

Waterford 3

1Q/2010 Plant Inspection Findings

Initiating Events

Significance:  Mar 31, 2010

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Control Transient Combustibles (Section 1R05)

• Green. The inspectors identified five examples of a green noncited violation of Waterford 3 Steam Electric Station license condition 2.C.9 for the failure to perform a transient combustible evaluation prior to introducing transient combustibles into procedurally controlled vital plant areas. Specifically, procedures limit the amount of transient combustibles that may be introduced into the control room ventilation equipment room, the component cooling water Train B heat exchanger room, and the main steam isolation valve Train B roof area. Any amounts greater than the preset procedural limits require a transient combustible evaluation to be performed. In all five cases, this evaluation was not performed prior to introduction of the transient combustibles. This violation has been entered into the licensee's corrective action program as condition reports CR WF3 2010 0482, CR-WF3-2010-0598, and CR-WF3-2009-4035.

The performance deficiencies associated with this violation were the failure to comply with Waterford 3 Steam Electric Station license condition 2.C.9. Specifically, the procedural requirements to perform a transient combustible evaluation prior to introducing the transient combustibles into designated fire zones were not performed. Since several of the previously described fire zones fail to meet Appendix R train separation requirements, use of Inspection Manual Chapter 0612, Appendix E to screen for minor examples is not appropriate. This condition is greater than minor because, if left uncorrected, it would become a more significant safety concern, since continued introduction of unevaluated transient combustible loading into controlled areas could significantly reduce the ability to achieve a safe shutdown condition, in the event of a fire in that controlled area. The inspectors evaluated the finding using Inspection Manual Chapter 0609, Appendix F, Fire Protection Significance Determination Process, to assess the safety significance. Since the severity of the observed deficiencies was assigned a low degradation rating, it was determined to be of very low risk significance. This finding had a crosscutting aspect in the area of human performance associated with the work practices component in that the licensee failed to utilize appropriate human error prevention techniques by (1) discussing transient combustible controls and expectations during pre-job briefs and (2) effectively utilizing human performance barriers, such as posted door signs.

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Inspection Report# : [2010002](#) (*pdf*)

Significance:  Mar 31, 2010

Identified By: NRC

Item Type: FIN Finding

Failure to Implement Procedure to Restore the 5A Feedwater Heater Level Switch (Section 1R19)

• Green. A self-revealing finding was identified for the failure to implement work order instructions relied upon to open the upper isolation valve for the 5A feedwater heater level switch following functional checks of the level switch. The failure to implement work order instructions necessary to return the 5A feedwater heater level switch to service resulted in a subsequent automatic isolation of a low pressure feedwater heater string on December 7, 2009 which required a plant down power to 72% in order to comply with limiting plant conditions specified by station procedure OP-003-034, "Feed Heater Vents and Drains". This finding has been entered into the licensee's CAP as CR-WF3-2009-7420.

The failure to implement step 4.4 of work order 00180716-01 on October 30, 2009 to open the upper isolation valve (FHD-703A) for the 5A feedwater heater level switch (FHDILS1553A) was a performance deficiency. This finding was greater than minor because it resulted in the automatic isolation of a low pressure feedwater heater string requiring a plant down power and; therefore, adversely affected the initiating events cornerstone objective to limit the likelihood of those plant events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. This finding was assessed using the initiating events cornerstone column of the Phase 1

screening worksheet of the SDP and determined to be of very low safety significance because the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. This finding was assigned a cross-cutting aspect in the work practices component of the human performance area because the licensee failed to effectively communicate and implement the use of “concurrent verification” of valve position as a human error prevention technique to ensure that personnel work practices supported human performance. The procedure the licensee failed to implement was not safety related, therefore, the finding did not result in a violation of regulatory requirements.

Inspection Report# : [2010002](#) (*pdf*)

Significance:  Dec 31, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Update Drawings after Design Change

Green. A self-revealing Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, was identified for the licensee’s failure to prescribe an activity affecting quality by documented instructions, procedures, or drawings appropriate to the circumstance. Specifically, for all reactor coolant pump heat exchanger to pump cover bolted connection gasket replacements between the refueling outage of 1986 (RF-1) and the refueling outage of 2009 (RF-16), the licensee prescribed the wrong gasket material, gasket size, and fastener preload because they had failed to incorporate a design change implemented during RF-1 into their instructions, procedures, or drawings. Station modification package SMP-1427, an engineering change implemented during RF-1 in response to industry operating experience, called for a thicker gasket, different gasket material, and an increased bolt preload in order to increase gasket compression and reduce the probability of leakage. As a consequence of failing to incorporate SMP-1427 changes into procedures, all heat exchanger gasket replacements since RF-1, four gasket replacements in total, have utilized thinner gaskets with less than the vendor recommended compression. The licensee documented this condition in CR-WF3-2009-5501.

