as condition reports CR-WF3-2014-05912 and CR-WF3-2014-06453. The immediate corrective action taken to restore compliance was to secure the identified hazards.

This finding was more than minor because it was associated with the Protection Against External Factors 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, in the event of a tornado at the site, these loose items could have become missiles with the potential to impact safety-related site equipment and personnel. The inspectors determined the finding was of very low safety

significance (Green) because the it did not involve the loss or degradation of equipment or functions specifically designed to mitigate a seismic, flooding, or severe weather event (e.g. seismic snubbers, flooding barriers, tornado doors). The inspectors concluded that the finding had a cross-cutting aspect in the area of Human Performance, Field Presence, because the licensee did not ensure supervisory and management oversight of work activities.

Inspection Report# : [2014005](#) (*pdf*)

Significance:  Dec 31, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Follow the Operability Determination Process

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” for the licensee’s failure to assess immediate operability of safety-related systems in accordance with site procedures, in three separate instances. Specifically, on two occasions, the licensee did not properly assess operability of safety-related relays in the Engineered Safety Features Actuation Signal system, which in turn brought into question the operability of the emergency diesel generators. A third example involved the licensee’s failure to properly assess operability of safety-related class 3 piping on the dry cooling towers, which brought into question the operability of the component cooling water system. The licensee entered this condition into their corrective action program as condition report CR-WF3-2014-06014. The licensee restored compliance by revising the immediate operability determinations to reflect an adequate reason to justify operability of the systems in questions.

The inspectors determined that the performance deficiency was more than minor because it was associated with the Equipment Performance attribute of the Mitigating Systems Cornerstone to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, failing to follow the Operability Determination procedure caused the licensee to incorrectly assess the capability of the systems impacted by the relays and dry cooling tower tube leak to perform their safety function and there was a reasonable doubt on the operability of the systems. The inspectors determined the finding had very low safety significance (Green) because it did not affect the design or qualification of the system, did not represent the loss of a safety system or function, did not represent the loss of function of at least a single train for greater than its Technical Specification allowed outage time, and did not represent an actual loss of function of one or more non-Technical Specification trains of equipment. This finding had a cross-cutting aspect in the area of Human Performance, Consistent Process, because individuals did not use a consistent, systematic approach to make a decision and risk insights were not incorporated appropriately.

Inspection Report# : [2014005](#) (*pdf*)

Significance:  Dec 31, 2014

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Establish an Inspection Schedule of the Dry Cooling Towers

The inspectors reviewed a self-revealing, non-cited violation of Technical Specification 6.8.1.a and Regulatory Guide 1.33, Revision 2, Appendix A, for failure of the licensee to develop a preventative maintenance schedule for inspections of safety-related equipment. Specifically, the licensee did not develop a preventative maintenance schedule to visually inspect all portions of the dry cooling towers (DCT). The licensee entered this condition into their corrective action program as condition report CR-WF3-2014-04930 and CR-WF3-2014-06100. The licensee developed preventative maintenance tasks to inspect the DCT tubes, including disassembly where necessary, to restore compliance.

The inspectors determined 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 of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to inspect portions of the dry cooling towers prevented the licensee from identifying corrosion that eventually degraded the system enough to cause a leak. The inspectors determined the finding had very low safety significance (Green) because it did not affect the design or qualification of the system, did not represent the loss of a safety system or function, did not represent the loss of function of at least a single train for greater than its Technical Specification allowed outage time, and did not represent an actual loss of function of one or more non-Technical Specification trains of equipment. The inspectors concluded that the finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Identification, because the licensee did not implement a corrective action program with a low threshold for identifying issues.

Inspection Report# : [2014005](#) (*pdf*)

Significance:  Dec 31, 2014

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Establish Design Control Measures for the Suitability of Safety-Related Relays

The inspectors reviewed a self-revealing, non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” for the licensee’s failure to establish measures for the selection and review for suitability of application of materials, parts, equipment, and processes that are essential to the safety-related functions of the structures, systems and components. Specifically, the licensee did not have an adequate replacement frequency for safety-related relays associated with engineered safety features equipment to ensure that all required equipment operated in the time sequence assumed by the safety analysis. The licensee entered this condition into their corrective action program as condition report CR-WF3-2013-05091. The licensee replaced the affected relays and reduced their replacement frequency from 18 years to 3 years to restore compliance.

