

Waterford 3 2Q/2013 Plant Inspection Findings

Initiating Events

Significance: G Jun 30, 2013

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to provide adequate post modification testing instructions for vibration monitoring on the feedwater piping system following steam generator replacement

The inspectors reviewed a self-revealing non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, because the licensee did not provide adequate post modification testing instructions for activities affecting quality to the circumstances that included appropriate acceptance criteria for determining that important activities have been satisfactorily accomplished. Specifically, the licensee did not provide adequate post modification testing instructions for vibration monitoring of the feedwater piping system that included appropriate acceptance criteria following the installation of the new replacement steam generators. As a result, the plant experienced an automatic reactor trip and a subsequent down power due to an increase in vibrations on the feedwater piping system without appropriate acceptance criteria and monitoring during power ascension. The licensee entered this issue into their corrective action program as CR-WF3-2013-0445. The immediate corrective actions taken to restore compliance included the implementation of a revised vibration-monitoring plan to include appropriate acceptance criteria and the development of engineering changes to mitigate vibration effects on the feedwater piping system.

The failure to provide adequate post modification testing instructions for vibration monitoring of feedwater piping system following steam generator replacement was a performance deficiency. Specifically, the licensee did not provide adequate post modification testing instructions for vibration monitoring on the feedwater piping system. The performance deficiency was more than minor because it was associated with the design control 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 power operations. 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 of very low safety significance (Green) because the transient initiator did not contribute to the likelihood that mitigation equipment or functions would not be available. 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 operating experience through changes to station equipment to support plant safety [P.2.b].

Inspection Report# : [2013003](#) (*pdf*)

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 [H.1(a)].

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

Significance:  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 [H.4(b)].
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 [H.4(b)].

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

Mitigating Systems

Significance:  Jun 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to provide adequate design control measures for verifying or checking the adequacy of the effects of a PMP flooding event on the reactor auxiliary building roof areas that contained safety-rea

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, because the licensee did not provide design control measures for verifying or checking the adequacy of the features designed to withstand the effects of a probable maximum precipitation (PMP) flooding event on

the reactor auxiliary building (RAB) roof areas. Specifically, the licensee did not provide an analysis to demonstrate that adequate flood protection existed from the effects of a PMP flooding event on safety-related components and electrical equipment located on the roof of the RAB in the main steam isolation valve (MSIV) wing areas. As a result, the licensee did not perform an analysis to determine if expected ponding levels from a PMP flooding event would challenge safety-related components and electrical equipment such as the emergency feedwater flow control and isolation valves and cables, main steam isolation valves and cables, atmospheric dump valves, and back-up nitrogen accumulator components. The licensee entered this issue into their corrective action program as CR-WF3-2012-7520. The immediate corrective actions taken to restore compliance included the performance of a preliminary analysis to show that the installed scuppers and roof drains have margin to protect against a local PMP flooding event and that the ponding depth would have little or no affect on the safety-related equipment and cables located in the MSIV wing areas.

The failure to provide design control measures for verifying or checking the adequacy of the features designed to withstand the effects of a local PMP on the RAB roof areas was a performance deficiency. The performance deficiency was more than minor because it was associated with the design control 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 safety-related equipment located on the RAB roof in the MSIV wing areas are required to safely shutdown and maintain the reactor in a cold shutdown condition following accidents and anticipated operational occurrences. The inspectors used the NRC Inspection Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings" and Appendix A, "The Significance Determination Process for Findings At-Power," to evaluate this issue. The inspectors determined that the finding was of 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. 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 identify potential flooding issues completely, accurately, and in a timely manner commensurate with their safety significance [P.1.a]

Inspection Report# : [2013003](#) (*pdf*)

Significance: N/A Jun 30, 2013

Identified By: NRC

Item Type: VIO Violation

Failure to submit a licensee event report within 60 days of discovery of a condition that affected the manual hand-wheel operation of safety related air operated valves following a loss of their corr

The inspectors identified a Severity Level IV non-cited violation of 10 CFR 50.73(a)(1) because the licensee did not submit a Licensee Event Report (LER) in a timely manner after the discovery of a reportable event. Specifically, the licensee failed to submit a required LER within 60 days after the discovery of a condition that affected the manual hand-wheel operation of safety related air operated valves following a loss of their corresponding back-up nitrogen accumulators. The licensee determined that the manual hand-wheel function on the essential chiller and emergency feedwater isolation and backup flow control valves did not work. The licensee was aware of the condition that existed but did not adequately evaluate the condition as a part of their reportability review. The licensee entered this issue into their corrective action program as CR-WF3-2013-2564. The immediate corrective actions taken to restore compliance included a new reportability review of the condition and the development of an LER.