The licensee’s failure to prescribe appropriate gasket replacement requirements is more than minor because it is associated with the equipment performance attribute of the initiating events cornerstone and affects the cornerstone objective to limit the likelihood of those events that upset plant stability. The finding has very low safety significance because, although the finding contributes to the likelihood of a reactor trip, mitigation equipment is still available. This finding had a crosscutting aspect in the area of problem identification and resolution associated with operating experience in that the licensee did not institutionalize operating experience through changes to the station procedures [P.2(b)].

Inspection Report# : [2009005](#) (*pdf*)

Significance:  Dec 31, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Reactor Coolant Pump Vapor Seal Leakage

Green. A self-revealing Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, was identified for the licensee’s failure to promptly correct a condition adverse to quality. Specifically, the licensee did not promptly correct reactor coolant pump vapor seal leakage that resulted in boric acid accumulation on the component cooling water heat exchanger and cover areas of three reactor coolant pumps. Corrective actions for this condition were implemented during refuel outage 15, but these corrective actions failed to correct the condition and the vapor seal leakage continued through operating cycle 16. This resulted in some additional boric acid corrosion and degradation to reactor coolant pump covers and carbon steel component cooling water flanges. The licensee implemented a design modification to correct the condition and documented the condition in CR-WF3-2009-5501.

The licensee’s failure to promptly correct a condition adverse to quality is more than minor because it is associated with the equipment performance attribute of the initiating events cornerstone and affects the cornerstone objective to limit the likelihood of those events that upset plant stability. The finding has very low safety significance because, although the finding contributes to the likelihood of a reactor trip, mitigation equipment was still available. This finding had a crosscutting aspect in area of human performance associated with work control in that the licensee did

not effectively plan for the resources necessary to implement the post maintenance testing associated with the corrective actions implemented during refuel outage 15, and therefore failed to discover that those corrective actions were inadequate to correct the condition[H.3(a)].

Inspection Report# : [2009005](#) (pdf)

Significance:  Sep 18, 2009

Identified By: NRC

Item Type: FIN Finding

Failure to Incorporate Start-Up Transformer Protective Relay Design Basis into Instructions, Procedures, or Drawings.

The team identified a finding for failure to translate design basis criteria into a design basis document for the start-up transformer '3A' 51G relay to support the settings listed in Calculation EC E90 012, "Protective Relays Settings for Main Generator and Transformers," Revision 1. Without the design basis criteria for the 51G relay, the setpoint values could not be established. Specifically, the team determined that the relay settings listed in Calculation EC E90 012 had not been effectively implemented since the required current transformer ratio of 600/5, upon which the settings were based, was never installed. The issue has been entered into the licensee's corrective action program as Condition Report CR WF3 2009 04813.

This finding was more than minor because the failure to provide adequate relay setting coordination could result in an unnecessary separation of the safety buses from the electrical grid and an ensuing plant transient (initiating event). The team noted that this finding also applies to 51G relay in the 'B' train which could challenge the single failure criterion. The team determined this finding was of very low safety significance (Green) because the issue would not prevent the safety buses from being reenergized by the emergency diesel generators. Enforcement action does not apply because the performance deficiency did not involve a violation of a regulatory requirement. This finding was reviewed for crosscutting aspects and none were identified (Section 1R21.b.1.10).

Inspection Report# : [2009009](#) (pdf)

Mitigating Systems

Significance:  Oct 19, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to identify an adverse trend in failures of time-delay relays

The team identified a violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," because the licensee failed to perform a root cause analysis and implement corrective actions to prevent repetition of a significant condition adverse to quality. Specifically, multiple failures of Agastat E7024PB relays that were installed in or designated for safety-related applications constituted a significant condition adverse to quality. The evaluations for the individual relay failures were narrow and did not identify the adverse trend until eight relays had failed in service and seven had failed pre-installation bench tests over a two-year period. The failure of these relays would prevent auto-starting of critical equipment during a loss of offsite power, potentially creating a substantial safety hazard.

The failure of the licensee to recognize that the adverse trend in failures of Agastat E7024PB relays constituted a significant condition adverse to quality, to perform a root cause evaluation, and to initiate corrective actions to prevent recurrence is a performance deficiency. This performance deficiency is more than minor because it is associated with the mitigating systems cornerstone attribute of equipment performance because it affects the availability and reliability of systems which respond to initiating events to prevent undesirable consequences. Using Inspection Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the performance deficiency was determined to require a Phase 2 analysis because of the potential for a loss of safety system function. A Phase 2/Phase 3 Significance Determination was performed by an NRC Senior Reactor Analyst. Based on a bounding analysis, the analyst quantitatively determined that the actual change in core damage frequency (?CDF) due to the increased failure rate of Agastat E7024PB relays would be less than 4.0E-7/year. Therefore, this performance

deficiency was determined to be of very low safety significance (Green).

This performance deficiency was determined to have a Problem Identification and Resolution cross-cutting aspect in the Corrective Action Program component because the licensee failed to periodically trend and assess information from the Corrective Action Program and other assessments in the aggregate to identify programmatic and common cause problems.