The inspectors determined 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 of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to develop an adequate replacement frequency for the relays used to monitor for under-voltage conditions on the safety-related emergency busses could have prevented the equipment from performing its safety function. The inspectors determined the finding was of very low safety significance (Green) because the finding was a deficiency affecting the qualification of a mitigating system component and the affected equipment maintained its operability. The inspectors determined the finding had a cross-cutting aspect in the area of Human Performance, Challenging the Unknown, because the licensee did not stop when faced with uncertain conditions and risks were not evaluated and managed before preceding.

Inspection Report# : [2014005](#) (*pdf*)

Significance:  Dec 31, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Correct a Condition Adverse to Quality in a Timely Manner

The inspectors identified a finding of very low safety significance and associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, “Corrective Actions,” for the licensee’s failure to correct a condition adverse to quality in a time commensurate with the safety significance of the issue. Specifically, the licensee failed to repair degraded conduit that had been identified as corroded since 2008. As a result, conduits that were housing cables for safety-related components were degraded to the point where water entered the conduit and submerged cables that

were not designed for submergence for an extended period of time. The licensee entered this condition into their corrective action program as condition report CR-WF3-2014-04951. The licensee repaired the degraded conduit associated with the impacted safety-related cables to restore compliance, and also initiated an extent of condition review to identify other cables that could potentially be impacted by degraded conduits.

The inspectors determined that the performance deficiency was more than minor because if left uncorrected the performance deficiency would have the potential to lead to a more significant safety concern. Specifically, safety-related cables that were not rated for full submergence were submerged in water since at least 2008, potentially affecting the integrity of the cable and potentially impacting the safety-related equipment's ability to perform their safety function in the event of an accident. The inspectors determined that the finding had very low safety significance (Green) because the finding impacted the qualification of mitigating components but the components maintained operability. This finding had a cross-cutting aspect in the area of Human Performance, Conservative Bias, because the licensee decision-making practices did not emphasize prudent choices over those that are simply allowable. Specifically, when evaluating condition reports written through several years that document the degraded conduit, the licensee elected to defer needed maintenance instead of placing the adequate priority on the issue.

Inspection Report# : [2014005](#) (*pdf*)

Significance:  Jun 06, 2014

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Inadequate Procedures for Securing Dry Cooling Tower Fans

A self-revealing non-cited violation of 10 CFR Part 50, Appendix B, Criterion III occurred when the licensee did not assure that design basis information was translated into specifications, drawings, procedures, and instructions. Specifically, after a failure revealed new design basis information regarding the need to place a train of dry cooling tower fan controllers to the "off" position prior to de-energizing the associated control cabinet, the licensee failed to incorporate this information into procedures. As a result, the failure recurred. The licensee entered this condition into its corrective action program as Condition Reports CR-WF3-2012-05680 and -06908 and updated procedure OP-006-005, "Inverters and Distribution," to incorporate the new design basis information into procedures. The licensee documented its failure to timely update design basis information in Condition Report CR-WF3-2014-02981.

The failure to assure that design basis information was translated into specifications, drawings, procedures, and instructions as required by 10 CFR Part 50, Appendix B, Criterion III 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 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 incorporate design basis information regarding the need to place the dry cooling tower fan controllers to the "off" position prior to de-energizing the associated control cabinet into specifications, drawings, procedures, and instructions impacted the capability, availability, and reliability of both trains of dry cooling towers. Using NRC Inspection Manual Chapter 0609, Appendix G, "Shutdown Operations Significance Determination Process," the inspectors determined the finding to be of very low safety significance (Green) because the required number of dry cooling towers in the protected train maintained their operability.

This finding has a resolution cross-cutting aspect in the problem identification and resolution cross-cutting area because the licensee had not taken effective corrective actions to address an issue in a timely manner commensurate with its safety significance (P.3).

