

## Millstone 3

# 2Q/2015 Plant Inspection Findings

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### Initiating Events

**Significance:**  Dec 31, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

#### **Failure to Manage Risk of RSST Testing**

The inspectors identified a Green NCV of 10 CFR 50.65 (a)(4) for the failure to properly assess and manage the risk of work in the switchyard during the Unit 3 refueling outage. The inspectors determined that Dominion incorrectly assumed the risk mitigation plans were sufficient to allow them to not have to take a penalty factor for off-site grid risk. Because Dominion did not consider the potential for the 15T breaker to open during the RSST leakage reactance testing or determine any mitigating actions to take in case of this possibility, they incorrectly classified the evolution as Yellow risk instead of Orange.

The inspectors determined that the failure to properly assess and manage risk is a performance deficiency which is more than minor because it would affect the Protection Against External Factors attribute of the Initiating Events cornerstone. The underlying issue that Dominion did not take adequate mitigating actions to reduce risk for has to do with the reliability of offsite power to the station. In addition, it is similar to Example 7.e from IMC 0612, Appendix E, "Examples of Minor Issues", which states that the failure to perform an adequate risk assessment when required to do so is more than minor if the overall elevated plant risk would put the plant into a higher licensee-established risk category. An adequate risk assessment would have assessed the plant risk as Orange, not Yellow. The inspectors evaluated the significance of the finding using IMC 0609 Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process." There is a note in this appendix which directs review of the issue if the licensee only uses qualitative analyses of plant configuration risk due to maintenance activities. The inspectors followed the guidance of this note and determined the issue was of very low safety significance in consultation with NRC management. The duration of the unplanned south bus outage was short (13 hours), and the station took additional risk mitigation actions after the event, including suspending all work in the switchyard and transformers and the control room briefed EOP 3501, Loss of All AC Power. The inspectors determined this issue had a cross cutting aspect in the area of Human Performance, Change Management, where managers maintain a clear focus on nuclear safety when implementing the change management process to ensure that significant unintended consequences are avoided. Specifically, the RSST testing performed during the outage was the initial performance of this specific test and all failure modes were not fully assessed prior to the test date. (H.3)

Inspection Report# : [2014005](#) (*pdf*)

**Significance:**  Aug 01, 2014

Identified By: NRC

Item Type: FIN Finding

#### **Inadequate Implementation of Dominion's Design Change Process**

The NRC identified a finding of very low safety significance (Green), in that Dominion did not ensure correct implementation of their design change process procedure when establishing licensing basis requirements for removal of the SPS. Specifically, Dominion did not correctly evaluate the impact of removing the system on the requirements of General Design Criterion (GDC) 17 and did not address the failure mechanism of this new design in the design change documents, as required by their design change procedure. Dominion entered this issue into the corrective action program for resolution (CR 553967 and CR 551068).

The team determined that Dominion's failure to implement their design change process procedure was a performance deficiency. This performance deficiency was more than minor because it was associated with the design control attribute of the Initiating Events Cornerstone and affected the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions during shutdown and power operations. The team performed a risk screening in accordance with IMC 0609, Appendix A, "Significance Determination Process for Findings At-Power," using Exhibit 1, "Initiating Events Screening Questions," Section C, "Support System Initiators." The answer to the question in Section C would be NO, because the finding did not increase the likelihood of a loss of two transmission lines with one line out of service (OOS), and affect mitigation equipment. The team determined that this finding had a cross-cutting aspect in the area of Human Performance, Procedure Adherence, because the design change process procedure was not adequately followed, in that the impact of the change on the current design basis and licensing bases was not evaluated correctly [H.8]

Inspection Report# : [2014011](#) (*pdf*)

## Mitigating Systems

**Significance:**  Mar 31, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Failure to Identify Charging and Primary Closed Cooling Water Area Heater Transformers Equipment Environmental Qualification Non-Conformance**

The inspectors identified a Green, Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI associated with Dominion's failure to promptly identify conditions adverse to quality associated with the Millstone Power Station Unit 3 CHS (Charging System) & CCP (Component Cooling Primary) area heaters which are required to support operability of the charging system when outside temperature is less than 17F, from September 17, 2014 to February 11, 2015. Dominion completed restoration of the 'B' train CHS & CCP area heaters on February 14, 2015 and has scheduled completion of the 'A' train heater restoration for April 16, 2015