Inspection Report# : [2009010](#) (pdf)

Significance:  Oct 19, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Inappropriate extension of qualified service life of Agastat relays

The team identified a violation of 10 CFR 50, Appendix B, Criterion III, “Design Control,” which occurred when the licensee inappropriately extended the service life of 322 safety-related Tyco/Agastat series E7000 time-delay relays without having an adequate technical basis. Specifically, the licensee’s engineering justification for extending the qualified life beyond the manufacturer-recommended ten years considered only degradation due to thermal aging; it failed to consider other known modes of degradation in accordance with applicable industry standards. Further, the team identified that a performance monitoring program intended to assess any increased failure rate due to this change was inappropriately canceled.

The failure of the licensee to perform a complete analysis of aging effects as required by industry standards in extending the qualified life of safety-related Agastat E7000-series relays is a performance deficiency. This performance deficiency is more than minor because it is associated with the mitigating systems cornerstone attribute of design control because it affects the availability and reliability of systems which respond to initiating events to prevent undesirable consequences. Using Inspection Manual Chapter 0609.04, “Phase 1 – Initial Screening and Characterization of Findings,” this performance deficiency was determined to be of very low safety significance (Green) because it is a design or qualification deficiency confirmed not to result in loss of operability or functionality. Specifically, only one of the identified relay failures had occurred beyond the recommended 10-year service life; this failure did not result in the failure of multiple redundant trains of safety-related equipment. This finding was determined not to have a cross-cutting aspect because it is not indicative of current licensee performance.

Inspection Report# : [2009010](#) (pdf)

Significance:  Oct 07, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to follow technical specification requirements for Reactor Protective Instrumentation.

Green. The inspectors identified a Green non-cited violation of technical specification 3.3.1, Reactor Protective Instrumentation. The technical specifications require all four channels (A, B, C, and D) of local power density, departure from nucleate boiling ratio, and reactor coolant flow instruments to be operable when in Mode 1. These Channel B instruments require an input from the Channel B log power instrument, which was previously declared inoperable. With the Channel B log power instrument inoperable, the Channel B local power density, departure from nucleate boiling ratio, and reactor coolant flow instruments should also have been declared inoperable. The licensee entered this finding in their corrective action program as condition reports CR WF3-2009-4401 and CR-WF3-2009-4407.

The failure to either trip or bypass the inoperable channels within one hour was more than minor because it affected the configuration control attribute of the mitigating systems cornerstone. Specifically, deliberate operator action was required to ensure that proper reactor protection system coincidence and reliability were maintained. Also, if left uncorrected, the potential existed for reactor protective trips to be inadvertently removed while at power. The failure to meet the technical specifications was considered to be of very low safety significance (Green), since there was no actual loss of safety function. This finding has a cross-cutting aspect in the decision-making component of the human performance area because the licensee failed to verify the validity of underlying assumptions and identify unintended consequences of failing to comply with technical specification 3.3.1 by declaring the log power Channel B inoperable

and not placing DNBR, LPD, and reactor coolant flow channels in either bypass or trip condition (H.1.b). (Section 1R15)

Inspection Report# : [2009004](#) (pdf)

Significance: **W** Sep 24, 2009

Identified By: Licensee

Item Type: VIO Violation

Inoperable 125Vdc battery because electricians failed to follow work instructions

White. Following a September 2, 2008 train B 125 Vdc battery failure, the licensee identified a violation of Technical Specification 6.8.1.a for the failure to follow plant procedures during corrective maintenance on the safety-related battery. Following the replacement of the entire battery bank during a 2008 refueling outage, craftsmen identified a faulty battery cell. When replacing the faulty cell, plant workers did not follow all of the specified procedural steps in the work package. The additional work resulted in a loose battery connection that rendered the entire battery bank inoperable. The licensee also failed to address an indicator of the loose connection during the battery discharge test. The condition then went undetected for several months. The licensee entered this finding in their corrective action program as Condition Report CR WF3 2008-4179.

This finding was greater than minor because it was similar to non-minor example 4.a in NRC Inspection Manual Chapter 0612, Appendix E, "Examples of Minor Issues," in that the failure to follow site procedures adversely affected safety related equipment. Using the Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 screening worksheet, the finding required a "Phase 2" significance determination because it resulted in the loss of a single train of safety related equipment for greater than the technical specification allowed outage time. Using a "T/2" exposure time of 50 days, the inspectors used the "Risk-Informed Inspection Notebook for Waterford Nuclear Power Plant Unit 3," Revision 2.01 and its associated "Phase 2 Pre-Solved Table," and determined that a "Phase 3" significance determination was necessary. A Region IV senior reactor analyst performed a preliminary "Phase 3" significance determination and found that the finding was White. This preliminary "Phase 3" significance determination is included as Attachment 2 to this report. This finding had a cross cutting aspect in area of Human Performance (work practices component) because maintenance personnel failed to use appropriate human error prevention techniques, such as peer checking (quality control hold points) and tracking battery components that were loosened (H.4.a). (Section 1R15).

