

Waterford 3

3Q/2007 Plant Inspection Findings

Initiating Events

Significance:  Dec 31, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

Excess Torque Resulting in Pressurizer Skirt Bolt Failures

A self-revealing violation of very low safety significance of Technical Specification 6.8.1.a was identified for an inadequate procedure for installing a bolted joint that provided structural support for the pressurizer. Specifically, the installation procedure required applying 8750 ft-lbs torque to make up a bolted joint. Following corrective actions, the licensee discovered that the break away torque on several bolts exceeded 13,400 ft-lbs. The improper bolt tensioning resulted in failure of 1 of 16 bolts and the partial cracking of 3 other bolts that potentially could affect the pressurizer's function in a safe shutdown earthquake event. This finding is more than minor because if left uncorrected it could have become a more safety significant concern. The finding was associated with the equipment performance attribute of the Initiating Events Cornerstone, and it affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. This finding was determined to have very low safety significance because a seismic event would not result in a loss-of-coolant accident that exceeded the Technical Specification limit for reactor coolant system leakage. Therefore, this issue screened out in Phase 1 of the MC 0609 significance determination because there was no actual loss of safety function.

Inspection Report# : [2006005](#) (*pdf*)

Significance:  Oct 07, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Maintenance Procedure for ESFAS Relay Replacement

A self-revealing noncited violation of Technical Specification 6.8.1.a was identified for an inadequate procedure that resulted in the unintentional actuation of five engineered safety features actuation system Train B relays and the loss of a 480 Vac motor control center. The 480 Vac motor control center provided power to the Train B pressurizer heaters and to the control element assembly motor generator Set B. Loss of the control element assembly motor generator increased the likelihood of a reactor trip. This finding is greater than minor because it affects the Initiating Event cornerstone objective procedure quality attribute to limit the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. This finding was evaluated using the significance determination process and was determined to be of very low safety significance (Green) because the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available. This finding had a crosscutting aspect in the area of human performance associated with resources because the licensee failed to ensure that Work Order 26998 was adequate for the task.

Inspection Report# : [2006004](#) (*pdf*)

Mitigating Systems

Significance:  Sep 12, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Boric Acid Leak Evaluation

The inspectors identified a noncited violation of Technical Specification 6.8.1.a (Procedures) for an inadequate boric acid evaluation procedure and for the failure to follow the same procedure. Specifically, the procedure noted that small amounts of boric acid could severely corrode carbon and low alloy carbon steel, but only had engineers check drawings for carbon steel components. Components with low alloy steel on the containment spray pumps were sometimes ignored. In addition, the procedure required pictures of the boric acid condition but, for some evaluations, no pictures were taken of the containment spray pump leaks. This made trending of the condition, to check for worsening, difficult. The inspectors determined that engineers were not following the boric acid evaluation procedure when performing the evaluations, they simply filled out the forms. The procedure contained valuable insights vital for proper boric acid evaluations, whereas the forms did not. The finding was more than minor because it could, if left uncorrected, result in a more significant safety concern. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheet, the finding was determined to have very low safety significance (Green) because it did not result in an actual loss of safety function for the containment spray system. The cause of the finding has a cross-cutting aspect in the area of human performance, work practices component, in that the licensee failed to effectively communicate the expectations regarding procedural compliance and personnel follow procedures (H.4(b)).

Inspection Report# : [2007004](#) (*pdf*)

Significance:  May 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Meet Maintenance Rule Requirements for Dry Cooling Tower Sump Pumps Failure to Meet Maintenance Rule Requirements for Dry Cooling Tower Sump Pumps

DRAFT - Green. The team identified a non-cited violation of 10 CFR 50.65(a)(2) for the failure to adequately demonstrate the performance or condition of the dry cooling tower motor-driven sump pumps. Specifically, the licensee failed to periodically verify that the pump flow rates were consistent with their design basis requirements and pump performance problems were likely to go unnoticed. Therefore, the licensee had no technical justification for continued Maintenance Rule (a)(2) status.

Failure to develop and implement technically justifiable performance criteria for the motor-driven sump pumps, for compliance with provisions of the Maintenance Rule, was a performance deficiency. The finding was greater than minor because it could be a more significant safety concern if left uncorrected. In addition, the finding was similar to non-minor finding Example 7.b in NRC Inspection Manual Chapter 0612 Appendix E, "Examples of Minor Issues," in that there were performance concerns associated with the dry cooling tower sump pumps. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding was determined to be a design deficiency confirmed not to result in loss of operability per Part 9900, Technical guidance, Operability Determination Process for Operability and Functional Assessment.

