

## Waterford 3

### 2Q/2003 Plant Inspection Findings

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#### Initiating Events

**Significance:**  Mar 24, 2003

Identified By: NRC

Item Type: FIN Finding

##### **Failure to Implement Vendor Recommendations**

A self-revealing finding was identified for the failure to maintain and operate main generator seal oil backup differential pressure regulating Valve SO-308 in accordance with vendor recommendations. This condition resulted in a turbine trip and subsequent reactor power cutback on February 14, 2003. This self-revealing finding is greater than minor because it resulted in a perturbation in plant stability resulting in a reactor power cutback, similar to example 4.b in Appendix E of Manual Chapter 0612. The finding is of very low safety significance because, although it caused a plant transient, it did not increase the likelihood of a primary or secondary system loss-of-coolant accident initiator, did not contribute to the loss of mitigation equipment functions, and did not increase the likelihood of a fire or internal/external flood (Section 4OA3).

Inspection Report# : [2003004\(pdf\)](#)

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#### Mitigating Systems

**Significance:**  Dec 28, 2002

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

##### **Failure to follow an operating procedure**

The licensee failed to follow Operating Procedure OP-002-003, "Component Cooling Water System," Revision 13, following maintenance activities on Essential Chiller A. The failure to follow procedure resulted in Component Cooling Water Valve CC-305A being mispositioned on November 22, 2002, affecting operability of both Component Cooling Water System Train A and Essential Chiller AB. The failure to follow an operating procedure is a violation of Technical Specification 6.8.1(a). This finding is greater than minor because the mitigating systems objective to ensure the availability and capability of the component cooling water and essential chill water systems were affected. The finding is of very low safety significance since the mispositioned valve did not result in loss of safety function for a single train for greater than the Technical Specification allowed outage time. The condition was promptly identified and corrected by the licensee approximately 1.5 hours after Valve CC-305A was mispositioned.

Inspection Report# : [2002004\(pdf\)](#)

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**Significance:**  Dec 20, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

##### **Ineffective Corrective Actions Resulting from Inadequate Evaluations of Extent of Condition**

Three examples associated (two in Mitigating Systems) with failures to adequately evaluate the extent of conditions adverse to quality were identified. The failure to promptly identify and correct these degraded conditions was a violation of 10 CFR Part 50, Appendix B, Criterion XVI (Section 40A2.b). The mitigating systems examples included:

- The licensee failed to promptly identify and correct a degraded condition resulting in the electrical and electronic components inside Emergency Diesel Generator B control cabinet being subjected to oil intrusion since 1997. The team found that the licensee failed to evaluate the cause of the oil intrusion until 2001, took no corrective actions in 2001 or 2002 to prevent the oil intrusion when the source was identified, and failed to fully evaluate the detrimental effects that the oil intrusion could pose to the electrical and electronic components. The failure to promptly identify and correct the degraded condition resulting in the electrical and electronic components inside Emergency Diesel Generator B control cabinet being subjected to oil intrusion since 1997 was determined to be a violation of 10 CFR Part 50, Appendix B, Criterion XVI. This violation is being treated as a noncited violation consistent with Section VI.A of the NRC Enforcement Policy. This finding is greater than minor because if left uncorrected it would become a more significant safety concern. This finding is of very low safety significance since the degraded condition did not result in a loss of the emergency diesel generator safety function.
- On April 18, 2002 when the low pressure safety injection Train B was found voided, the licensee failed to identify that the containment spray system Train B would also be voided from similar plant conditions. The containment spray voiding was identified by the licensee on September 17, 2002, when abnormal indications were noted by operators during a surveillance. Action was then taken by the licensee to correct the degraded condition. However, the licensee failed to identify the degraded condition during previous opportunities. The failure to promptly identify and correct the voided condition affecting containment spray Train B was determined to be a violation of 10 CFR Part 50, Appendix B, Criterion XVI. This violation is being treated as a noncited violation consistent with Section VI.A of the NRC Enforcement Policy. This finding is greater than minor because if left uncorrected the voided condition could impact the reliability of the containment spray system to perform its safety function during accident conditions. The finding is of very low safety significance since the licensee could demonstrate through analysis that the actual degraded condition found would not have prevented the system from performing its safety function during accident conditions.