Update: A Regulatory Conference was held for this issue on December 14, 2009. The final significance of this issue was determined to be White as described in a letter to the licensee (ML1001506600), dated January 14, 2010.

Inspection Report# : [2009008](#) (pdf)

Significance: **G** Sep 18, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Account for Reduction of Flow from the Emergency Feedwater System to the Steam Generators

The team identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control." Specifically, the licensee did not account for reduction of flow from the emergency feedwater system when analyzing the flow rate to the steam generators and establishing the acceptance criteria for the performance of the motor-driven emergency feedwater pumps. The factors associated with the loss of flow included the emergency diesel generator under-frequency of 0.3 Hertz allowed by technical specifications, and not accounting for accepted reverse flow (back leakage) of 25 gpm through the turbine-driven discharge check valve. The pumps had a documented analyzed margin of 55 gpm. The margin was reduced by 24 gpm due to allowed diesel under-frequency. Another reduction was attributed to the accepted reverse flow (back leakage) of 25 gpm through the turbine-driven discharge check valve.

This left the combined margin of both emergency feedwater motor-driven pumps at 6 gpm. The licensee entered this issue into the corrective action program as Condition Reports

CR-WF3-2009-04731, CR-WF3-2009-04528, and CR-WF3-2009-05043, and performed an operability assessment for each of these factors.

This finding is more than minor because it affected the mitigating systems cornerstone attribute of design control to ensure the availability, reliability, and capability of safety systems that respond to initiating events to prevent undesirable consequences. This finding closely parallels Inspection Manual Chapter 0612, Appendix E, Example 3.j, "Not Minor: If the engineering calculation error results in a condition where there is now a reasonable doubt on the

operability of a system or component, or if significant programmatic deficiencies were identified with the issue that could lead to worse errors if uncorrected.” This finding is of very low safety significance (Green) because it was not a design issue resulting in loss of function, did not represent an actual loss of a system safety function, did not result in exceeding the Technical Specification allowed outage time, and did not affect external event mitigation. Some margin in total flow still remained to compensate for the reduced pump performance if operated at the reduced-frequency. The inspectors determined that the finding has a cross cutting aspect in the area of Problem Identification and Resolution, associated with Operating Experience. The licensee had received NRC Information Notice 2008-02, which specifically identified the diesel under-frequency as a potential problem for ac motor-operated pumps, and test acceptance criteria concerns which would have ensured the capability of the equipment to perform its function under the most limiting conditions. The licensee failed to identify the applicability of these potential problems to the emergency feedwater motor-operated pumps and take proper actions [P.2(a).] (Section 1R21.b.1.1).
Inspection Report# : [2009009](#) (*pdf*)

Significance:  Sep 18, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Establish Proper Design Control Measures to Assure Adequate Design and to Properly Translate the Design into Test Procedures.

The team identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” with three examples.

Example 1: The licensee did not use the correct size emergency feedwater system suction piping in calculation MNQ10-12 “Net Positive Suction Head Available for Emergency Feedwater Pumps.” The motor-driven pump suction piping is 4 inches in diameter but the licensee nonconservatively used 6-inch piping in the calculations. The licensee has entered this issue into their corrective action program as Condition Report CR-WF3-2009-04729 and performed an operability assessment for the issue.

Example 2: Calculation ECM91-001, Revision 3, “Emergency Diesel Generator Fuel Oil Transfer Pump Recirculation and Discharge Flow,” arbitrarily assumed that the suction strainer of the fuel oil transfer pump would only be 10 percent clogged. The licensee could not justify the 10 percent clogging assumption or find any justification for selecting the 10 percent value. Also, there is no discussion or any physical comparison to ensure that the mesh of the installed “Leslie” strainer was the same as that of the “Hayward” strainer identified in an attachment to the calculation. The licensee has entered this issue into their corrective action program as Condition Report CR-W3-2009-04812 and performed an operability assessment for the issue.

Example 3: Calculation EC-I01-003, Revision 0, “IST Instrumentation Uncertainties,” determines the adequacy of permanent plant instrumentation for inservice testing use. The calculation determined that some specific instruments shall not be used for inservice testing applications. Contrary to the calculation requirements, procedure OP 903 014, used for the inservice testing comprehensive test of the emergency feedwater pumps, specified that the forbidden flow instruments shall be used for verification of emergency feedwater system flow rate. The licensee has entered this issue into their corrective action program as Condition Report CR-W3-2009-04811. These findings are more than minor because they affected the mitigating systems cornerstone attribute of design control to ensure the availability, reliability, and capability of safety systems that respond to initiating events. Also, using Inspection Manual Chapter 0612, “Power Reactor Inspection Reports,” Appendix B, Section 1-3, “Screen for More than Minor – ROP,” question 2, the finding is more than minor because if left uncorrected, the performance deficiencies would have the potential to lead to more significant safety concerns. Using Inspection Manual Chapter 0609, “Significance Determination Process,” Attachment 4, the finding was determined to have very low safety significance (Green) because it was not a design issue resulting in loss of function, did not represent an actual loss of a system safety function, did not result in exceeding the Technical Specification allowed outage time, and did not affect external event mitigation.