This finding was determined to be more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 7, 2012, as it represented a challenge to the equipment performance attribute of the Reactor Safety – Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. This finding screened to be of very low safety significance as safety function of the charging system was not lost based upon the capability of the nonconforming heaters to maintain charging area temperatures greater than 65F. Inspectors identified a cross-cutting aspect in the Human Performance cross-cutting area associated with Procedure Adherence associated with Dominion's failure to adequately screen the condition adverse to quality upon discovery of heater failure and failure to evaluate heater maintenance history when making changes to heater preventive maintenance frequency. (H.8)

Inspection Report# : [2015001](#) (*pdf*)

**Significance:**  Dec 31, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Failure to Correct Multiple 'A' HVK Start and Runtime Failures**

Green: The inspectors identified a Green, NCV of 10 CFR 50, Appendix B, Criterion XVI associated with Dominion's failure to promptly identify or correct conditions adverse to quality associated with the equipment

reliability of the Millstone Power Station Unit 3 'A' Control Building Chilled Water System (HVK) Chiller from September 26, 2014 to December 13, 2014. Specifically, the component was placed into service without establishing adequate corrective actions resulting in failures to start on 17 of 20 demands. Further, the component experienced run time failures due to a series of no less than six identified and corrected failure modes within the exposure window. Dominion has entered these concerns into their corrective action program CR560039 and CR566762.

This finding was determined to be more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 7, 2012, as it represented a challenge to the equipment performance attribute of the Reactor Safety – Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. This finding screened to be of very low safety significance as there was no loss of system or function due to the functionality of the 'B' HVK Chiller train. Inspectors identified a cross-cutting aspect in the Human Performance cross-cutting area associated with Conservative Bias associated with Dominion's acceptance of multiple repetitive failures to start and failures to run. (H.14)

Inspection Report# : [2014005](#) (*pdf*)

**Significance:**  Dec 31, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

**Failure to Implement Standing Order Restrictions into the EOPs and AOPs for the Unit 3 TDAFW Pump Flow Control Valves**

The inspectors identified a Green NCV of Technical Specification (TS) 6.8.1, "Procedures," for the failure to accurately maintain the EOPs and Abnormal Operating Procedures (AOPs) by not including operating restrictions that had been promulgated as a temporary order (Standing Order (SO) 14-04) regarding the limitation of the closure sequence and rate for the Turbine-Driven Auxiliary Feedwater (TDAFW) pump flow control valves (3FWA\*HCV36A, B, C and D). Dominion's immediate corrective actions included approving a revision to the appropriate AOPs and EOPs to incorporate the throttling restrictions.

This finding is more than minor because it is associated with the procedure quality attribute of the Mitigating Systems cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, Dominion did not incorporate operating restrictions on the throttling rate of the TDAFW pump flow control valves into the post-event procedures (AOPs and EOPs). In accordance with IMC 0609.04, "Initial Characterization of Findings," and Appendix A, Exhibit 2, "The Significance Determination Process for Findings at Power," the inspectors determined the finding is of very low safety significance (Green) because the performance deficiency involved a procedural deficiency but did not involve an actual loss of safety function, represent an actual loss of safety function of a single train for greater than TS allowed outage time, did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event, and did not represent an actual loss of function of a non-TS train of equipment designated as high safety significant. This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Resolution, in that Dominion did not take effective corrective actions to address issues in a timely manner commensurate with their safety significance. Dominion determined that it was not necessary to incorporate the AFW throttling restrictions into the EOPs or AOPs. [P.3]

Inspection Report# : [2014005](#) (*pdf*)

