

# Waterford 3

## 3Q/2008 Plant Inspection Findings

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### Initiating Events

**Significance:**  Dec 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate Maintenance Procedure**

Green. A self-revealing Green noncited violation of 10 CFR 50, Appendix B, Criterion V was identified for an inadequate maintenance procedure. Specifically, MM-006-054, "Check Valve Inspection (Tilting Disc)", lacked sufficient detail to prevent poor workmanship during maintenance on safety injection Tank 1A discharge check Valve SI-335A. This poor workmanship allowed Valve SI-335A to be reassembled with a cocked hinge pin cover, resulting in reactor coolant system (RCS) leakage. The licensee entered this issue into their corrective action program for resolution.

The finding is more than minor because it challenges the procedure quality attribute of the initiating events cornerstone objective to limit the likelihood of those events that upset plant stability during power operations. Using Manual Chapter 0609, Appendix A Phase 1 screening worksheet, the issue screened as having very low safety significance because assuming worst case degradation, the Valve SI-335A leak would not result in exceeding the Technical Specification limit for identified RCS leakage. This finding had a crosscutting aspect in the resources component of the human performance area. Specifically, the licensee failed to provide the maintenance technician with a complete and accurate maintenance procedure [H.2(c)].

Inspection Report# : [2007005](#) (*pdf*)

**Significance:**  Dec 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Reactor Coolant Pump 1A Seal Leak**

Green. A self-revealing Green noncited violation of 10 CFR 50, Appendix B, Criterion XVI was identified for the licensee's failure to promptly identify and correct a significant condition adverse to quality. Specifically, the licensee did not identify a seal leak on reactor coolant Pump 1A in a timely fashion. During efforts to identify the source of leakage, the licensee effectively ruled out the reactor coolant pump seal areas based on an incorrect assumption. When no other significant sources of leakage could be found, the decision was made to monitor the leakage and take no further actions until the mid-cycle outage. This unidentified reactor coolant system leakage caused degradation to the reactor coolant pump cover, main casing stud nuts, shroud wall, and carbon steel flanges. The licensee entered this issue into their corrective action program for resolution.

The finding is more than minor because it challenges the equipment performance attribute of the initiating events cornerstone objective to limit the likelihood of those events that upset plant stability during power operations. Using Manual Chapter 0609, Appendix A Phase 1 screening worksheet, the issue screened as having 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 human performance associated with decision-making in that the licensee did not use conservative assumptions in the reactor coolant system leakage investigation [H.1(b)].

Inspection Report# : [2007005](#) (*pdf*)

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### Mitigating Systems

**Significance:**  Apr 07, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to re-evaluate previously identified boric acid leaks**

The inspectors identified a violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," for the failure to implement corrective actions for a condition adverse to quality. Specifically, the licensee developed a corrective action to evaluate the condition of existing boric acid leaks. However, the effort failed to identify and evaluate multiple existing boric acid leaks on safety related components, including some that had deteriorated since initial discovery. The licensee entered this deficiency into their corrective action program as Condition Report CR WF3 2007 3951.

This finding was more than minor because, if left uncorrected, it would have become a more significant safety concern. Specifically, some

unchecked boric acid leaks may have worsened and corroded safety related equipment. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Screening Worksheet, the finding had very low risk significance because it was a qualification deficiency confirmed not to result in loss-of-operability in accordance with NRC Manual Chapter Part 9900, Technical Guidance, "Operability Determination Process for Operability and Functional Assessments." This finding had a crosscutting aspect in the Human Performance area, Work Practices component, because engineers failed to implement proper error prevention techniques when identifying boric acid leaks for additional review H.4 (a).

Inspection Report# : [2008002](#) (*pdf*)

**G**

**Significance:** Apr 07, 2008

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**Failure to correct "Fuel Oil Receipt and Transfer" procedure**

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for failure to implement adequate corrective actions for a deficient emergency diesel generator fuel tank filling procedure (a condition adverse to quality). The licensee had identified the deficiency following a previous event when fuel oil leaked out of multiple fuel oil injectors during a diesel run. Procedural steps were needed to adequately vent the fill line following pressurization during fuel oil tank filling. However, the licensee only corrected the procedure in one section and, when a different section was used, the problem reoccurred. The fuel oil leak led to the emergency diesel generator being declared inoperable. In addition, the fuel oil created a potential fire hazard. The licensee entered this deficiency into their corrective action program as Condition Report CR WF3 2008 1345.

