Waterford 3 – Quarterly Plant Inspection Findings

4Q/2017 – Plant Inspection Findings

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Initiating Events

Significance: G May 01, 2017
Identified By: Self-Revealing
Item Type: NCV Non-Cited Violation
Failure to Perform Field Changes in Accordance with Design Control Measures
The inspectors reviewed a self-revealed, non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," because the licensee failed to perform field changes in accordance with design control measures. Specifically, following maintenance on reactor coolant pump 1B, the licensee performed unauthorized field changes by not reinstalling two design supports for the differential pressure instrument line. As a result, the instrument line developed a vibration-induced flaw, which caused an increase in reactor coolant system unidentified leakage, and consequently, an unplanned reactor shutdown. The licensee entered this condition into their corrective action program as Condition Report CR-WF3-2016-06698. The licensee's corrective actions included replacing the damaged instrument line and installing the missing supports.

The performance deficiency was more than minor, and therefore a finding, because it affected the equipment performance attribute of the Initiating Events Cornerstone and its objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, the licensee's failure to reinstall the required supports on the reactor coolant pump 1B instrumentation line resulted in plant operation with increased reactor coolant system unidentified leakage, requiring an unplanned reactor shutdown to perform repairs. The inspectors screened the finding in accordance with NRC Inspection Manual Chapter 0609, "Significance Determination Process." Using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," the inspectors determined that the finding was of very low safety significance (Green) because the instrument line flaw, after a reasonable assessment of degradation, could not result in exceeding the reactor coolant system leak rate for a small loss-of-coolant accident, and could not likely affect other systems used to mitigate a loss-of-coolant accident, resulting in a total loss of their function. Because the licensee's review indicated that no work had been performed in this instrument line within the last three years, and a specific date

for the performance deficiency was not identified, the inspectors concluded that the finding does not reflect current licensee performance, and therefore, did not assign a cross-cutting aspect.
Inspection Report# : 2017001 *(pdf)*

Mitigating Systems

Significance: G Aug 08, 2017
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Ensure Appropriate Testing of TSP Baskets Inside Containment

The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," for the licensee's failure to assure that testing required to demonstrate that structures, systems, and components will perform satisfactorily while in service was identified and performed in accordance with written test procedures incorporating the requirements and acceptance limits contained in the applicable design documents. Specifically, prior to performing Licensee Procedure OP-903-027, "Inspection of Containment," Attachment 10.3, "Trisodium Phosphate Storage Basket Inspection," the licensee routinely performed a preliminary check to fill the trisodium phosphate storage baskets, thereby ensuring the successful completion of the technical specification-required surveillance. As a result, following unsatisfactory preliminary checks, the trisodium phosphate storage baskets were not evaluated for past operability. The licensee entered this condition into their corrective action program as Condition Report CR-WF3-2017-05108. The licensee's corrective actions will include performing the surveillance procedure as an as-found check and evaluating failed surveillances for past operability.

The performance deficiency was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affected its objective to ensure availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, conducting preliminary checks of the trisodium phosphate storage baskets and refilling them prior to performing the technical specification surveillance can mask the as-found condition of the test and preclude an evaluation of past operability if the levels are below the technical specification-required values. The inspectors screened the finding in accordance with NRC Inspection Manual Chapter 0609, "Significance Determination Process." Inspection Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," instructed the inspectors to use Appendix G, "Shutdown Operations Significance Determination Process." Using Appendix G, Attachment 1, Exhibit 3, "Mitigating Systems Screening Questions," the inspectors determined that the finding was of very low safety significance (Green) because the finding: (1) was not a deficiency affecting the design or qualification of a mitigating structure, system, or component; (2) did not represent a loss of system safety function; (3) did not represent an actual loss of safety function of at least a single train for greater than its technical specification allowed outage time or two separate safety systems out-of-service for greater than its technical specification allowed outage time; (4) with the cavity flooded, it did not represent an actual loss of safety function of one or more nontechnical specification trains of equipment during shutdown designated as risk-significant, for greater than 24 hours; (5) did not degrade the reactor coolant system level indication and/or core exit thermal couples when the cavity was not flooded; (6) did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event; (7) did not involve fire brigade training and qualification requirements, or brigade staffing; (8) did not involve the response time of the fire brigade to a fire, and; (9) did not involve fire extinguishers, fire hoses, or fire hose stations.