Inspection Report# : [2014008](#) (*pdf*)

Significance:  Jun 06, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Identify and Correct Condition Adversely Affecting Flooding Mitigation Design

The team identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, for the licensee's failure to identify and correct a condition adverse to quality. On May 19, 2014, the team identified a significant amount of debris on the floor of one of the main steam isolation valve areas. In a probable maximum precipitation event, this debris could have prevented sufficient water removal by the floor drains to meet design basis assumptions. Following identification, the licensee entered this condition into its corrective action program as Condition Report CR-WF3-2014-03037 and removed the debris from the area.

Excessive debris in the main steam isolation valve A area that could challenge the waterremoval capability of safety-related drain systems was a condition adverse to quality. The licensee's failure to promptly identify and correct this condition adverse to quality as required by 10 CFR Part 50, Appendix B, Criterion XVI was a performance deficiency. This performance deficiency was more than minor because if left uncorrected, it had the potential to lead to a more significant safety concern. The lead inspector performed the initial significance determination for performance deficiency using NRC Inspection Manual 0609, Appendix A, Exhibit 4, "External Events Screening Questions," dated July 1, 2012. The finding required a detailed risk evaluation because it involved the degradation of equipment specifically designed to mitigate a flooding event. Therefore, a Region IV senior reactor analyst performed a bounding detailed risk evaluation. The bounding change to the core damage frequency was 4.7×10^{-8} per year (Green). The dominant core damage sequences included extremely heavy rainfall, a loss of offsite power initiating event, failure of the train B 4.16kV bus, and failure of the pressurizer safety relief valves to close. The low initiating event frequency reduced the risk significance.

This finding has a resolution cross-cutting aspect in the problem identification and resolution cross-cutting area because the licensee failed to take effective corrective actions to address issues in a timely manner commensurate with their safety significance. Specifically, the licensee's corrective actions from the previous non-cited violation did not fully address the issue (P.3).

Inspection Report# : [2014008](#) (pdf)

Significance:  Jun 06, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Promptly Correct Multiple Degraded or Nonconforming Conditions

The inspectors identified multiple instances of the licensee's failure to promptly correct degraded or nonconforming conditions as required by 10 CFR Part 50, Appendix B, Criterion XVI. At the conclusion of the inspection, the licensee had one structure, system or component that had been degraded since November 2008, requiring compensatory measures to provide reasonable assurance of operability; the licensee had another degraded condition that had existed since April 2011 with no compensatory measures in place. Following the team's identification of this issue, the licensee documented this issue in Condition Report CR-WF3-2014-03250 to evaluate the timeliness of its corrective actions.

The failure to promptly correct conditions adverse to quality as required by 10 CFR 50, Appendix B, Criterion XVI was a performance deficiency. This performance deficiency is more than minor because it was associated with the design control 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. Using Inspection Manual Chapter 0609, Appendix A, the team determined this finding to be of very low safety significance (Green) because it did not represent the actual loss of function of a safety-related system or train.

This finding has an evaluation cross-cutting aspect in the problem identification and resolution cross-cutting area

because the licensee failed to thoroughly evaluate the issues to ensure that the resolutions addressed causes and extents of condition commensurate with the issues' safety significance (P.2).

Inspection Report# : [2014008](#) (*pdf*)

Significance:  Feb 20, 2014

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Establish Adequate Design Control Measures for the Selection and Review for the Suitability of Application of Molded Case Circuit Breakers

A self-revealing, non-cited violation of 10 CFR Part 50, Appendix B,

Criterion III, "Design Control," occurred because the licensee did not establish design control measures for the selection and review for the suitability of application of a molded case circuit breaker that was essential to the safety-related function of a shutdown cooling heat exchanger fan cooler. Specifically, the licensee did not select and review for the suitability of the correct safety-related circuit breaker for the application to provide circuit fault protection to the train B shutdown cooling heat exchanger air handling unit fan motor. The licensee entered this condition into their corrective action program as Condition Reports

CR-WF3-2013-02316 and CR-WF3-2013-04644. The immediate corrective action taken to restore compliance included the replacement of the breaker with a breaker more suitable for the application to protect the air handling unit fan motor. The planned corrective actions included an extent of condition review for other installed breakers and the revision of work order instructions to eliminate the practice of substituting and using the factory acceptance testing for pre-installation and post-maintenance tests, respectively.