The finding was more than minor because it was similar to nonminor example 4.f in Inspection Manual Chapter 0612, "Examples of Minor Issues," in that emergency diesel generator operability was affected. Further, the oil created a fire hazard. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Screening Worksheet, the issue screened as having very low safety significance because it did not: (1) represent a loss of safety function; (2) represent an actual loss of a single train of equipment for more than its Technical Specification allowed outage time; or (3) screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event.

Inspection Report# : [2008002](#) (*pdf*)

**G**

**Significance:** Apr 07, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

**Essential chiller AB return Header B Isolation Valve CHW 786B Misposition**

The inspectors documented a self revealing noncited violation of Technical Specification 6.8.1.c (Procedures) for the failure to correctly position a valve during a surveillance. The procedure required operators to position the essential Chiller AB return Header B isolation Valve CHW 786B closed but operators left the valve in the open position. This resulted in cross connecting the essential services chilled water Loops A and B, which led to an unplanned entry into Technical Specifications 3.7.12 and 3.0.3. The violation was revealed through a control room alarm. The licensee entered this deficiency into their corrective action program as Condition Report CR WF3 2008-0778.

The finding was more than minor because, if left uncorrected, would have become a more significant safety concern. Specifically, with both loops of the essential services chilled water system cross connected, the system was no longer single-failure proof. A leak in one of the essential chilled water loops would have caused both units to become inoperable. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Screening Worksheet, the issue screened as having very low safety significance because it was a qualification deficiency confirmed not to result in loss-of-operability in accordance with NRC Manual Chapter Part 9900, Technical Guidance, "Operability Determination Process for Operability and Functional Assessments." This finding had a crosscutting aspect in the Human Performance area, Work Practices component, because operators failed to implement self-checking techniques when performing procedure steps H.4(a).

Inspection Report# : [2008002](#) (*pdf*)

**G**

**Significance:** Apr 07, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

**ACCW pump failure due to inaccurate operator aid**

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," because the licensee failed to correct a condition adverse to quality (inadequate instructions that led to low fuel oil and the failure of auxiliary component cooling water pump bearing). Specifically, the licensee's corrective action for a previous event called for an operator aid (oil level label). However, the operator aid contained incorrect and confusing information. Consequently, another auxiliary component cooling water pump failed. The licensee entered this deficiency into their corrective action program as Condition Report CR WF3 2008-0350.

The finding was more than minor because it was similar to nonminor violation example 4.f in Inspection Manual Chapter 0612, Appendix E, "Examples of Minor Issues," in that the problem affected auxiliary component cooling water Pump B operability. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Screening Worksheet, the issue screened as having very low safety significance because

it did not: (1) represent a loss of safety function; (2) represent an actual loss of a single train of equipment for more than its Technical Specification allowed outage time; or (3) screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding had crosscutting aspects associated with Human Performance area, resources program component, because the licensee failed to have correct labeling on components H.2(c).

Inspection Report# : [2008002](#) (*pdf*)

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**Significance:** Dec 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Follow Procedure Review Process**

Green. The inspectors identified a Green noncited violation of Technical Specification 6.8.1.a (Procedures) for failure to correctly implement a procedure recommended in Appendix A of Regulatory Guide 1.33. Specifically, the failure to follow Site Procedure W2.109, "Procedure Development, Review, and Approval," led to the unapproved deletion of the Special Scope section of the Quality Assurance Program Manual. The Special Scope section contained the fire protection quality assurance (QA) program components and discussion for their implementation. This deleted information is required by the Waterford 3 Steam Electric Station License Condition 2.C.9. The licensee entered this issue into their corrective action program for resolution.

The finding was more than minor because if left uncorrected, it would become a more significant safety concern. Using Inspection Manual Chapter 0609, Appendix F, this finding can be assigned a low degradation rating and screen as green, since current QA audit standards contain a similar level of detail as the criteria contained in the deleted Special Scope document.

Inspection Report# : [2007005](#) (*pdf*)

**G**

**Significance:** Oct 07, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate Procedure for a Fire in Vital Switchgear Room B**