The finding had a change management cross-cutting aspect in the area of human performance because leaders did not use a systematic process for evaluating and implementing change so that nuclear safety remains the overriding priority.

Specifically, when the licensee implemented the preliminary check practice in 2012, they did not evaluate the unintended consequences of how that practice would impact the results of the technical specification surveillance. Additionally, the licensee performed the preliminary check during each successive refueling outage between 2012 and 2017 giving the licensee an opportunity to identify the improper practice. As a result, the inspectors concluded this performance deficiency was indicative of current performance.

Inspection Report# : 2017002 *(pdf)*

Significance: G Aug 08, 2017
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Perform a Post Maintenance Test on a Main Steam Isolation Valve Solenoid Valve

The inspectors identified a non-cited violation of Technical Specification 6.8, "Procedures and Programs," and Regulatory Guide 1.33, "Quality Assurance Program Requirements," for the licensee's failure to perform operability testing on a safety-related component. Specifically, following the coil replacement of main steam isolation valve 2 solenoid valve, a safety-related component, the licensee did not perform a retest of the solenoid valve. As a result, main steam isolation valve 2 was returned to service without the assurance that no new deficiencies had been introduced, calling into question its operability. The licensee entered this condition into their corrective action program as Condition Report CR-WF3-2017-05507. The licensee's corrective action was to perform a voltage check of the solenoid valve to ensure it would energize in the event that a main steam isolation valve 2 closure was needed.

The performance deficiency was more than minor because it was associated with the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affected its objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee restored main steam isolation valve 2 to an operable status without ensuring that its solenoid valve, which is a main steam isolation valve support system, was properly retested following maintenance. The inspectors screened the finding in accordance with NRC Inspection Manual Chapter 0609, "Significance Determination Process." Inspection Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," instructed the inspectors to use Appendix A, "Significance Determination Process for Findings At-Power." Using Appendix A, Exhibit 2, "Mitigating Systems Screening Questions," the inspectors determined the finding to be of very low safety significance (Green) because it: (1) was not a deficiency affecting the design or qualification of a mitigating structure, system, or component; (2) did not represent a loss of system and/or function; (3) did not represent an actual loss of function of at least a single train for greater than its technical specification allowed outage time or two separate safety systems out-of-service for greater than its technical specification allowed outage time; and (4) did not represent an actual loss of function of one or more nontechnical specification trains of equipment designated as high safety-significant in accordance with licensee's maintenance rule program for greater than 24 hours.

The finding had a conservative bias cross-cutting aspect in the area of human performance because individuals did not use decision making-practices that emphasized prudent choices over those that were simply allowable. Specifically, the licensee did not make a conservative decision when determining whether the main steam isolation valve or its solenoid valve should be tested prior to proceeding with plant startup.

Inspection Report# : 2017002 *(pdf)*

Significance: G Aug 08, 2017
Identified By: Self-Revealing
Item Type: NCV Non-Cited Violation
Failure to Perform Maintenance on the Correct Safety-Related Component

The inspectors reviewed a self-revealed, non-cited violation of Technical Specification 6.8, "Procedures and Programs," and Regulatory Guide 1.33, "Quality Assurance Program Requirements," which occurred due to the licensee's failure to perform field work on reactor coolant loop 2 shutdown cooling warm-up valve, SI-135A. Specifically, mechanical maintenance technicians, who were assigned work on safety injection train A, erroneously performed work on safety injection train B on reactor coolant loop 1 shutdown cooling warm-up valve, SI-135B. As a result, both trains of emergency core cooling systems were simultaneously inoperable, which placed the plant in a 1-hour technical specification shutdown action statement. The licensee entered this condition into their corrective action program as Condition Report CR-WF3-2017-01433. The licensee's corrective actions included a revision of the model work order to require concurrent verification for component identification, and adding the valves to the protected equipment list for when the opposite train is inoperable.