Inspection Report# : [2007007](#) (*pdf*)

Significance:  May 31, 2007

Identified By: NRC

Item Type: FIN Finding

Failure to Implement FME Procedure for Dry Cooling Tower Sumps

DRAFT - The team identified a finding for the failure to properly implement the site foreign material exclusion procedure for the dry cooling tower sumps. Specifically, the procedure required the establishment of a foreign material exclusion area if foreign materials could adversely impact equipment function. The area surrounding the dry cooling tower sumps met this criteria but the licensee failed to establish a foreign material exclusion area to protect the sump pump system from damage. The sump pumps had previously suffered damage due to foreign material intrusion.

The failure to properly implement the site foreign material exclusion procedure was a performance deficiency. The finding was more than minor because it affected the mitigating systems cornerstone objective (external factors attribute) to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding was determined to be a design deficiency confirmed not to result in loss of operability per Part 9900, Technical guidance, Operability Determination Process for Operability and Functional Assessment. The finding had a crosscutting aspect in the area of human performance (work practices component) in that personnel failed to

follow a site procedure (H.4(b)). The finding was indicative of current plant performance because the open sump and the foreign material vulnerability was known to plant personnel on an ongoing basis

Inspection Report# : [2007007](#) (*pdf*)

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Significance: May 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Procedure for Restoring Power to Dry Cooling Tower Sump Pumps

DRAFT - The team identified a non-cited violation of Technical Specification 6.8.1.a, Procedures, for inadequate procedural guidance for operators to respond to a postulated loss of offsite power event coincident with a design basis rain event. The design basis calculation specified that, during certain rain precipitation events, operators must transfer the pump power to a safety related power source within 30 minutes of a loss of offsite power to protect a safety related motor control center from flooding. The motor control centers are needed to ensure ultimate heat sink operability. During plant walkdowns, due to the sequencing of steps in the procedure, operators took approximately 50 minutes to transfer essential power to the pumps. In addition, the procedural step was worded inappropriately because it allowed operators to wait the full 30 minutes before starting the action.

The failure to provide an emergency operating procedure that could be consistently completed within the required time limits was a performance deficiency. This finding was more than minor because it affected the mitigating systems cornerstone objective (external factors component) to ensure the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. In addition, the finding was similar to non-minor finding Example 3.k in NRC Inspection Manual Chapter 0612 Appendix E, "Examples of Minor Issues," in that there was reasonable doubt of the operability of the system under certain heavy rain conditions. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the team determined that a Phase 2 significance determination was required because the finding potentially represented a loss of system safety function. The team performed a Phase 2 significance determination and found the finding was potentially greater than Green in significance. A Region IV senior reactor analyst performed a Phase 3 significance determination and found the issue was of very low safety significance.

Inspection Report# : [2007007](#) (*pdf*)

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Significance: May 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Acceptance Criteria for Battery Cell-to-Cell and Terminal Connection Resistance Value

DRAFT - The Team identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, Design Control, for the failure to ensure that the 125 Vdc safety-related batteries would remain operable if all the intercell and terminal connections were at the resistance value of 150 micro-ohms as allowed by Technical Specification Surveillance Requirement 4.8.2.1.b.2 and 4.8.2.1.c.3.

The failure to adequately verify or check a design value in accordance with NRC design control requirements was a performance deficiency. The finding was greater than minor because it affected the mitigating systems cornerstone objective (design control attribute) to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding was determined to be a design deficiency confirmed not to result in loss of operability per Part 9900, Technical guidance, Operability Determination Process for Operability and Functional Assessment.

Inspection Report# : [2007007](#) (*pdf*)

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Significance: May 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Take Prompt Corrective Measures to Address Degraded Dry Cooling Towers

DRAFT - The team identified a noncited violation of 10 CFR 50, Appendix B, Criterion XVI, Corrective Actions, for the failure to promptly correct a condition adverse to quality (dirt and debris in the dry cooling tower heat exchanger fins). The condition adversely impacted the heat exchangers' heat removal rates. The dry cooling towers had very

little design margin under some scenarios. In addition, the licensee failed to respond to trend data that showed degraded heat exchanger performance, had no basis for the specified 5 year cleaning interval specified in their heat exchanger program, and hadn't actually cleaned the towers for approximately 11 years. This issue was entered into the licensee's corrective action program as Condition Report CR-WF3-2007-01433.

This finding was more than minor because it was similar to non-minor Example 3.k in NRC Inspection Manual Chapter 0612 Appendix E, Examples of Minor Issues, in that there was a reasonable doubt of the operability of the dry cooling towers. Using Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding was determined to be of very low safety significance (Green) because the finding was a qualification deficiency confirmed not to result in loss of operability per Part 9900, Technical Guidance, Operability Determination Process for Operability and Functional Assessment. The finding had a crosscutting aspect in the area of Problem Identification and Resolution (corrective action program attribute) in that the issue was identified but corrective actions were not taken in a prompt manner (P.1(d)). The issue was indicative of current performance because the system engineer was aware of the degraded cooling tower condition for several years.