The inspectors determined that the finding has a crosscutting aspect in the area of Problem Identification and Resolution, Self and Independent Assessment. The licensee conducted a Waterford 3 Component Design Basis Assessment, April 20 23, 2009, that included the emergency feedwater turbine-driven pump and the emergency diesel generator fuel oil transfer pump in the “Scope of Components to be Reviewed During CDBI Assessment,” and failed to identify any of these three issues [P.3.(a).] (Section 1R21.b.1.6).

Significance:  Sep 18, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to have an Operating Procedure for Executing an Evolution Credited in the UFSAR and in an Request for a License Amendment

The team identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings” pertaining to the emergency diesel generator fuel oil transfer pump. Criterion V states, in part, “activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings.”

Specifically, the licensee did not have operating procedures for accomplishing the transfer of fuel oil from one storage tank to the opposite train feed tank (day tank) using the opposite train fuel oil transfer pump, as designated in the USAR Table 9.5-2, “Failure Mode and Effects Analysis.” Also, License Amendment Number 157 (TAC Number MA4940) was granted, in part, for having the capability to transfer fuel oil from one storage tank to the opposite train feed tank using the opposite transfer pump. The licensee specified this capability as part of the justification for having an insufficiently sized fuel oil storage tank. Moreover, the Safety Evaluation Report associated with License Amendment Number 157 specifically referred to this capability at Waterford 3, and specified that procedures were available for accomplishing the transfer of fuel oil. The licensee has entered this finding in their corrective action program as Condition Report CR-WF3-2009-04950, and performed an operability assessment for the issue.

This finding is more than minor because it affected the mitigating systems cornerstone attribute of equipment performance to ensure the availability, reliability, and capability of safety systems that respond to initiating events. Also, using Inspection Manual Chapter 0612, “Power Reactor Inspection Reports,” Appendix B, Section 1-3, “Screen for More than Minor – ROP,” question 2, the finding is more than minor because if left uncorrected, the performance deficiency would have the potential to lead to a more significant safety concern. Using Inspection Manual Chapter 0609, “Significance Determination Process,” Attachment 4, the finding was determined to have very low safety significance (Green) because the failure to have an operating procedure did not result in loss of function, did not represent an actual loss of a system safety function, did not result in exceeding a technical specification allowed outage time, and did not affect external event mitigation. This finding was reviewed for crosscutting aspects and none were identified (Section 1R21.b.1.7).

Significance:  Sep 18, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Properly Analyze the Effect of Acceptable Reverse Flow through Emergency Feedwater Check Valves

The team identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, “Design Control.” Specifically, the licensee failed to analyze the effects of the acceptable back leakage of 25 gpm from the emergency feedwater pump discharge check valves on the integrity of the emergency feedwater pumps and the integrity of its suction piping. The acceptable back leakage could possibly cause the pump to reverse rotate, and provide a path for high pressure fluid to go through the pump and pressurize low pressure suction piping. The licensee has entered this item in their corrective action program as Condition Report CR WF3 2009 04528 and performed an operability assessment for this issue.

This finding is more than minor because it affected the mitigating systems cornerstone attribute of design control to ensure the availability, reliability, and capability of safety systems that respond to initiating events. This finding closely parallels Inspection Manual Chapter 0612, Appendix E, Example 3.j, “Not Minor: If the engineering calculation error results in a condition where there is now a reasonable doubt on the operability of a system or component, or if significant programmatic deficiencies were identified with the issue that could lead to worse errors if uncorrected.” This finding was determined to be of very low safety significance (Green) because this design issue did not result in loss of function, did not represent an actual loss of a system safety function, did not result in exceeding the Technical Specification allowed outage time, and did not affect external event mitigation.

The inspectors determined that the finding has a crosscutting aspect in the area of Problem Identification and Resolution, Self and Independent Assessment. The licensee conducted a Waterford 3 Component Design Basis Assessment, on April 20-23, 2009, that included the emergency feedwater AB turbine-driven pump in the “Scope of Components to be Reviewed During CDBI Assessment”, and failed to identify the impact of reverse flow on the integrity of the pump and its suction piping [P.3.(a)] (Section 1R21.b.1.8).

