

Waterford 3

3Q/2009 Plant Inspection Findings

Initiating Events

Significance:  Dec 31, 2008

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Inadequate Test Procedure for Safety Injection Valves SI-405A(B) Post Modification Testing

Green. The inspectors reviewed a self revealing noncited violation of 10 CFR 50, Appendix B, Criterion III due to the failure by the licensee to perform adequate post modification testing to evaluate the adequacy of design modifications made to the actuators of low pressure safety injection Isolation Valves SI-405A(B). This led to the licensee failing to identify a fundamental difference in the manner that the air operated valve actuator operated resulting in the valve popping open instead of slowly opening, creating a pressure transient that resulted in the lifting of the low temperature overpressure relief valve causing an intersystem loss-of-coolant event. The licensee entered this deficiency into their corrective action program as Condition Report CR-WF3-2008-4161.

This finding was more than minor because, if left uncorrected, it would have become a more significant safety concern. The inspectors utilized NRC Manual Chapter 0609, Appendix G, "Shutdown Operations Significance Determination Process," to characterize the significance of the issue. Using the worst case scenario of having both Valves SI-405A(B) inoperable, the finding was of very low safety significance because multiple systems or components would still be available to remove decay heat and respond to a loss-of-inventory event. This performance deficiency would not result in any loss of instrumentation needed for safe shutdown and cool down of the plant. This finding had a crosscutting aspect in Human Performance, specifically the Resources aspect [H.2(a)] because the licensee failed to maintain adequate design margins. Specifically, the licensee's pneumatic actuator for SI-405B could not overcome the pressure locking mechanism until twelve minutes into a fifteen minute time limit, after receiving the open demand signal. This led to the instantaneous valve disc displacement when the valve popped open causing the pressure surge, which resulted in the opening of relief valve SI-406B and subsequent loss of inventory event (Section 4OA5).

Inspection Report# : [2008005](#) (*pdf*)

Mitigating Systems

Significance:  Jul 07, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Determine the Cause of a 125 Vdc Battery Failure

DRAFT - 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

DRAFT - 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.

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)

Significance:  Dec 31, 2008

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Untimely Corrective Actions

• Green. The inspectors reviewed a self revealing noncited violation of 10 CFR 50, Appendix B, Criterion XVI due to the failure by the licensee to take prompt corrective actions following the identification of an inadequate testing method used for determining the integrity of the Essential Chiller B heat exchanger tubing. Failure to take this timely action resulted in an inadvertent tube rupture and inoperability of Essential Chiller B. The licensee entered this deficiency into their corrective action program as Condition Report CR-WF3-2008-5342.

This finding was more than minor because it is associated with the Mitigating Systems attributes for Equipment Performance and would impact the availability and reliability of systems that respond to initiating events. The inspectors evaluated this finding using Manual Chapter 0609, Attachment 4, and determined that it was of very low safety significance (Green) because, assuming worst case degradation of both the B and AB Essential Chillers failing, the redundant A Essential Chiller would still have been available for accident mitigation. This finding had a crosscutting aspect in Problem Identification and Resolution, specifically the Corrective Action Program aspect [P.1 (d)] because the licensee failed to take appropriate corrective actions to address a degrading condition in a timely manner. Specifically, the failure to perform timely tube inspections of Essential Chiller B, following the identification of an inadequate testing methodology used for identifying Essential Chiller heat exchanger tubing degradation (Section 4OA2).

Inspection Report# : [2008005](#) (*pdf*)

Significance:  Dec 31, 2008

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Essential Chiller AB Component Failure Due to Inadequate Procedural Guidance

• Green. The inspectors reviewed a self revealing noncited violation of Technical Specification 6.8.1.a for failure to provide documented instructions appropriate to the circumstances as recommended in Appendix A of Regulatory Guide 1.33. The failure by the licensee to provide adequate guidance for the replacement of the Essential Chiller AB compressor motor temperature sensor resulted in the reintroduction of a failure mechanism that had previously been corrected. This subsequently led to the failure of the temperature sensor wiring and inoperability of Essential Chiller AB. The licensee entered this deficiency into their corrective action program as Condition Report CR-WF3-2008-5471.

This finding was more than minor because it is associated with the Mitigating Systems attributes for Equipment Performance and would impact the availability and reliability of systems that respond to initiating events. The inspectors evaluated this finding using Manual Chapter 0609, Attachment 4, and determined that it was of very low safety significance (Green) because the redundant Essential Chillers A and B would still have been available for accident mitigation. Based on the guidance provided in Manual Chapter 0612, Appendix B, Section 1-5, "Screen for Cross-Cutting Aspects," this finding did not have a crosscutting aspect because it was not considered to be reflective of current licensee performance. Specifically, the licensee's failure to update the model work instructions in 2000 was a latent issue, whereby the licensee did not have a reasonable opportunity to identify the problem prior to August, 2008. In addition, the licensee has since instituted programs and processes such that the problem would not reasonably occur today (Section 4OA2).