Inspection Report# : [2007007](#) (*pdf*)

Significance:  Apr 07, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Translate Design Basis into Drawings

The inspectors identified a Green noncited violation of 10 CFR 50 Appendix B, Criterion III, "Design Control," for failure to assure that the design basis, as specified in the license application, was correctly translated into drawings and the actual plant configuration. Specifically, Waterford Final Safety Analysis Report, Section 2.4.2.3.3.d, describes openings in the dry cooling tower cubicles that help preclude the possibility of flooding Motor Control Centers 3A315-S and 3B315-S during the probable maximum precipitation event. These openings serve as a backup to the floor drains located in each cubicle. Current plant configuration and Drawing G-499 S06, "Common Foundation Structure, Masonry," Sheet 6, do not conform to the design basis, in that there are no openings other than the floor drains. These motor control centers control power to the wet and dry cooling tower fans, which act as the ultimate heat sink. The licensee entered this issue into their corrective action program for resolution. This finding is more than minor because it is associated with the design control attribute and affects the Mitigating Systems cornerstone objective to ensure the reliability of the dry cooling tower system during the probable maximum precipitation event on the plant site. The normal floor drains had historically clogged and the drainage openings were needed to limit flood related challenges to the motor control centers. The finding was determined to be of very low safety significance because the deficiency did not represent an actual loss of the wet and dry cooling tower systems safety functions during the past year per "Part 9900: Technical Guidance, Operability Determinations & Functional Assessments for Resolution of Degraded or Nonconforming Conditions Adverse to Quality".

Inspection Report# : [2007002](#) (*pdf*)

Significance:  Apr 07, 2007

Identified By: NRC

Item Type: FIN Finding

Failure to Ensure that Written Procedures Adequately Incorporate Regulatory Requirements and Design Basis

The inspectors identified a finding of very low safety significance for failure to assure that the design basis for the dry cooling tower diesel-driven sump pumps was properly implemented. Specifically, the Train B dry cooling tower diesel-driven sump pump was stored near nonseismic equipment which could fall and damage the pump during an operating-basis earthquake. The dry cooling tower diesel-driven sump pumps are equipment important to safety that are required to protect the ultimate heat sink during a standard project storm coincident with an operating-basis earthquake. The licensee entered this deficiency into their corrective action program for resolution. The finding was greater than minor because it affected the mitigating systems cornerstone objective (design control attribute) to assure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Phase 1 worksheet in Manual Chapter 0609, "Significance Determination Process," the inspectors determined that this finding was of very low safety significance because the finding was a design deficiency that was confirmed not to result in a loss of operability per "Part 9900, Technical Guidance, Operability Determination Process for Operability and Functional Assessment." The inspectors determined the cause of this finding was not related to a crosscutting element because the performance deficiency does not reflect current

operating performance.

Inspection Report# : [2007002](#) (*pdf*)

Significance:  Dec 31, 2006

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Recurring Failure of Valve SI-405B to Open

A self-revealing violation of very low safety significance (Green) of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," was identified for the failure to implement effective corrective actions to prevent recurrence of a significant condition adverse to quality. Specifically, on multiple occasions Valve SI-405B failed to stroke open while attempting to place shutdown cooling Train B in service. This violation of Appendix B, Criterion XVI, is being treated as a noncited violation and was entered into the licensee's corrective action program. This finding is greater than minor because it affects the the Mitigating Systems Cornerstone attribute of equipment operability, availability, and reliability of systems that respond to initiating events. This finding was evaluated using the significance determination process and was determined to be a finding of very low safety significance because, in each condition identified, it did not represent an actual loss of a safety function. The inspectors also determined that the cause of the condition had crosscutting aspects associated with the corrective action program component in the problem identification and resolution area. This assessment was based on the fact that the licensee failed to thoroughly evaluate the problem such that the resolutions addressed the causes and therefore, corrective actions were inadequate to prevent repetition.

Inspection Report# : [2006005](#) (*pdf*)

Significance:  Oct 07, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Inspection of Essential Chiller Condenser Tubing

A self-revealing noncited violation of Technical Specification 6.8.1.a was identified for failing to follow a maintenance procedure during performance of eddy current testing on the safety-related essential chiller Train A condenser tubing. The performance deficiency was the failure to perform a full length eddy current inspection of each tube with an appropriately sized eddy current probe. Subsequently, essential chiller Train A was removed from service to correct a throughwall tube leak in its condenser. This finding is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone because the performance deficiency affected the reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Using IMC 0609, "Significance Determination Process," Appendix A, Phase 1, questions for mitigating systems, the inspectors determined that this finding was of very low safety significance (Green) because the finding was not a design or qualification deficiency, there was no loss of a safety function, and there were no other adverse impacts to the facility. This finding had a crosscutting aspect in the area of human performance associated with work practices because the licensee failed to effectively communicate expectations of procedure compliance.