The inspectors concluded that the failure to establish design control measures for the selection and review for suitability of application for the correct safety-related circuit breaker was a performance deficiency. The performance deficiency was more than minor because it was associated with the design control 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 incorrect breaker affected the availability, reliability, and capability of the

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shutdown cooling heat exchanger fan coolers to remove heat from the shutdown cooling heat exchanger areas following a design basis accident. The inspectors performed the initial significance determination. The inspectors used the NRC Inspection Manual 0609, Attachment 4, "Initial Screening and Characterization of Findings." The initial screening directed the inspectors to use Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," Exhibit 2, Section A, to determine the significance of the finding. The finding required a detailed risk evaluation because it involved a potential loss of one train of safety-related equipment for longer than the technical specification allowed outage time. The total exposure period was 23 days. The allowed outage time was 7 days. A Region IV senior reactor analyst performed the detailed risk evaluation and determined that the change to the core damage frequency was 5E-13/year (Green). The dominant core damage sequences included loss of offsite power events, failure of both trains of containment spray, and the failure of a pressurizer safety relief valve to remain closed. The equipment that helped mitigate the risk included the emergency diesel generators and the essential feedwater systems.

The inspectors concluded that the finding reflected current licensee performance and involved a cross-cutting aspect of avoiding complacency in the human performance area because the licensee did not recognize and plan for the possibility of mistakes, latent issues, and inherent risk on relying on 21 year old vendor information and installing a breaker without pre-installation and adequate post-maintenance testing.

Inspection Report# : [2014002](#) (*pdf*)

Significance:  Jan 08, 2014

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Replace an Essential Chiller Oil Pump prior to the End of Duty Life.

A Green self-revealing, non-cited violation of Technical Specification 6.8.1.a, occurred because the licensee did not establish preventative maintenance schedule to inspect or replace an item that have a specific lifetime. Specifically, the licensee did not establish a preventative maintenance schedule to inspect or replace the oil pump motors associated with the essential chillers prior to the pump motor exceeding its duty life. As a result, the pump associated with essential chiller B failed in-service. The licensee entered this condition into their corrective action program as condition report CR-WF3-2014-00095. The immediate corrective action taken to restore compliance was to issue an action request to establish the periodic replacement of the essential chiller pumps prior to the end of their vendor recommended service life.

The failure to establish a preventative maintenance schedule to inspect or replace the oil pump motors associated with the essential chillers prior to the end of the vendor provided duty life 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 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 establish a preventative maintenance schedule to inspect or replace the oil pumps associated with the essential chillers prior to the duty life resulted in the failure of a pump while in service and the unavailability of essential chiller B. The inspectors used NRC Inspection Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," to evaluate this issue. The inspectors categorized the finding as having very low safety significance (Green) because the finding did not represent an actual loss of function of one or more non-Technical Specification trains of equipment designated as high safety-significant in accordance with the licensee's maintenance rule program for greater than 24 hours. The inspectors concluded that the finding did not have a cross-cutting aspect because the most significant contributor to the performance deficiency did not reflect current licensee performance.

Inspection Report# : [2014002](#) (pdf)

Significance:  Jan 06, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Establish Procedures for Using the Alternate Emergency Fuel Oil Storage Tank Fill Line.

An NRC-identified Green, non-cited violation of Technical Specification 6.8.1.a, occurred because the licensee did not establish written procedures for filling emergency power sources. Specifically, the licensee did not establish procedures to fill the fuel oil storage tanks for the emergency diesel generators using the safety related, seismic category I alternate emergency fill line. The licensee entered this condition into their corrective action program as condition report CR-WF3-2014-00636. The immediate corrective action taken to restore compliance was to initiate actions for developing procedures for filling the emergency diesel generator fuel oil storage tanks using the alternate emergency fill line.