Inspection Report# : [2002005\(pdf\)](#)



**Significance:** Dec 20, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Ineffective Corrective Actions Resulting from Untimeliness**

Two examples of failures to implement timely corrective actions to resolve degraded conditions were identified. The failure to promptly identify and correct these degraded conditions was a violation of 10 CFR Part 50, Appendix B, Criterion XVI (Section 40A2.c). Two examples included:

- The licensee failed to promptly identify and correct piping connections susceptible to fatigue stress cracking resulting in an unisolable leak from the charging system header on March 6, 2000. In 1997, the licensee experienced a crack of the charging system header due to fatigue stress cracking and determined additional piping connections were susceptible. The piping connection that failed in March 2000 was identified as being susceptible to fatigue stress cracking, however, no corrective actions had been taken. The failure to promptly identify and correct piping susceptible to fatigue stress cracking resulting in an unisolable leak from the charging system header on March 6, 2000, is a violation of 10 CFR Part 50, Appendix B, Criterion XVI. This violation is being treated as a noncited violation consistent with Section VI.A of the NRC Enforcement Policy. The finding is greater than minor because if left uncorrected the finding could become a more significant event. The finding is of very low safety significance since the degradation of the system was identified and corrected prior to the safety function of the system being adversely impacted.
- The licensee failed to promptly implement timely corrective actions to operate and maintain the low pressure safety injection system as described in the Final Safety Analysis Report. Specifically, since 1997, the licensee utilized multiple analysis for evaluating degraded piping and pipe supports to evaluate acceptable void sizes. These analysis utilized allowable stresses that exceeded the design criteria allowable stresses described in the facilities Final Safety Analysis Report for the low pressure safety injection system. The failure to implement timely corrective actions to restore and maintain the low pressure safety injection system as described in the

Final Safety Analysis Report is a violation of 10 CFR Part 50, Appendix B, Criterion XVI. This violation is being treated as a noncited violation consistent with Section VI.A of the NRC Enforcement Policy. The finding is greater than minor because the Mitigating Systems Objective to ensure the availability, reliability, and capability is potentially affected when the system is maintained outside of its design criteria as described in the Final Safety Analysis Report. The finding is of very low safety significance since the analysis used to assess the degraded condition ensured the system could perform its safety function.

Inspection Report# : [2002005\(pdf\)](#)

**Significance:**  Sep 30, 2002

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

### **Failure to Perform an Adequate Operability Evaluation Resulting in the Failure of the Shutdown Cooling System**

The licensee failed to adequately address the capability of the shutdown cooling system to perform its safety function after identifying a degraded condition. This resulted in the failure of two shutdown cooling suction isolation valves to open during attempts to line up the plant for shutdown cooling. The associated inadequate operability evaluation was determined to be a violation of Technical Specification 6.8.1(a) and Administrative Procedure LI-102, "Corrective Action Process," Revision 1. This violation is being treated as a noncited violation consistent with Section VI.A of the NRC Enforcement Policy. This issue affected the reactor safety cornerstone objective in that this event challenged critical safety functions of the shutdown cooling system during shutdown plant conditions. NRC Manual Chapter 0609, Appendix G, "Shutdown Operations Significance Determination Process," was utilized to characterize the significance of the issue. During the loss of shutdown cooling on March 23, 2002, multiple systems or components were 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 high-pressure safety injection system. This event did not result in any loss of instrumentation needed for safe shutdown and cooldown of the plant. Based on multiple success paths available for ensuring decay heat removal capability and inventory makeup capability, this event was characterized as having very low safety significance (Section 1R15).

Inspection Report# : [2002003\(pdf\)](#)

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## **Barrier Integrity**

**Significance:**  Jan 31, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

### **Ineffective Corrective Actions Resulting from Inadequate Evaluations of Extent of Condition**

Three examples (one in barrier integrity) associated with failures to adequately evaluate the extent of conditions adverse to quality were identified. The failure to promptly identify and correct these degraded conditions was a violation of 10 CFR Part 50, Appendix B, Criterion XVI (Section 40A2.b). The barrier integrity example included: The licensee failed to promptly identify and correct a degraded condition resulting in exceeding the rated thermal power limit from February 1995 to March 2002. This condition, identified by the licensee in March 2002, introduced non-conservative excore neutron detector calibration errors which affected the high linear power level, high logarithmic power level, high local power density, and low departure from nucleate boiling ratio, reactor protection trip functions. The failure to promptly identify and correct the overpower condition was determined to be a violation of the facility operating License NPF-38 and 10 CFR Part 50, Appendix B, Criterion XVI. This violation is being treated as a

noncited violation consistent with Section VI.A of the NRC Enforcement Policy. This finding is greater than minor because it affected four reactor trip functions in a non-conservative manner, thus, potentially impacting the barrier cornerstone integrity. The finding is of very low safety significance since it was determined that the accident analysis, Chapter 15 of the Final Safety Analysis Report, bounded the non-conservative trip functions. This finding is also of very low safety significance since actual fuel barrier integrity was never challenged during the overpower condition. Inspection Report# : [2002005\(pdf\)](#)