Inspection Report# : [2009009](#) (pdf)

Significance:  Sep 18, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Verify or Check the adequacy of Design Changes for the Emergency Diesel Generator Protective Relay IGVC-51V

The team identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, “Design Control.” The calculation EE2 14 3 “Diesel Generator Overcurrent Protection,” Revision 1, does not document sufficient design bases for the setting of the IGCV 51 overcurrent with voltage control relays for the emergency diesel generators. Specifically, the licensee failed to perform an adequate evaluation of new setpoint values identified in Engineering Report ER W3 99 0174 00 00, which provided the bases for relay tap setpoint changes for emergency diesel generator overcurrent protection while the diesel was in test mode. The primary purpose of the IGCV-51V relays was to protect the emergency diesel generator against external faults and prevent the output breaker from closing following a breaker trip associated with a fault. If the faulted bus had been isolated by the operation of the under-voltage relays instead of the IGCV 51 relays, the emergency diesel generator output breaker would be allowed to electrically reclose onto this faulted bus and potentially damage the emergency diesel generator and the associated switchgear. The issue has been entered into the licensee’s corrective action program as Condition Report CR WF3 2009 04780.

The failure to have sufficient design bases for the emergency diesel generator overcurrent protection IGCV 51V relays without an adequate verification of the setpoint modification for the IGCV 51V relay, Voltage Controlled, Time-Overcurrent Relay, for emergency diesel generator overcurrent protection while the diesel was in test mode, was a performance deficiency. Specifically, failure to verify the adequacy of a design modification for the IGCV 51V relay could result in reduced reliability of the emergency diesel generators. The finding was determined to be greater than minor because it affected the mitigating systems cornerstone attribute of design control to ensure the availability, reliability, and capability of safety systems that respond to initiating events to prevent undesirable consequences. Using Manual Chapter 0609.04, the finding was determined to have a very low safety significance (Green) because the failure did not result in loss of operability or functionality and because the finding did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding was reviewed for crosscutting aspects and none were identified (Section 1R21.b.1.12).

Inspection Report# : [2009009](#) (pdf)

Significance:  Jul 07, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Determine the Cause of a 125 Vdc Battery Failure

Green. The inspectors identified a noncited violation of 10 CFR 50, Appendix B, Criterion VXI (Corrective Actions) because the licensee failed to identify the cause for a significant condition adverse to quality. The Train B 125 Vdc battery bank failed to pass a technical specification surveillance requirement discharge test during a Spring, 2008 outage. The root cause procedure required that the licensee sequester the battery in a controlled area so that vital information related to the failure could be obtained. However, the licensee disposed of the battery instead. When questions arose concerning the specified failure cause (impurities in the battery materials), the licensee was unable to provide objective evidence to support the conclusion. Had the licensee obtained objective evidence to support their conclusion that impurities caused the battery failure, a 10 CFR Part 21 report may have been required. The licensee replaced the battery and planned to replace similar batteries in the other two trains during the next refueling outage. The licensee entered this finding in their corrective action program as Condition Report CR WF3-2009-2846. The finding was more than minor because, if left uncorrected, it could lead to a more significant safety concern.

Specifically, since the cause of the battery failure was not definitively found, the licensee may not have taken corrective actions to prevent other battery failures. Using the Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 screening worksheet, the finding was of very low risk significance because it did not actually cause the loss of operability or functionality of another 125 Vdc battery at the time of the inspection. This finding had a crosscutting aspect in the area of Problem Identification and Resolution (Corrective Action Program Component) because the licensee failed to thoroughly evaluate the need to keep the battery prior to disposal [P.1(c)] (Section 40A2).

Inspection Report# : [2009003](#) (pdf)

Significance:  Jul 07, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Correct Several Conditions Adverse to Quality

Green. The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI (Corrective Action) for the failure to promptly correct conditions adverse to quality. The licensee had documented several conditions adverse to quality and then transferred the concerns to other condition reports. Then, the licensee closed those condition reports without addressing the concerns. Identified conditions included: 1) the Train B 125 Vac discharge test data indicated a loose battery connection but the battery was permitted to pass the test anyway; 2) the root cause determination for the failed battery was focused on the statements of one person and failed to address other information; 3) the root cause determination failed to address conflicting information; and 4) the root cause determination failed to properly address other potential causes for the inoperable battery, such as tampering. Plant personnel had failed to accurately translate the issues when transferring information from one condition report to another. The licensee entered this finding into their corrective action program as Condition Report CR-WF3-2009-1177.

The finding was more than minor because, if left uncorrected, it would become a more significant safety concern. For example, the failure to include acceptance criteria in the battery discharge test (intended to identify and correct loose battery connections) could result in another inoperable 125 Vdc battery for an extended period of time. The inspectors evaluated the finding using Inspection Manual Chapter 0609, Significance Determination Process, Phase 1 Screening Worksheet and determined that the finding was of very low risk significance because it did not result in another battery becoming inoperable or nonfunctional. This finding had a crosscutting aspect in the area of Human Performance (Work Practices Component) because plant personnel failed to effectively use human error prevention techniques, such as self and peer checking, when transferring concerns between condition reports [H.4(a)] (Section 40A2).

Inspection Report# : [2009003](#) (pdf)

Significance:  May 22, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to identify conditions adverse to fire protection.