Inspection Report# : [2006004](#) (*pdf*)

Significance: SL-IV Aug 09, 2006

Identified By: NRC

Item Type: VIO Violation

Inaccurate Performance Indicator Information

The inspector identified a violation of 10 CFR 50.9, with two examples, for the failure to provide accurate information to the NRC associated with the Safety System Unavailably High Pressure Injection and Residual Heat Removal Performance Indicators. The performance indicator information was inaccurate because the licensee improperly concluded that the Train B high pressure safety injection and Train B containment spray systems were still available during an extended period when the containment safety injection sump suction valve was partially open. The inspector found that the licensee had underestimated the size of valve (SI 602B) opening when assessing system availability and failed to address inconsistencies between their field data, diagnostic test data and their own informal calculations. Further, a second analysis performed by a contractor (to determine the as-found valve position) was inadequate, as it contained several errors and inappropriate assumptions. The licensee also provided inadequate contractor oversight

with respect to this effort. The erroneous valve position determination resulted in the licensee reporting system availability information that caused the performance indicators to be Green when the High Pressure Safety Injection System Unavailability Performance Indicator should have been Red and the Residual Heat Removal System Unavailability Performance Indicator should have been Yellow. The failure to provide accurate information to the NRC in accordance with 10 CFR 50.9 requirements was a performance deficiency. The issue had more than minor significance in that, had the information been accurate, two performance indicators would have changed color. Per the NRC Enforcement Policy, Section IV.A.3, these issues are not subject to the Significance Determination Process. The Enforcement Policy, Supplement VII, specifies that a Severity Level III violation would be appropriate for these issues. However, considering: 1) the NRC's recently implemented Mitigating Systems Performance Index program, which would have resulted in the subject performance indicators returning to the Green threshold; and 2) the risk associated with the underlying valve performance issue was of very low safety significance (Green), the NRC determined that a Severity Level IV violation was more appropriate. This finding had problem identification and resolution crosscutting aspects, in that the implementation of the licensee's Corrective Action Program did not result in a thorough evaluation of the identified condition such that information reported to the NRC was verified to be complete and accurate.

Inspection Report# : [2006009](#) (*pdf*)

Barrier Integrity

Significance:  Feb 12, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Promptly Identify and Correct an Adverse Condition (Welds Not In Accordance With Design)

A noncited violation of Criterion XVI of Appendix B to 10 CFR Part 50 was identified for the failure to promptly identify and correct an adverse condition (i.e., steam generator batwing-to-wrapper bar welds not in accordance with design). Specifically, in May 2005, during Refueling Cycle 13, licensee personnel found that the batwing-to-wrapper bar welds were not in accordance with design drawings, but did not enter the adverse condition into the corrective action program until December 2006. This condition was entered into the corrective action program as Condition Report WF3-2006-04395. This finding was more than minor because by not promptly entering the non-conforming welds into the corrective action program and taking actions to correct the adverse condition, it became a more significant condition when two welds failed during Operating Cycle 14. Using the guidance of Appendix J to NRC Inspection Manual Chapter 0609, "Significance Determination Process," the finding is determined to have very low safety significance (Green) because there was no tube degradation that exceeded 40 percent through-wall which did not increase in the large early release frequency. This finding had a crosscutting aspect in the area of problem identification and resolution (corrective action) program component.

Inspection Report# : [2006012](#) (*pdf*)

Emergency Preparedness

Significance:  Dec 20, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Conduct a Required Offsite medical Drill in 2005

The inspector identified a noncited violation of 10 CFR 50.54(q) for failure to conduct during 2005 an offsite drill involving a simulated contaminated individual with provision for participation by local medical support services as required by the licensee's emergency plan. The licensee failure to conduct the drill is a performance deficiency because the licensee identified the drill's postponement in October 2005 and did not appropriately reschedule the drill. The licensee did not request NRC approval to deviate from this emergency plan requirement. This finding is greater

than minor because a degraded proficiency in providing appropriate medical treatment for a contaminated individual has a potential impact on the safety of licensee employees and the public. The finding is of very low safety significance because the licensee failed to conduct only one required drill during the inspection period January 2005 through December 2006, and the drill was not appropriately rescheduled with NRC approval. This finding is a non-cited violation of 10 CFR 50.54(q) and 10 CFR 50 Appendix E, IV, F.1. The licensee has entered this issue into their corrective action system as Condition Report 2006-4429.

Inspection Report# : [2006005](#) (*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

Last modified : December 07, 2007