The inspectors identified two examples of a noncited violation of Waterford Steam Electric Station, Unit 3 Facility Operating License Condition 2.C.9 for failure to implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety Analysis Report for the facility. In the first example, the pre-fire strategy for vital switchgear Room B did not contain adequate information regarding the doors required to be open to allow the desired ventilation flowpath, nor did it contain the required number of smoke ejectors necessary to desmoke the switchgear room in a manner that would allow the implementation of OP-901-524, "Fire In Areas Affecting Safe Shutdown." In the second example, the licensee did not take corrective actions for a previously identified issue in a timely fashion. Specifically, the deficiencies in the pre-fire strategy for vital switchgear Room B were first identified on August 21, 2006. The deficient procedure was not corrected until September 14, 2007, after the senior resident inspector discussed the non-conformance with licensee management. The licensee entered this deficiency into their corrective action program for resolution. The finding was more than minor because it was associated with the mitigating systems cornerstone objective (Protection Against External Factors) to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Manual Chapter 0609, Appendix F, Phase 1 initial qualitative screening, the issue screened as having very low safety significance because the compensatory manual action required to safely shut down the plant is not needed in order to reach hot shutdown. This finding had a crosscutting aspect in the area of problem identification and resolution. Specifically, the licensee's personnel corrective action process failed to take appropriate corrective actions to address the safety issue in a timely manner (P.1(d)).

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

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## **Barrier Integrity**

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**Significance:** Oct 07, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Missed Reactor Coolant System Chemistry Samples**

The inspectors identified a noncited violation of Technical Specification (TS) 3.4.7 for multiple failures to complete a radiochemical analysis for EBAR (Average Disintegration Energy) determination within the required periodicity. Specifically, on thirteen out of fifteen occasions, the licensee had failed to complete the analysis and replace the old EBAR value with the new EBAR value within the TS required interval of 136 to 229 days. EBAR is the average of the sum of average beta and gamma energies per disintegration for isotopes, other than radioiodines, with half-lives greater than fifteen minutes. Daily RCS samples are compared to this calculated value in order to ensure that 10CFR50.67 dose limits at the site boundary are not exceeded in the event of an accident scenario. The licensee entered this issue into their corrective action program for resolution. The finding was more than minor because it was associated with the cladding performance attribute of the barrier integrity cornerstone and affected the cornerstone objective of providing reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. Using the

Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheet, the finding was determined to have very low safety significance (Green) because it only affected the fuel barrier. This finding had a crosscutting aspect in the area of human performance. Specifically, the licensee's personnel work practices failed to support human performance by ensuring that activity status and completion are properly documented (H.4(a)).

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

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## Emergency Preparedness

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## Occupational Radiation Safety

**Significance:**  May 14, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to conspicuously post a radiation area**

The inspectors identified a NCV of 10 CFR 20.1902 because the licensee failed to post a radiation area conspicuously. On May 14, 2008, the inspectors toured the hot machine shop and noted a box with high radiation area signs attached. Dose rates around the box ranged from 55 to 90 millirems per hour at 30 centimeters. The inspectors noted there was no posting to identify the radiation area. The nearest radiation area posting was on the entry door of the decontamination room, outside the hot machine shop. As a result of the inspectors' finding, the licensee erected a rope barricade around the radiation area and posted it conspicuously.

The finding was more than minor because it was associated with one of the cornerstone attributes and the finding affected the Occupational Radiation Safety cornerstone objective, in that, uninformed workers could unknowingly accrue additional radiation dose. Because the finding involved the potential for unplanned, unintended dose resulting from conditions that were contrary to NRC regulations, the finding was evaluated using the Occupational Radiation Safety Significance Determination Process. The inspectors determined that the finding had no more than very low safety significance because: (1) it did not involve (ALARA) planning and controls, (2) there was no personnel overexposure, (3) there was no substantial potential for personnel overexposure, and (4) the finding did not compromise the licensee's ability to assess dose. The finding also had a cross-cutting aspect in the area of human performance, resource component, because the licensee did not have complete procedures. (H.2.c)

Inspection Report# : [2008003](#) (*pdf*)

**Significance:**  Apr 30, 2008

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **Failure to follow procedure when entering the radiological controlled area**

The inspectors reviewed two examples of a self-revealing, noncited violation of Technical Specification 6.8.1 because workers failed to follow procedural requirements when preparing to enter the radiological controlled area.

The first example, on April 28, 2008, involved a contract employee who informed the radiation protection shift control technician he would be working on the Reactor Coolant Pump 1B platform where dose rates were below 350 millirems per hour. Subsequently, the contract employee entered another area, one which had not been surveyed and on which the worker had not been briefed, and received a dose rate alarm measuring 553 millirems per hour. The second example, on April 30, 2008, involved a rigger who was assigned to help rig and lift a reactor coolant pump seal from the pump to the top of the D-ring. However, the rigger did not report to radiation protection personnel to receive a briefing on the dose rates in the area of Reactor Coolant Pump 1A. Before being reassigned, the rigger was briefed for an area with dose rates less than 180 millirems per hour, but during his work on the reactor coolant pump, the worker entered an area with dose rates as high as 628 millirems per hour and received a dose rate alarm. Radiation protection personnel counseled the workers and documented the occurrences in the corrective action program.