The failure to develop procedures for filling emergency power sources was a performance deficiency. The performance deficiency was more than minor because it was associated with the procedure quality 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 establish procedures for the filling of the emergency diesel fuel oil storage tanks using the Seismic Category I alternate emergency fill connection reduced the licensee's capability and reliability to for filling the fuel oil storage tanks following an extreme weather event. The inspectors inspector performed the initial significance determination and used Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings at-Power," Exhibit 2, "Mitigating Systems Screening Questions," to evaluate this issue. The finding required a detailed risk evaluation because the performance deficiency could have resulted in a loss of safety function (onsite AC power) because the system may not have remained operable for its 30 day design basis accident mission time. Therefore, a Region IV senior reactor analyst performed a detailed risk evaluation for this issue. The analyst determined that the finding was of very low safety significance (Green) because the diesel

generators would have remained functional for their 24-hour probabilistic risk assessment mission time. This shorter mission time is used for detailed risk evaluations because, after 24 hours, the NRC assumes that the licensee has substantially more resources available to help mitigate the accident. The dominant core damage sequences included longer term loss of offsite power events and the common cause failure of the diesel generators because of potential problems refilling the diesel fuel oil storage tanks. The relatively long period prior to ultimate diesel generator failure helped to minimize the risk. The finding was not a significant contributor to the large early release frequency. The inspectors concluded that the finding reflected current licensee performance and involved an avoiding complacency cross-cutting aspect of the human performance area in that the licensee did not recognize and plan for the possibility of mistakes, latent issues, and inherent risk, even while expecting successful outcomes.

Inspection Report# : [2014002](#) (*pdf*)

Significance: **G** Jan 03, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Perform an Evaluation for Transient Combustibles.

An NRC-identified Green, non-cited violation of Waterford's Facility Operating License Number NPF-38, License Condition 2.C.9 and the Fire Protection Program occurred because the licensee failed to follow procedures. Specifically, the licensee did not perform a transient combustible evaluation as required by EN-DC-161, "Control of Combustibles," to evaluate the impact of capturing and storing up to two gallons of leaking fuel oil in the train B emergency diesel generator room. As a result, the licensee was not performing required hourly fire watches. The licensee entered this condition into their corrective action program as condition report CR-WF3-2013-6020 and CR-WF3-2013-06123. The immediate corrective action taken to restore compliance was to perform a transient combustible evaluation implement hourly fire watches.

The failure to implement a fire protection program procedure was a performance deficiency. The performance deficiency was more than minor because it was associated with the protection against external factors (i.e., fire) 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 perform a transient combustible evaluation when a flammable liquid above one pint in an approved container was present in the B emergency diesel generator room prevented the licensee from implementing required compensatory measures in response to the presence of transient combustibles. In addition, similar to NRC Inspection Manual Chapter 0612, Appendix E, Section 4, Example k of a more than minor violation, the failure of the leak collection device resulting in fuel oil around emergency diesel generator B represented a credible fire scenario involving transient combustibles that could affect equipment important to safety. The inspectors used NRC Inspection Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," to evaluate this issue. The inspectors categorized the finding under Fire Prevention and Administrative Controls and qualitatively screened it as very low safety significance (Green) because the impact of the fire finding was limited to no more than one train of equipment important to safety. The inspectors concluded that the finding reflected current licensee performance and involved a conservative bias cross-cutting aspect in the human performance area in that the licensee did not use decision making practices that emphasized prudent choices over those that are simply allowable.

Inspection Report# : [2014002](#) (*pdf*)

Significance: **W** Dec 20, 2013

Identified By: NRC

Item Type: VIO Violation

Failure to establish an adequate test program to demonstrate that the train B EDG exhaust fan would perform satisfactorily in service

A self-revealing apparent violation of 10 CFR Part 50, Appendix B, Criteria XI, Test Control, occurred because the licensee failed to establish an adequate test program to demonstrate that a safety related component associated with the Train B Emergency Diesel Generator would perform satisfactorily in service. Specifically, the licensee failed to identify and perform adequate testing on the Train B EDG exhaust fan to demonstrate that the exhaust fan would perform satisfactorily in service, which incorporated the requirements and acceptance limits contained in applicable design documents such as the Final Safety Analysis Report, as updated. As a result, the licensee failed to ensure that for all operational tests that the safety related exhaust fan would perform satisfactorily such that it would provide sufficient flow and remove heat during accident conditions. The licensee entered this condition into their corrective action program as condition report CR-WF3-2013-02530. The immediate corrective actions taken to restore compliance included the replacement of the B EDG exhaust fan assembly. The planned corrective actions include the review of the EDG ventilation system monitoring plan.