The performance deficiency was more than minor because it was associated with the configuration control attribute of the Mitigating Systems Cornerstone and adversely affected its objective to ensure availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, when the mechanics worked on valve SI-135B instead of valve SI-135A, they simultaneously made both trains of emergency core cooling systems inoperable. The inspectors screened the finding in accordance with NRC Inspection Manual Chapter 0609, "Significance Determination Process." Inspection Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," instructed the inspectors to use Appendix A, "Significance Determination Process for Findings At-Power." Using Appendix A, Exhibit 2, "Mitigating Systems Screening Questions," the inspectors determined the finding to be of very low safety significance (Green) because it: (1) was not a deficiency affecting the design or qualification of a mitigating structure, system, and component; (2) did not represent a loss of system and/or function; (3) did not represent an actual loss of function of at least a single train for greater than its technical specification allowed outage time or two separate safety systems out-of-service for greater than its technical specification allowed outage time; and (4) did not represent an actual loss of function of one or more nontechnical specification trains of equipment designated as high safety-significant in accordance with licensee's maintenance rule program for greater than 24 hours.

The finding had an avoid complacency cross-cutting aspect in the area of human performance because individuals did not recognize and plan for the possibility of mistakes, latent issues, and inherent risk, even while expecting successful outcomes, and did not implement appropriate error reduction tools. Specifically, maintenance technicians repeatedly visited the incorrect work location and didn't properly verify the valve number to ensure they would work on the correct component.

Inspection Report# : 2017002 *(pdf)*

Barrier Integrity

Significance: G Aug 08, 2017
Identified By: NRC

Item Type: NCV Non-Cited Violation
Failure to Prepare the Site for Impending Adverse Weather

The inspectors identified multiple examples of a non-cited violation of Technical Specification 6.8, "Procedures and Programs," and Regulatory Guide 1.33, "Quality Assurance Program Requirements," for the licensee's failure to follow Licensee Procedure OP-901-521, "Severe Weather and Flooding," Revision 323. Specifically, on three occasions, the licensee did not close exterior doors when required by the procedure due to potential severe weather conditions. As a result, plant equipment was at an increased failure risk due to severe weather at the site. The licensee entered this condition into their corrective action program as Condition Reports CR-WF3-2017-03961 and CR-WF3-2017-04944. The licensee is planning corrective actions to ensure doors do not remain blocked open during conditions that require their closure.

The performance deficiency was more than minor because it was associated with the design control attribute of the Barrier Integrity Cornerstone and adversely affected its objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, the failure to maintain all of the doors required by Licensee Procedure OP-901-521 with all fuel offloaded to the spent fuel pool threatened the licensee's ability to maintain the functionality of the spent fuel pool cooling system. The inspectors screened the finding in accordance with NRC Inspection Manual Chapter 0609, "Significance Determination Process," and determined that a qualitative analysis by a senior reactor analyst was required. The senior reactor analyst determined that the finding was of very low safety significance (Green). Using Inspection Manual Chapter 0609, Appendix M, "Signifiance Determination Process Using Qualitative Criteria," the senior reactor analyst performed a bounding analysis indicated that the total increase in core damage frequency from the failure to close the doors during severe weather was less than 1E-6.

The finding had a work management cross-cutting aspect in the area of human performance because the organization did not implement a process of planning, controlling, and executing work activities such that nuclear safety was the overriding priority and the work process did not include the identification and management of risk commensurate to the work and the need for coordination with different groups of job activities. Specifically, during the planning and executing of work activities associated with Refueling Outage 21, the licensee did not consider the nuclear safety implications of blocking open exterior watertight and tornado doors and the work process did not include the identification and management of the risk associated with the blocked-open doors.

Inspection Report# : 2017002 *(pdf)*

Significance:  Aug 08, 2017
Identified By: Self-Revealing
Item Type: NCV Non-Cited Violation
Failure to Ensure Containment Equipment Hatch Closure Prior to RCS Time to Boil

The inspectors reviewed a self-revealed, non-cited violation of Technical Specification 6.8, "Procedures and Programs," and Regulatory Guide 1.33, "Quality Assurance Program Requirements," which occurred because the licensee did not implement instructions for maintaining containment integrity. Specifically, on April 18, 2017, the licensee did not ensure that the containment equipment hatch could be closed within the calculated reactor coolant system time to boil as required by Licensee Procedure OP-010-006, "Outage Operations," Revision 330. The licensee entered this condition into their corrective action program as Condition Report CR-WF3-2017-02541. The licensee's

corrective actions included exiting the applicable condition, re-performing the equipment hatch closure drill to show the equipment hatch could be closed prior to the reactor coolant system time to boil, and performing repairs to the containment equipment hatch.