The occurrence involved the program attributes of exposure control and affected the cornerstone objective, in that the failure of the workers to follow procedural guidance and inform radiation protection personnel of the worker's intended activities work area resulted in the workers being unknowledgeable of 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 ALARA finding, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an inability to assess dose. The finding had a cross-cutting aspect in the area of human performance, work practices component, because the workers failed to use human error prevention techniques such as self and peer checking. (H.4.a)

Inspection Report# : [2008003](#) (*pdf*)

**G****Significance:** Dec 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Obtain Current Radiological Information Prior to Entering a High Radiation Area**

Green. The inspector reviewed a self-revealing, noncited violation of Technical Specification 6.12.1.b that resulted when workers did not obtain current radiological information before entering a high radiation area as required by the Technical Specifications. On December 12, 2006, two workers accessed a high radiation area near the Reactor Coolant Pump 1B Cold Leg through a pathway not discussed with radiation protection and received electronic dose rate alarms. Upon investigation, the licensee determined the workers did not clearly communicate the work scope and the travel path for accessing the work areas; therefore, the workers were not briefed for the radiological conditions of the areas near the Reactor Coolant Pump 1B Cold Leg. The peak dose rates for the two workers were 210 millirem per hour and 361 millirem per hour, respectively. Corrective actions implemented by the licensee were that the workers completed an electronic alarming dosimeter dose/dose rate alarm questionnaire and received additional coaching from radiation protection personnel.

The failure to obtain current radiological information prior to entering a high radiation area is a performance deficiency. This finding is greater than minor because it is associated with one of the cornerstone attributes (exposure control) and affected the Occupational Radiation Safety cornerstone objective, in that workers not obtaining high radiation area dose rates does not ensure adequate protection of the worker health and safety from additional personal exposure. The finding was determined to be of very low safety significance because it did not involve: (1) ALARA planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. Further, this finding had a human performance cross-cutting aspect in the work practices component because the workers did not use human error prevention techniques, such as self and peer checking, when discussing the work scope and work areas with radiation protection staff [H.4.(a)].

Inspection Report# : [2007005](#) (*pdf*)**G****Significance:** Dec 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Follow Radiation Work Permit Instructions**

Green. The inspector reviewed two examples of a self-revealing, noncited violation of Technical Specification 5.4.1 that resulted when workers failed to follow their radiation work permit instructions. The first example occurred on October 11, 2007, when an operator accessed Valves RC 109 and RC 110 by a travel path not discussed with radiation protection personnel and without obtaining current radiological conditions as specified in the radiation work permit. As the operator passed through the pipe-chase to access the valves, the worker received a dose rate alarm. The highest dose rate levels were 80 millirem per hour along the travel path. The second example occurred on October 12, 2007, when a maintenance mechanic entered the Safeguards "B" room without a current radiological briefing as specified in the radiation work permit. Radiation protection personnel requested the worker wait to access Safeguards "A" room while the radiological conditions were changing (shutdown cooling in progress) and did not know the worker also needed to access the "B" room. The worker, who had previously entered the "B" room but failed to realize this room also had changing radiological conditions, did not receive current radiological conditions for this room and received a dose rate alarm. The worker's peak dose rate was 61 millirem per hour. The licensee's corrective actions for the first example were that a radiation protection supervisor conducted an interview with worker, and the worker completed an electronic alarming dosimeter dose/dose rate alarm questionnaire and human performance error review. For the second example, the immediate corrective action was to exclude the individual from the radiological controlled area then perform a human performance error review.

The failure to follow a radiation work permit instruction is a performance deficiency. This finding is greater than minor because it is associated with one of the cornerstone attributes (exposure control) and affected the Occupational Radiation Safety cornerstone objective, in that workers not following their radiation work permit does not ensure adequate protection of the worker health and safety from additional personal exposure. The finding was determined to be of very low safety significance because it did not involve: (1) ALARA planning and controls, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. Further, this finding had a human performance cross-cutting aspect in the work practices component because the workers did not use human error prevention techniques, such as self checking, to ensure the full work scope, locations, and radiological conditions were discussed with radiation protection personnel as required by the radiation work permit [H.4.(a)].

Inspection Report# : [2007005](#) (*pdf*)

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## Public Radiation Safety

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## 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.

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## Miscellaneous

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