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 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 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 licensee failed to perform testing to ensure that the B EDG ventilation exhaust fan would fulfill its safety function to remove heat from the EDG room when the diesel operates during accident conditions. The senior resident inspector performed the initial significance determination for the diesel generator room ventilation fan failure. The inspector used the NRC Inspection Manual 0609, Attachment 4, "Initial Screening and Characterization of Findings." The finding required a detailed risk evaluation because it involved a potential loss of one train of safety related equipment for longer than the technical specification allowed outage time. The emergency diesel generator needed the ventilation exhaust fan to remain Operable. The unit was not recoverable. The total exposure period was 25 days. The allowed outage time was 72 hours. The analyst determined the best estimated change to the core damage frequency was $4.4E-6$ /year (White). The risk significance was low to moderate (White). The dominant core damage sequences included loss of offsite power events, leading to station blackout, coincident with the failure of the turbine driven auxiliary feedwater pump. Equipment that helped mitigated the risk included recovery of an emergency diesel generator or manually starting a temporary emergency diesel generator set. The inspectors concluded that the finding reflected current licensee performance and involved a cross-cutting aspect in the resource component of the human performance area in that the licensee did not have complete, accurate and up-to-date operational surveillance procedure tests [H.2.c].

Final significance determination and White NOV issued March 28, 2014. IR 05000382/2014009 (ML 14086A768)

IP 95001 supplemental inspection performed. IR 05000382/2014011 (ML 14364A412) issued December 30, 2014. White finding is being held open due to IP 95001 objectives not being met due to inadequate extent of cause evaluation.

Inspection Report# : [2013008](#) (*pdf*)

Inspection Report# : [2014009](#) (*pdf*)

Inspection Report# : [2014011](#) (*pdf*)

Barrier Integrity

Emergency Preparedness

Significance:  Jun 30, 2014

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Maintain Adequate Public Address System to Implement Onsite Protective Actions.

The inspectors identified a non-cited violation of 10 CFR Part 50.54(q)(2) for a failure to maintain the effectiveness of an emergency plan that meets the planning standards of 10 CFR Part 50.47(b). Specifically, the licensee failed to maintain the public address system in a manner that could provide prompt protective action notifications via voice or emergency alarms to all areas and buildings on the plant site. The capability to implement onsite protective actions for its workers is required by 10 CFR Part 50.47(b)(10). The licensee implemented compensatory measures while the system was being restored. Based on communications from the licensee on January 14, 2014, signs have been placed on entrances to areas affected by the non-functional public address speakers detailing alternate radio communications protocols that must be used while in the areas. In addition, public address speaker communications were sent out via group pagers and plant radio systems as well to enhance the ability to reach all workers. These compensatory measures have been communicated to their operations staff via written instructions in their daily turnover documentation. The licensee entered the issue into the corrective action program as Condition Report CR-WF3-2013-05860.

The failure to maintain the effectiveness of the means to warn or advise onsite individuals of the range of protective measures consistent with the licensee's emergency plan was a performance deficiency. The performance deficiency is more than minor because it is associated with the facilities and equipment attribute of the emergency preparedness cornerstone and it adversely impacted the objective of ensuring that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. In addition, if left uncorrected, continued degradation of the public address system could lead to workers not receiving emergency instructions in a manner timely enough to ensure their safety. Using NRC Inspection Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," and the corresponding Appendix B, "Emergency Preparedness Significance Determination Process (SDP)," the finding was determined to have very low safety significance (Green) because it did not result in a loss of risk-significant planning standard function, a risk-significant planning standard degraded function, or a loss of planning standard function. The finding had a cross-cutting aspect in the evaluation area of problem identification and resolution, associated with thoroughly evaluating issues to ensure that resolutions address causes and extent of conditions commensurate with their safety significance. From August 2011 to December 4, 2013, as documented by multiple condition reports, there have been many instances of speaker and system component failures that have resulted in fixing failed components only without addressing the underlying conditions causing those failures. None of the failures caused the licensee to question whether they fully understood the reasons for the repetitive failures and whether alternative actions were necessary to correct the causes.

