

Waterford 3

Initiating Events

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\(pdf\)](#)



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 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). Three 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. • 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. • 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\(pdf\)](#)

G**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\(pdf\)](#)G**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\(pdf\)](#)G**Significance:** Apr 01, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to maintain proper foreign material exclusion controls

The inspectors identified a violation of Technical Specification 6.8.1 for the failure to maintain proper foreign material exclusion controls in accordance with Procedure UNT 007-059 while working to correct a piping misalignment at Check Valve MS-402A, on the Emergency Feedwater AB main steam supply line. This violation is being treated as a noncited violation consistent with Section VI.A.1 of the NRC Enforcement Policy and is in the licensee's corrective action program as Condition Report 2002-0628. The safety significance of this violation was more than minor because it could be reasonably viewed as a precursor to a more significant event due to the potential for foreign material in the main steam supply line affecting the ability of the Emergency Feedwater AB turbine to operate as required. This issue was determined to be of very low safety significance because there was no foreign material found in the main steam piping system during the final system closure inspection.

Inspection Report# : [2002002\(pdf\)](#)

G**Significance:** Mar 06, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to perform corrective maintenance on safety-related equipment in accordance with established procedures.

The inspectors identified a violation of Technical Specification 6.8.1 for the failure to perform corrective maintenance on a reactor trip circuit breaker in accordance with established procedures. During installation of a reactor trip circuit breaker, the breaker unexpectedly closed as it was being placed into service. The licensee performed troubleshooting and repair activities on the breaker, and subsequently placed the breaker in service. No record of the troubleshooting or repair activities was made, resulting in an inability to independently verify the specifics of the problem or provide for traceability of parts used, as required by corrective maintenance procedures. This is being treated as a noncited violation consistent with Section VI.A.1 of the NRC Enforcement Policy, and is in the licensee's corrective action program as Condition Report 2002-0382. The safety significance of this violation was determined to be more than minor because there was a credible impact on safety, by not performing corrective maintenance in accordance with established procedures on safety related equipment (reactor trip circuit breaker), which could affect the operability, availability, reliability, or function of the reactor protection system. Using the reactor safety significance determination process, the violation was determined to have very low safety significance because the reactor trip circuit breakers would have functioned if required.

Inspection Report# : [2001009\(pdf\)](#)G**Significance:** Jan 18, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to meet the requirements of the reactivity management program procedure during maintenance work activities

The inspectors identified a violation of Technical Specification 6.8.1 for the failure to meet the reactivity management program requirements during the performance of maintenance on Charging Pump A. The work package for charging pump A did not include a completed reactivity management checklist used to document the reactivity management program screening. The reactivity management program requires that work on specified systems such as the charging system be screened for the potential of an inadvertent reactivity change. Subsequent to this finding, the licensee performed a self-assessment to determine the extent of this condition. Additional issues with the reactivity management program were identified. The inspectors considered these issues to be programmatic in nature in that the program requirements were not being met in all cases for maintenance activities. This violation is being treated as a noncited violation, consistent with Section VI.A.1 of the NRC Enforcement Policy and is in the licensee's corrective action program as Condition Reports 2002-0169 and -0476. This violation was more than minor because it could be reasonably viewed as a precursor to a more significant event due to the potential for an unplanned reactivity excursion and could affect the function of the charging or other reactivity management systems. This issue was determined to be of very low safety significance because there was no inadvertent reactivity change.

Inspection Report# : [2001009\(pdf\)](#)

Barrier Integrity

G**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\(pdf\)](#)



Significance: G 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\(pdf\)](#)



Significance: G Jan 18, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

Design control measures failed to prevent design and approval for installation of a relief valve with a set pressure in excess of the design pressure.

The inspectors identified a violation of Criterion III of Appendix B to 10 CFR Part 50 for a design change that failed to fully consider the requirements of Article NC-7000, "Protection Against Overpressure," of Section III in the ASME Boiler and Pressure Vessel Code, 1971 Edition through Winter 1972 Addenda. This failure resulted in the approval to install a relief valve with a setpoint greater than the design pressure in a section of pipe in a containment penetration that is normally isolated with entrained fluid. This design change had a credible impact on safety because the design change directed the installation of a relief valve with a set pressure greater than the design pressure allowed by the ASME Code. This design change also could affect the integrity of the containment barrier as a result of not providing overpressure protection such that the design pressure of any component within the boundary would not be exceeded. This violation is being treated as a noncited violation consistent with Section VI.A.1 of the NRC Enforcement Policy and is in the licensee's corrective action program as Condition Report CR-WF3-2002-0079. This issue was determined to be of very low safety significance because the modification was not installed in the plant and this design did not represent: a degradation of the radiological barrier function provided for the control room, or auxiliary building, or spent fuel pool; a degradation of the barrier function of the control room against smoke or a toxic atmosphere; or 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.

Inspection Report# : [2001009\(pdf\)](#)

Emergency Preparedness

Occupational Radiation Safety



Significance: G 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\(pdf\)](#)



Significance: Apr 12, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to survey and control a high radiation area

The licensee failed to survey and control a high radiation area correctly. When items containing radioactive material were placed into a trash holding area on the -4-foot elevation of containment on April 7, 2002, the licensee failed to perform a radiation survey, in violation of 10 CFR 20.1501(a), to evaluate the additional hazard and to adjust the placement of the rope barricade and warning signs (posting). Consequently, radiation dose rates at the rope barricade and posting exceeded the dose rates allowed by Technical Specification 6.12 by a factor of two, demonstrating that the rope barricade and posting did not encompass and control the entire high radiation area. This violation is being treated as a noncited violation consistent with Section VI.A.1 of the NRC Enforcement Policy. This item is documented in the licensee's corrective action program as Condition Report 2002-00726. The finding had a credible impact on safety because workers could have unknowingly worked in the high radiation area outside the barricades and postings. The occurrence involved the potential for individual workers unplanned, unintended doses resulting from actions or conditions contrary to licensee procedures, Technical Specifications or NRC regulations, which could have been significantly greater if people had worked in the area. Using the Occupational Radiation Safety Significance Determination Process, the inspector determined the finding had only very low safety significance because it is not an ALARA finding, an overexposure, a situation involving a substantial potential for overexposure, or an item compromising the ability to assess dose.

Inspection Report# : [2002002\(pdf\)](#)

Public Radiation Safety

Physical Protection

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 calendar 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\(pdf\)](#)



Significance: Jun 29, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to correct the cause of voiding in the low pressure safety injection system and to take effective corrective action to preclude repetition of this condition

The inspectors identified a violation of 10 CFR Part 50, Appendix B, Criterion XVI, Corrective Action, for the failure to correct the cause of voiding in the low-pressure safety injection system and to take effective corrective action to preclude repetition of this condition, which had existed for several months prior to the March 23, through April 17, 2002, refueling outage (RF11). The licensee failed to correct the root cause of this condition during the refueling outage. A total of seven unplanned entries into Technical Specification 3.5.2 Action (a) were made as a result of voids large enough to render Low-Pressure Safety Injection System Train A or B inoperable during the period April 18 - June 14, 2002. This violation is being treated as a noncited violation consistent with Section VI.A.1 of the NRC Enforcement Policy and is in the licensee's corrective action program as Condition Report 2002-0818. This violation was determined to have greater than minor safety significance because it had a credible impact on safety and did affect the operability, availability, reliability, and function of the low-pressure safety injection system. This issue was determined to be of very low safety significance because only one train of the low-pressure safety injection system was affected at any one time and the Technical Specification allowed outage time was not exceeded.

Inspection Report# : [2002002\(pdf\)](#)

Last modified : March 25, 2003