The team identified a non-cited violation of License Condition 2.C.9 for the failure to identify conditions adverse to the fire protection program, as required by Procedure UNT-005-013, "Fire Protection Program," Revision 10. Specifically, during required inspections of the material condition of the sprinkler system, the licensee failed to identify several instances of either bent or misaligned sprinkler head deflector plates, which were not protected as required by National Fire Protection Association 13 1976, "Standard for the Installation of Sprinkler Systems."

The failure to identify a condition adverse to fire protection was a performance deficiency. This deficiency was more than minor since, if left uncorrected, the finding would become a more significant safety concern in that the number of damaged sprinklers would continue to increase. The team evaluated the significance of this finding using Manual Chapter 0609, Appendix F, "Fire Protection Significance Determination Process." The deficiency involved the Fixed Fire Protection Systems category. Using Appendix F, Attachment 2, "Degradation Rating Guidance Specific to

Various Fire Protection Program Elements," the team determined that the deficiency had low degradation since less than 10 percent of the heads in the affected fire area were nonfunctional, a functional head remained within 10 feet of the combustibles of concern, and the system remained nominally code compliant. This finding screened as having very low safety significance (Green) in Phase 1. This finding has a cross cutting aspect in the area of human performance associated with resources because the procedure used to inspect the condition of these sprinklers did not contain specific criteria for identifying unacceptable sprinkler conditions [H.2(c)].

Inspection Report# : [2009006](#) (*pdf*)

Significance: N/A May 22, 2009

Identified By: NRC

Item Type: FIN Finding

Failure to provide area wide sprinkler coverage as required in an Appendix R, Section III.G.2.c fire area.

The team identified a violation of License Condition 2.C.9 for failure to protect post fire safe shutdown equipment against fire damage, as required by 10 CFR Part 50, Appendix R, Section III.G.2. Specifically, in Fire Area RAB 39 the licensee failed to provide area wide sprinkler coverage that complied with the requirements in National Fire Protection Association 13 1976. As required in Appendix R, Section III.G.2.c, redundant trains within the same fire area must be protected with detection and an automatic fire suppression system when redundant post fire safe shutdown equipment is protected with 1 hour fire barriers. The team determined this violation met the "Interim Enforcement Policy Regarding Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48)" conditions for receiving enforcement discretion (EA 09 171).

Failure to provide area wide sprinkler coverage in accordance with National Fire Protection Association 13 1976 for a fire area with 1 hour fire barriers was a performance deficiency. The team determined that this finding was more than minor because it is associated with the protection against external factors attribute of the mitigating systems cornerstone and adversely affected the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Because this violation meets the discretion criteria of the "Interim Enforcement Policy Regarding Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48)" for a noncompliance identified during the transition to National Fire Protection Association 805, the team determined that discretion to take no enforcement action is appropriate at this time, as described in the Enforcement Policy. The team reviewed the risk assessment for the fire area and determined that the licensee demonstrated that the risk was less than high safety significance (Red). Specifically, the team determined that the fixed and transient fire sources would not generate sufficient heat to cause fire damage that rendered the systems incapable of performing their safety function.

Inspection Report# : [2009006](#) (*pdf*)

Significance: N/A May 22, 2009

Identified By: NRC

Item Type: FIN Finding

Failure to ensure post-fire safe shutdown valves could be operated.

The team identified a violation of License Condition 2.C.9 related to the capability to complete required manual actions, following a control room fire, because of potential fire damage to some motor operated valves. Specifically, the licensee failed to evaluate the susceptibility of fire damaging circuits in motor operated valves that needed to be manually operated for post fire safe shutdown. The licensee did not recognize that the circuits could cause the valves to become stuck. The team determined licensee personnel would not be able to reposition motor operated valves as specified in plant procedures. The team determined this violation met the "Interim Enforcement Policy Regarding Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48)" conditions for receiving enforcement discretion (EA 09 171).

The failure to ensure that safe shutdown equipment could be operated as required during control room fire events was a performance deficiency. The team determined that this finding was more than minor because it is associated with the protection against external factors attribute of the mitigating systems cornerstone and adversely affected the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Because this violation meets the discretion criteria of the "Interim Enforcement Policy Regarding Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48)" for a noncompliance identified during the transition to National Fire Protection Association 805, the team determined that discretion to take no enforcement action is appropriate at this time, as described in the Enforcement Policy.

Inspection Report# : [2009006](#) (pdf)

Significance:  Apr 07, 2009

Identified By: NRC

Item Type: FIN Finding

Failure to Follow Commitment Tracking Procedures

The inspectors identified a finding because the licensee inadvertently deleted procedural steps to recover an emergency diesel generator during a severe accident. The steps were part of a formal commitment to the NRC. The licensee had failed to follow the site commitment management program when making the procedure change and the procedure writer failed to understand the basis for the steps prior to deleting them. The licensee entered this finding in their corrective action program as Condition Reports CR WF3-2009-0193 and CR WF3-2009-1616.