The performance deficiency was more than minor because it was associated with the human performance attribute of the Barrier Integrity Cornerstone and adversely affected its objective to provide reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. Specifically, the licensee must close containment penetrations prior to the reactor coolant system time to boil in order to minimize radionuclide releases under accident conditions. The inspectors screened the finding in accordance with NRC Inspection Manual Chapter 0609, "Significance Determination Process." Inspection Manual Chapter 0609, instructed the inspectors to use Appendix H, "Containment Integrity Significance Determination Process," the inspectors determined the finding to be of very low safety significance (Green) because licensee maintained in-depth shutdown capability and because the duration of the performance deficiency was less than 8 hours.

The inspectors concluded that the finding had a teamwork cross-cutting aspect in the area of human performance because individuals and work groups did not communicate and coordinate their activities within and across organizational boundaries to ensure nuclear safety was maintained. Specifically, personnel performed work resulting in a short calculated reactor coolant system time to boil without first communicating their actions to operations or the outage control center, resulting in an unexpected plant condition.

Inspection Report# : 2017002 *(pdf)*

Emergency Preparedness
Occupational Radiation Safety
Public Radiation Safety
Security

The security cornerstone is an important component of the ROP, which includes various security inspection activities the NRC uses to verify licensee compliance with Commission regulations and thus ensure public health and safety. The Commission determined in the staff requirements memorandum (SRM) for SECY-04-0191, "Withholding Sensitive Unclassified Information Concerning Nuclear Power Reactors from Public Disclosure," dated November 9, 2004, that specific information related to findings and performance indicators associated with the security cornerstone will not be publicly available to ensure that security-related information is not provided to a possible adversary. Security inspection report cover letters will be available on the NRC Web site; however, security-related information on the details of inspection finding(s) will not be displayed.

Miscellaneous

Significance: N/A Aug 07, 2017
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Evaluate Departures from Approved Methodologies for Reactor Vessel Fluence

The inspectors identified a Severity Level IV, non-cited violation of 10 CFR 50.59, ?Changes, Tests, and Experiments,? Section (c)(1), which states, in part, that a licensee may make changes in the facility as described in the

updated safety analysis report without obtaining a license amendment pursuant to 10 CFR 50.90 only if: (i) a change to the technical specifications incorporated in the license is not required, and (ii) the change, test, or experiment does not meet any of the criteria in paragraph (c)(2). Title 10 CFR 50.59, Section (c)(2)(viii), states, in part, that a licensee shall obtain a license amendment pursuant to Section 50.90 prior to implementing a proposed change, test, or experiment if the change, test, or experiment would result in a departure from a method of evaluation described in the updated safety analysis report used in establishing the design bases or in the safety analyses. Specifically, since January 2017, the licensee revised updated final safety analysis report Section 4.3.3.3 to reflect RAPTOR-M3G as the current licensing basis fluence method without first obtaining a license amendment. This finding was entered into the licensee?s corrective action program as Condition Report CR-WF3-2017-04748.

The inspectors determined that the failure to evaluate proposed changes to determine if prior NRC review was required in accordance with 10 CFR 50.59 was a performance deficiency. Using NRC Inspection Manual Chapter 0612, Appendix B, ?Issue Screening,? the inspectors determined that this performance deficiency had minor safety significance. In accordance with the NRC Enforcement Manual, violations of 10 CFR 50.59 are not processed through the Reactor Oversight Process significance determination process because this violation potentially impacted the ability of the NRC to perform its regulatory oversight function. Therefore, this violation was processed through traditional enforcement examples of Section 6.1 of the NRC Enforcement Policy. This violation was more than minor because there was a reasonable likelihood that the change would require NRC review and approval prior to implementation, similar to the more than minor example of a change in requirements in the NRC Enforcement Manual, Appendix E, ? Minor Violations ? Examples,? dated September 9, 2013. Since the violation was associated with a performance deficiency of minor significance, the traditional enforcement violation was determined to be a Severity Level IV violation, consistent with the example in paragraph 6.1.d(2) of the NRC Enforcement Policy.

Inspection Report# : 2017010 *(pdf)*

Current data as of : February 01, 2018

Page Last Reviewed/Updated Monday, November 06, 2017