The failure to submit a required LER within 60 days after discovery of a condition that required a report was a violation of NRC requirements. The inspectors determined that this violation was also a performance deficiency. However, the inspectors determined that the performance deficiency was minor. The inspectors considered this issue to be within the traditional enforcement process because it had the potential to impact the NRC's ability to perform its regulatory oversight function. The inspectors used the NRC Enforcement Policy to evaluate the significance of this violation. The inspectors determined that the violation was a Severity Level IV because it was similar to an example provided in Section 6.9 of the NRC Enforcement Policy. The inspectors did not assign a cross-cutting aspect to this non-cited violation because there was no finding associated with this traditional enforcement violation.

Inspection Report# : [2013003](#) (*pdf*)

Significance:  Mar 31, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Identify and Control Potential Tornado Borne Missile Hazards

The inspectors identified a Green, NCV of Technical Specification 6.8.1.a for failure to follow Procedure OP-901-521, "Severe Weather and Flooding," Revision 307. Specifically, on February 25, 2013, the licensee entered the off-normal procedure due to a tornado watch and failed to identify and control potential missile hazards. The licensee has entered this issue into the corrective action program as Condition Report CR-WF3-2013-1590, and is planning corrective actions to determine criteria to identify missile hazards needing controls during severe weather events.

The inspectors concluded that the failure to assess and control potential missile hazards was a performance deficiency. The inspectors concluded the performance deficiency is more than minor, therefore a finding, because it adversely affected the protection against external factors attribute of the Mitigating Systems Cornerstone and its objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors evaluated the significance of the issue under the Significance Determination Process, as defined in Inspection Manual Chapter 0609.04, "Initial Characterization of Findings," and IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations." The inspectors determined that all questions in Exhibit 4. A. could be answered no, and as such the issue was of very low safety significance (Green). The inspectors determined this finding has a cross-cutting aspect in the area of human performance associated with the resources component because the licensee failed to include qualitative or quantitative criteria for identification and control of potential missile hazards [H.2(c)].

Inspection Report# : [2013002](#) (*pdf*)

Significance:  Mar 31, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Perform an Adequate Operability Determination for Nitrogen Leak in MSIV

The inspectors identified a Green NCV of 10 CFR Part 50, Appendix B, Criterion V "Instructions, Procedures, and Drawings," for the failure of the licensee to accomplish activities affecting quality in accordance with written procedures. Specifically, operations personnel failed to follow Procedure EN-OP-104, "Operability Determinations," and declared main steam isolation valve 1 operable with a through-wall leak on an ASME Class 3 system, despite procedural guidance to the contrary. The licensee has entered this issue into the corrective action program as CR-WF3-2013-1284, and has implemented an ASME Code leak repair as corrective action to restore the degraded condition and reinforced expectations of procedural use and adherence with operations personnel.

The inspectors concluded that the failure of operations personnel to follow procedures was a performance deficiency.

The inspectors determined that the performance deficiency is more than minor, therefore a finding, because it adversely affected the equipment performance attribute of the Mitigating Systems Cornerstone and its objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors evaluated the significance of the issue under the Significance Determination Process, as defined in Inspection Manual Chapter 0609.04, "Initial Characterization of Findings," and IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations." The inspectors determined that all questions in Exhibit 2, A. could be answered no, and as such the issue was of very low safety significance (Green). The inspectors determined this finding has a cross-cutting aspect in the area of human performance associated with the component of decision making because the licensee failed to make conservative assumptions when assessing the source of the nitrogen leak and failed to validate underlying assumptions on subsequent operability reviews [H.1(b)].
Inspection Report# : [2013002](#) (*pdf*)

Significance:  Mar 31, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Identify and Perform Testing to Demonstrate Local Manual Operation Action on Safety-Related Air-Operated Valves

The inspectors identified a NCV of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," because the licensee failed to identify and perform testing on safety-related components to demonstrate that they would perform satisfactorily in service in accordance with requirements contained in applicable design documents. Specifically, the licensee did not identify and perform testing on several safety-related air-operated valves to demonstrate local manual operation in the event their safety-related nitrogen accumulators were exhausted. As a result, the licensee could not demonstrate that the safety-related valves would perform satisfactorily in service in accordance with requirements contained in the updated final safety analysis report (UFSAR) and design calculations. The licensee entered this issue into their corrective action program as CR-WF3-2012-6703. The immediate corrective actions taken to restore compliance included developing a test for the local manual operation for some valves and the installation of a backup air supply to recharge the accumulators for other valves.