The finding was more than minor because, if left uncorrected, it could result in a more significant safety concern. Specifically, during a severe accident, operators would not have an appropriate mitigation strategy for starting an emergency diesel generator under certain severe accident conditions. Using the Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 screening worksheet, the finding was of very low risk significance because the finding: (1) could result in a loss of functionality of an emergency diesel generator; (2) did not represent a loss of safety function; (3) did not represent an actual loss of a single train of equipment for more than its technical specification allowed outage time; (4) did not involve non-technical specification equipment; and (5) did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding had a crosscutting aspect in the area of Human Performance, Decision Making component [H.1(a)], because the licensee failed to use a systematic process when removing the procedural steps

Inspection Report# : [2009002](#) (pdf)

Significance:  Apr 07, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Obtain Voltage Readings Following a Single Cell Battery Charge

The inspectors identified a noncited violation of 10 CFR 50, Appendix B, Criterion V (Instructions, Procedures and Drawings) because the licensee failed to implement instructions that were intended to help troubleshoot a defective 125 Vdc battery cell. In response to the degraded cell, the licensee had established additional measures to monitor the cell following charging to ensure proper cell operation. However, the licensee did not perform the monitoring. Once identified by the inspectors, the licensee performed more frequent cell tests. The licensee subsequently replaced the faulty cell. The licensee entered this finding into their corrective action program as Condition Reports CR-WF3-2009-1088 and CR-WF3-2009-1099.

The finding was more than minor because it could have resulted in a more significant safety concern if left uncorrected. Specifically, the normal monitoring period for the cell was weekly. The cell may not have remained operable between weekly tests. Using the Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 screening worksheet, the finding was of very low risk significance because it: (1) could have resulted in a loss of operability of the 125 Vdc battery; (2) did not represent a loss of safety function; (3) did not represent an actual loss of a single train of equipment for more than its technical specification allowed outage time; (4) did not involve non-technical specification equipment; and (5) did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding had a crosscutting aspect in the area of Problem Identification and Resolution, because the licensee failed to implement corrective measures intended to address a condition adverse to quality [P.1(d)]

Inspection Report# : [2009002](#) (pdf)

Emergency Preparedness

Significance:  Jul 07, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Licensee Practices Result in Protective Actions Recommendations for Areas Where Protective Action Guides Are Not Exceeded

Green. The inspectors identified a noncited violation of 10 CFR 50.47(b)(10), for the licensee's failure to develop and have in place guidelines for the choice of protective actions during an emergency that were consistent with federal guidance. Specifically, the licensee's guidelines for extending existing protective action recommendations into additional geographical areas of the emergency planning zone under conditions of changing wind vectors were not consistent with the guidance of EPA 400 R 92 001, "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents." The licensee's practices resulted in unnecessary recommendations for protective actions in areas where valid dose projections show federal protective action guides are not exceeded, and may expose members of the public to unjustified risks. The licensee has entered this issue into their corrective action system as Condition Report CR-WF3-2009-03256.

This finding was more than minor because it was not similar to the examples of Manual Chapter 0612, Appendix E, and affected the emergency preparedness cornerstone objective because unnecessary protective actions may expose members of the public to an unjustified risk. The finding was associated with the emergency response organization attributes of 50.47(b) planning standards and training. This finding was of very low safety significance because it was not a risk significant planning standard functional failure or degraded function because licensee protective action recommendations would be issued in accordance with federal guidance for all areas of the emergency planning zone where Protective Action Guides are exceeded. This finding was evaluated as not having a crosscutting aspect because the finding was not indicative of current licensee performance (Section 1EP1).

Inspection Report# : [2009003](#) (*pdf*)

Occupational Radiation Safety

Significance:  Dec 31, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to follow radiation protection procedural requirements

Green. The inspectors reviewed a self-revealing, noncited violation of Technical Specification 6.8.1 which resulted from a worker failing to follow radiation protection procedures. A contract radiation worker went to work near steam generator 1 rather than the area for which he/she was briefed and received multiple electronic dosimeter dose rate alarms, but did not leave the area until receiving a continuous dose alarm. In response, the licensee investigated the occurrence and restricted the individual's access. Additional actions were being evaluated. This issue was entered into the licensee's corrective action program as Condition Reports WF3-2009-05648 and WF3-2009-06852.

This finding is greater than minor because it involved the program attribute of exposure control and affected the cornerstone objective in that the failure of the worker to follow procedural guidance resulted in the worker being unknowledgeable to the dose rates in all areas entered. The inspectors used the Occupational Radiation Safety Significance Determination Process and determined the finding had very low safety significance because it was not: (1) an as low as reasonably achievable (ALARA) finding, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an inability to assess dose. The finding had a crosscutting aspect in the area of human performance, work practices component, because the worker failed to use human error prevention techniques such as self and peer checking [H.4(a)].

Public Radiation Safety

Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Last modified : May 26, 2010