Inspection Report# : [2008005](#) (*pdf*)

Significance:  Dec 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Calculations Used for Operability determination of SI-405 A(B)

Green. The inspectors identified a noncited violation of 10 CFR 50, Appendix B, Criterion III to address three examples of inadequate calculations involving shutdown cooling Valves SI-405A and SI-405B. The calculations were also used, in part, to support valve operability, which made an existing operability assessment invalid. First, a calculation performed by a contractor to estimate the bounding thrust requirements for pressure locking contained

errors and used mathematical formulas out of their intended context without applying uncertainties to account for the differences. Recent operational experience with these valves was inconsistent with the calculation's conclusions. In addition, the licensee failed to meet their quality assurance program requirements that specified that engineers perform a design verification of the calculation prior to use. Second, the licensee's calculation, that demonstrated valve actuator thrust capabilities, contained errors. Specifically, it failed to account for the friction between the actuator piston disk and walls as well as the weight of components. Third, a calculation that determined that the temperature within the valve bonnet would not heat up during small break loss of coolant accidents and faulted steam generator accidents was inadequate, in that it failed to address a faulted steam generator event, it used heat transfer calculation methods on water that were intended only for solid materials, it failed to model all components, and it failed to determine the temperatures inside the valve bonnets, which was the overriding variable of interest. The licensee entered the finding into the corrective action program as Condition Report CR-WF3-2009-00127.

This finding was more than minor because it was similar to non-minor finding Example 3.j in NRC Inspection Manual Chapter 0612 Appendix E, "Examples of Minor Issues," in that there was a reasonable doubt concerning the operability of Valves SI-405A(B). The inspectors utilized NRC Manual Chapter 0609, Appendix G, "Shutdown Operations Significance Determination Process," to characterize the significance of the issue. Using the worst case scenario of having both SI-405A(B) valves inoperable, the finding was of very low safety significance because multiple systems or components would still be available to remove decay heat and respond to a loss of inventory event. These systems included the emergency feedwater system, main feedwater system, auxiliary feed water system, atmospheric dump valves, charging pumps, safety injection tanks, and the high-pressure safety injection system. This performance deficiency would not result in any loss of instrumentation needed for safe shutdown and cool down of the plant. The finding had a crosscutting aspect in the area of problem identification and resolution (P.1(c)) because engineers failed to thoroughly evaluate the potential for valve pressure-locking. The calculations were completed in 2008 and were indicative of current performance (Section 40A2).

Inspection Report# : [2008005](#) (pdf)

Barrier Integrity

Significance:  Oct 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to promptly identify and correct a condition adverse to quality.

The team identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, for failure to promptly identify and correct a condition adverse to quality. Specifically, from March 20, 2007, through October 27, 2008, personnel failed to identify and correct a condition, which allowed containment vacuum relief valve differential pressure switches to operate in pressures that exceeded the designed operating pressure of the switches. The licensee implemented interim corrective actions to ensure operability. Specifically, the licensee increased the test frequency and adjusted the switches to reduce the effects of the deficient condition. The licensee entered this deficiency into their corrective action program as Condition Report 2008 05106.

The performance deficiency associated with this finding involved the failure to promptly identify and correct a condition adverse to quality that could affect containment integrity. This finding was greater than minor because it affected the Configuration Control attribute of the Barrier Integrity Cornerstone objective to provide reasonable assurance that the containment physical design barrier protected the public from radionuclide releases caused by an event. Using the NRC Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," the team determined the finding had very low safety significance because it did not represent an actual open pathway in the physical integrity of the reactor containment building. This finding had a crosscutting aspect in the area of human performance, associated with the decision making component, in that, licensee personnel failed to make conservative decisions related to equipment operation in accordance with design requirements (H.1(b)).

Inspection Report# : [2008007](#) (pdf)

Significance:  Oct 31, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate operability determination of a pressure boundary valve

The team identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion V, for a failure to follow procedure, when the licensee failed to complete an adequate operability evaluation for Valve SI 142A. Specifically, on August 21, 2008, the licensee failed to follow Procedure EN OP 104, "Operability Determinations," Revision 3, because personnel did not determine the leak rate solely through the required pressure boundary valve. The licensee entered this deficiency into their corrective action program as Condition Report 2008 05077.

The failure to perform an adequate operability evaluation on safety related plant equipment in accordance with Procedure EN OP 104 is a performance deficiency. The team determined this finding was greater than minor from review of Manual Chapter 0612, Appendix E, "Examples of Minor Issues." The finding was similar to non minor finding Example 3.j in that reasonable doubt existed related to the operability of Valve SI 142A. Using Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings", the team determined the finding had very low safety significance because it did not represent an actual open pathway in the physical integrity of the reactor containment building. The finding had a crosscutting aspect in the area of problem identification and resolution because the licensee failed to thoroughly evaluate valve operability (P.1(c)).

Inspection Report# : [2008007](#) (*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

DRAFT - 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

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

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