The failure to identify and perform testing to demonstrate that safety-related air-operated valves 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 affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors used the NRC Inspection Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," to evaluate this issue. The finding required a detailed analysis because it involved a potential loss of a system function of safety related equipment. Therefore, the senior reactor analyst performed a bounding detailed risk evaluation. The analyst determined that the finding was of very low safety significance (Green). The bounding change to the core damage frequency was less than $4E-8$ /year. The finding was not significant with respect to the large early release frequency. The dominant core damage sequences included losses of offsite power, which result in an early loss of the instrument air compressors. The fact the accumulators would allow continued air operated valve operation for ten or more hours helped to reduce the risk. 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 [P.1(c)].

Inspection Report# : [2013002](#) (*pdf*)

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 [P.1(c)].

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

Significance:  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 [P.2(b)].

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

Significance:  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 [P.1(c)].

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 [P.1(c)].

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

Significance: G 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 [P.2(a)].

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

Significance: G 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 [H.2(a)].

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

Significance: G 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 [H.2(a)].

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

Barrier Integrity

Significance: N/A Jun 30, 2013

Identified By: NRC

Item Type: VIO Violation

Failure to Update Fuel Handling Accident Analysis in the Updated Final Safety Analysis Report

The inspectors identified a Severity Level IV non-cited violation for the licensee’s failure to update the final (updated) safety analysis report in accordance with 10 CFR 50.71(e). Specifically, from July 1981 to April 18, 2013, the

licensee failed to update the methodology, the data input, and the resulting limits for the fuel bundle drop accident analysis in the Waterford Steam Electric Station, Unit 3, Updated Final Safety Analysis Report, Section 15.7.3.4, "Design Basis Fuel Handling Accidents." This violation was entered into the licensee's corrective action program as Condition Report CR-WF3-2013-0193.

The failure to update the methodology, the data input to the calculation, and the resulting limits for the fuel bundle drop accident analysis in Section 15.7.3.4 of the Updated Final Safety Analysis Report in accordance with 10 CFR 50.71(e) is a performance deficiency. This performance deficiency was evaluated using traditional enforcement because it has the potential to impact the NRC's ability to perform its regulatory function. The inspectors used the NRC Enforcement Policy to evaluate the significance of this violation. Consistent with the NRC Enforcement Policy, the inspectors determined that the performance deficiency is a Severity Level IV non-cited violation. This non-cited violation had no cross-cutting aspect because there was no finding associated with this traditional enforcement violation.

Inspection Report# : [2013003](#) (*pdf*)

Significance:  Jun 30, 2013

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to comply with Action 4 of TS 3.3.1 during shutdown with the protective system trip breakers in the open position for Modes 4 and 5

The inspectors identified a non-cited violation of Waterford Steam Electric Station, Unit 3, Technical Specification (TS) Limiting Condition of Operation (LCO) 3.3.1 because the licensee did not take action to suspend operations that involved reactivity changes use to accomplish startup activities with only one excore nuclear instrumentation (ENI) logarithmic (log) channel operable. Specifically, the licensee did not take action to suspend operations involving diluted water additions to the volume control tank and temperature increases with a positive moderator temperature coefficient (MTC) without the required number of operable log channels. As a result, the licensee did not comply with Action 4 of TS LCO 3.3.1 because they did not account for temperature increases with a positive MTC within the shutdown margin calculation. This had the potential to affect the available shutdown margin. The licensee entered this issue into their corrective action program as CR-WF3-2013-2166 and CR-WF3-2013-3182. The immediate corrective actions taken to restore compliance included the discontinued use of water additions to the volume control tank and the increase of RCS temperatures with a positive MTC until the licensee's personnel returned an additional log channel to service.

The failure to comply with TS LCO 3.3.1, Action 4, was a performance deficiency. The performance deficiency was more than minor because it was associated with the configuration control attribute of the barrier integrity cornerstone and affected the cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, the LCO for the log power channels ensures that adequate information is available to verify core reactivity conditions while shutdown to minimize the probability of the occurrence of postulated events. The inspectors used Checklist 4 contained in Attachment 1 of the NRC Inspection Manual Chapter 0609, Appendix G, "Shutdown Operations Significance Determination Process Phase 1 Operational Checklists," to evaluate this finding. The inspectors determined that the finding did not meet the reactivity guidelines because the licensee did not comply with TS LCO 3.3.1, Action 4. The inspectors determined that the finding was of very low safety significance (Green) because it did not require a quantitative assessment and was not similar to any of the examples requiring a phase two or phase three analyses. The inspectors also determined that the licensee maintain the required shutdown margin to preclude inadvertent criticality in the shutdown condition. 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 in that the licensee did not make a safety-significant decision using a systematic process, especially when faced with uncertain or unexpected plant conditions, to ensure safety was maintained. This included obtaining interdisciplinary input and reviews on safety-significant decisions

[H.1.a].

Inspection Report# : [2013003](#) (pdf)

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 [H.3(a)].

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 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 : September 03, 2013