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**Significance:** Dec 28, 2002

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

#### **Failure to establish an adequate maintenance procedure**

The licensee failed to establish an adequate maintenance procedure to ensure Switchgear Ventilation Damper SVS-102 remained in its safe position during maintenance and after the switchgear ventilation system was returned to an operable condition. Specifically, the damper was worked over a two day period without the damper being gagged in its safety minimum open position. The switchgear ventilation system was returned to an operable condition on September 19, 2002, without the associated actuator having been connected or a gag installed to maintain the damper in the minimal open position. The failure to gag the damper or restore the damper to an operable condition would have prevented the damper from being able to perform its safety function (minimum open position) on a safety injection actuation signal. The failure to provide adequate work instructions to repair Ventilation Damper SVS-102 is a violation of Technical Specification 6.8.1(a). This finding is greater than minor because the barrier integrity objective, to provide reasonable assurance that the physical design barriers protect the public from radionuclide releases caused by accidents or events, was affected. A Phase 3 review was performed that considered the potential impact the switchgear ventilation system could have on the control envelope. The NRC risk analyst considered both radiological and toxic gas atmosphere. This finding is of very low safety significance, in part, based on a redundant damper being operable and the short duration the condition actually existed.

Inspection Report# : [2002004\(pdf\)](#)

G

**Significance:** Dec 20, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Maintain Design Control of the Low Pressure Safety Injection System**

The licensee failed to maintain design control of the low pressure safety injection system, Train A, in accordance with the design basis, as described in the Final Safety Analysis Report, when installing a modification to mitigate adverse voiding conditions that have affected the system. The failure to maintain design control of the system resulted in loss of a Seismic Class 1, ASME Section III, Safety Class 2, barrier during post accident conditions. The failure to maintain design control of the system is a violation of 10 CFR Part 50, Appendix B, Criterion III. This violation is being treated as a noncited violation consistent with Section VI.A of the NRC Enforcement Policy. This issue screens more than minor because the Barrier Integrity Objective to provide reasonable assurance that the physical design barriers protect the public from radionuclide releases caused by accidents or events was potentially affected. The finding is of very low safety significance since only degradation of the radiological barrier function provided for the auxiliary building was affected.

Inspection Report# : [2002005\(pdf\)](#)

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**Significance:** Sep 30, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Implement Effective Corrective Actions**

The inspectors identified that the licensee failed to promptly identify and correct a condition adverse to quality, resulting in repetitive failures of solenoid-operated control valves to properly operate. The failure of these valves resulted in loss of the primary containment isolation function for the fire protection system piping penetrating containment. This was determined to be a violation of 10 CFR Part 50, Appendix B, Criterion XVI. This violation is being treated as a noncited violation consistent with Section VI.A of the NRC Enforcement Policy. This issue affected the reactor safety cornerstone objective in that this event challenged critical safety functions of Valves FP-601A and -601B to isolate on a containment isolation signal. This finding did not result in an actual open pathway in the physical integrity of reactor containment or an actual reduction of the atmospheric pressure control function of the reactor containment. In accordance with NRC Manual Chapter 0609, Appendix A, Attachment 1, this issue was characterized as having very low safety significance.

Inspection Report# : [2002003\(pdf\)](#)

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## Emergency Preparedness

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## Occupational Radiation Safety

**Significance:**  Apr 25, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

### **Violation of Technical Specification 6.8.1.a required radiation work permit requirement**

The team identified a noncited violation of Technical Specification 6.8.1.a because the licensee failed to follow radiation work permit requirements. Specifically, on April 21, 2003, operations personnel entered into an unsurveyed radiologically restricted area in an overhead area in the reactor auxiliary building without first contacting radiation protection personnel prior to entry. This finding is greater than minor because it was associated with one of the Occupational Radiation Safety Cornerstone attributes (exposure/contamination control) and the finding affected the associated cornerstone objective (to ensure the adequate protection of public health and safety from exposure to radiation from radioactive material). The team processed the violation through the Occupational Radiation Protection Significance Determination Process because the occurrence involved potential doses (resulting from actions or conditions contrary to licensee procedures) which could have been significantly greater as a result of a single minor, reasonable alteration of the circumstances. However, because the violation was not an as low as is reasonably achievable (ALARA) finding, there was no personnel overexposure, there was no substantial potential for personnel overexposure, and the finding did not compromise the licensee's ability to assess dose, the violation had no more than very low safety significance.