Inspection Report# : [2014003](#) (*pdf*)

Occupational Radiation Safety

Significance:  Dec 31, 2014

Identified By: NRC

Item Type: FIN Finding

Failure to Adequately Plan and Control Work Activities Related to Alloy 600 Pipe Weld Inspections to Ensure Doses were ALARA.

The inspectors identified a finding of very low safety significance associated with the licensee's failure to adequately plan and control work activities associated with Alloy 600 ultrasonic examinations during Refueling Outage 19. Specifically, the inspectors concluded that, had the licensee appropriately evaluated the Alloy 600 pipe weld conditions/ locations during the ALARA planning process and appropriately performed in-progress ALARA reviews, they could have reasonably planned for the full scope of work and provided a better estimate and/or adequately

justified revising the estimate for the job. These failures to plan and control the job activities led to unplanned, unintended collective dose. The licensee evaluated the procedures used during this work, including their process for planning and estimating doses, and documented the issue in the corrective action program.

The failure to adequately plan and control work activities associated with Alloy 600 ultrasonic examinations is a performance deficiency. This performance deficiency is more than minor because it is associated with the program and process attribute of the Occupational Radiation Safety cornerstone. It adversely affects the cornerstone objective to ensure adequate protection of the worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. Specifically, it caused the collective radiation dose for the work to be greater than 5 man-rem and exceed the planned dose estimate by more than 50 percent. Using Inspection Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," dated August 19, 2008, the inspectors determined the violation has very low safety significance because: (1) it was associated with ALARA planning and (2) the licensee's three-year rolling average collective dose of 121.7 man-rem was less than 135 man-rem. The finding has a Work Management cross-cutting aspect, associated with the Human Performance cross-cutting area, because the licensee did not adequately plan or control work activities such that nuclear safety is the overriding safety priority. Specifically, the ALARA plan did not reflect the time needed to complete the work activities, thus underestimating the dose requirements, and the administrative control of reviewing the work-in-progress at appropriate completion points failed.

Inspection Report# : [2014005](#) (*pdf*)

Significance: G Jun 30, 2014

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Control Entry into a High Radiation Area

The inspectors reviewed a self-revealing, non-cited violation of Technical Specification 6.12.1 because a worker entered a high radiation area, but was not on a radiation work permit that authorized entry and was not knowledgeable of the dose rates in the area. Specifically, on April 14, 2014, a worker entered shutdown heat exchanger room B, a posted high radiation area during crud burst operations, and received an unanticipated electronic dose rate alarm of 107 millirem per hour. Radiation protection personnel counseled the worker, revoked his access to radiological controlled areas, and documented the occurrence in the corrective action program as Condition Report CR-WF3-2014-01638.

The entry into a high radiation area while not on a radiation work permit that allows entry into high radiation areas and without knowledge of the dose rates in the area is a performance deficiency. The performance deficiency is more than minor and a violation of Technical Specification 6.12.1 because it impacted the program and process attribute (exposure control) of the occupational radiation safety cornerstone and adversely affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation. Using Inspection Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," dated August 19, 2008, the inspectors determined the violation has very low safety significance because: (1) it was not as low as is reasonably achievable (ALARA) finding, (2) there was no overexposure, (3) there was no substantial potential for an overexposure, and (4) the ability to assess dose was not compromised. This violation has a cross-cutting aspect in the human performance area, associated with an individual's failure to implement appropriate error reduction tools necessary for avoiding complacency by recognizing and planning for the possibility of mistakes, latent issues, and inherent risk, even while expecting successful outcomes.

Inspection Report# : [2014003](#) (*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 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 : February 26, 2015