Inspection Report# : [2003008\(pdf\)](#)

**Significance:**  Jul 19, 2002

Identified By: NRC

Item Type: FIN Finding

### **Poor Radiological Work Planning**

During the review of the licensee's Refueling Outage 11 exposure estimates and exposure performance data, the inspectors identified that the Radiation Work Permit 2002-1600, "Health Physics Surveys and Postings," total person-rem exceeded budgeted person-rem by greater than 50 percent (5.7 rem verses 3.5 rem). From a review of the job-in-progress review, the inspectors noted that additional exposure was due, in part, to a higher source term than planned

and increased radiation protection support for lower cavity and steam generator work that was not well communicated to the radiation protection staff. Additionally, the licensee did not reevaluate the dose estimate for Radiation Work Permit 2002-1600, when it was known that the actual effective dose rate was higher than planned. The failure to reevaluate and adjust an as low as is reasonably achievable (ALARA) dose estimate was a performance deficiency. The finding was more than minor because it was associated with an Occupational Radiation Safety cornerstone attribute (ALARA Planning) and affected the associated cornerstone objective. Using the Occupational Radiation Safety Significance Determination Process, the inspectors determined the finding to have very low safety significance because actual job dose was more than 5 person-rem, it exceeded the planned intended dose by more than 50 percent, and the station's 3-year rolling average collective dose was less than 135 person-rem.

Inspection Report# : [2002003\(pdf\)](#)

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## Public Radiation Safety

**Significance:**  Apr 25, 2003

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

### **Violaton of 10 CFR 71.5 for failure to placard a transport vehicle containing hazardous material**

The team identified a self-revealing noncited violation of 10 CFR 71.5 because the licensee failed to placard a transport vehicle containing hazardous material. On June 5, 2002, the licensee was informed by letter from the recipient that Radioactive Material Shipment 02-3047 arrived at it's destination with no radioactive placards on the transport vehicle as required for radioactive material labeled as Radioactive Yellow III. This finding is greater than minor because it was associated with one of the Public Radiation Safety Cornerstone attributes (transportation program) and the finding affected the associated cornerstone objective (to ensure the adequate protection of public health and safety from exposure to radiation materials released into the public domain). The team processed the violation through the Public Radiation Safety Significance Determination Process because the finding involved an occurrence in the licensee's radioactive material transportation program that is contrary to NRC and DOT regulations. The finding was a radioactive material control issue that involved transportation. However, it did not exceed radiation limits, involve a breach of package during transit, involve a Certificate of Compliance issue, involve a low level burial ground nonconformance, and involve a failure to make notifications or provide emergency information; therefore, the violation had no more than very low safety significance.

Inspection Report# : [2003008\(pdf\)](#)

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## Physical Protection

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## Miscellaneous

**Significance:** N/A Dec 20, 2002

Identified By: NRC

Item Type: FIN Finding

### **Identification and Resolution of Problems**

The licensee's process to identify, prioritize, evaluate, and correct problems was generally effective during calender years 2001 and 2002. The team reviewed 250 condition reports that were opened or closed during the period and found,

in general, that station personnel effectively identified, characterized, and prioritized problems. Some issues involving the evaluation and correction of degraded conditions were identified by the team. Most of these issues were associated with longstanding degraded conditions that were identified and corrected by the licensee during this period and included the following: (1) an untimely identification of a void condition in the containment spray system existing between April and September 2002, (2) inadequate extent of condition reviews to identify main steam flow venturi degradation which existed since 1995 and the deleterious affect an oil coating which existed since 1997 would have on electrical components associated with the emergency diesel generator, (3) the inappropriate use of engineering analyses that allowed piping supports to exceed design basis allowable stresses during postulated accidents with voids in the low pressure safety injection system since 1997, (4) an inadequate verification of the design adequacy of a plant modification to vent low pressure safety injection system voids installed in June 2002, and (5) untimely corrective actions which resulted in a forced shutdown to repair weld cracks in the charging system in March 2000. Most of these issues had cross-cutting aspects in the area of problem identification and resolution.

Inspection Report# : [2002005\(pdf\)](#)

Last modified : September 04, 2003