**Significance:**  Dec 09, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

**Failure to Resolve Anomalous Data During Complex Troubleshooting of the Turbine Driven Auxiliary**

**Feedwater Pump Controls**

The Team identified a Green NCV of Title 10 of the Code of Federal Regulations (10 CFR), Part 50, Appendix B, Criterion V, “Instructions, Procedures and Drawings,” for the failure to follow procedure MA-AA-103, Conduct of Troubleshooting, Revision 11 following the failure of the TDAFW pump to properly start on September 10, 2014, during quarterly surveillance testing. Specifically, between September 10 and September 13, 2014, Dominion failed to identify, review and address conflicting troubleshooting results for the governor shutdown relay (3CR) and the electrical overspeed relay (1CON) in the TDAFW control circuit by failing to compare troubleshooting result with the expected results. Dominion entered this issue into their corrective action program as condition report 567073. This finding was more than minor because if left uncorrected, the failure to address anomalous conditions or inconsistent data in accordance with procedural requirements could result in degraded or deficient conditions. This issue was of very low safety significance because there was no loss of TDAFW operability or functionality. These troubleshooting issues, given the actions taken by Dominion to replace electrical components and the governor and subsequent satisfactory surveillance testing and electrical circuit checks, had no impact on TDAFW pump functionality. The Team concluded that this finding had a cross-cutting aspect in the Human Performance, Teamwork area because individuals and work groups failed to communicate and coordinate their activities within and across organizational boundaries to ensure nuclear safety is maintained. (H.4)

Inspection Report# : [2014013](#) (*pdf*)

**Significance:**  Dec 09, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

**Failure to Promptly Identify and Correct Adverse Conditions related to the Turbine Driven Auxiliary Feedwater Pump Governor to Control Valve Linkage**

The Team identified a Green NCV of 10 CFR Part 50, Appendix B, Criterion XVI, “Corrective Actions” associated with the failure to identify and correct adverse conditions related to the TDAFW pump governor to control valve linkage which potentially could have affected the reliability of the pump. Specifically, previously unidentified cam-plate pivot bushing wear and non-optimal linkage setup allowed degradation of the cam-follower spherical bearing and potential linkage sluggishness and binding from February 4 to October 29, 2014, when the unit entered a refueling outage. Dominion addressed these linkage issues during the refueling outage and entered this issue into their corrective action program as condition report 563885.

This finding was more than minor because it represented a challenge to the equipment performance attribute of the Reactor Safety – Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Leaving the control linkage misalignment issues uncorrected could have reduced the reliability of the TDAFW pump. This issue was of very low safety significance because there was no loss of TDAFW operability or functionality. The linkage issues had no impact on TDAFW pump functionality based on satisfactory surveillance test results. The Team determined that this issue had a cross-cutting aspect in the Human Performance cross-cutting area associated with Conservative Bias, in that Dominion failed to identify the potential importance of deficiencies in the control linkage configuration. (H.14)

Inspection Report# : [2014013](#) (*pdf*)

**Significance:**  Aug 01, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

**Failure to Correctly Implement Emergency Operating Procedures**

The NRC identified a Green non-cited violation (NCV) of Technical Specification (TS) 6.8.1 “Procedures,” because the Millstone Unit 3 control room personnel did not implement Emergency Operating Procedures (EOP) in a timely manner and in accordance with EOP usage guidelines. Specifically, from approximately 0845 to 1438 on May 25, 2014, the licensed control room operators were effectively stopped on a transition step in ES-0.1, “Reactor Trip Response,” Step 14, which is a decision step requesting the verification of offsite power availability. However, EOP

rules of usage would have required a transition into ES-0.2, “Natural Circulation Cooldown.” Dominion entered this issue into the corrective action program under CR 551059 and CR 553970, and initiated an apparent cause evaluation. The team determined there was a performance deficiency, in that Millstone Unit 3 control room personnel did not properly implement and execute procedurally-required actions of the EOPs in a timely manner and in accordance with the EOP usage rules, during a loss of offsite power and plant trip event. The performance deficiency was determined to be more than minor because it is associated with the Human Performance attribute of the Mitigating Systems cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage).

Additionally, the performance deficiency, if left uncorrected, would have the potential to lead to a more significant safety concern. The inspectors evaluated the finding using the Phase 1, “Initial Screening and Characterization of Findings,” worksheet in Attachment 4 to IMC 0609, “Significance Determination Process” and determined the finding to be of very low safety significance (Green). The finding was of very low safety significance (Green) because it did not result in an actual loss of function, only delayed additional cooldown and boration activities that would have assisted in event mitigation given the plant conditions at the time. The team determined that this finding had a cross-cutting aspect in the Human Performance cross-cutting area, Procedure Adherence component, because Millstone Unit 3 licensed personnel did not implement EOPs in a timely manner and in accordance with the EOPUG [H.8] Inspection Report# : [2014011](#) (*pdf*)

**Significance:**  Jul 21, 2014

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

**Failure to Provide Adequate Maintenance Instructions for the Turbine Driven Auxiliary Feedwater Pump Governor Control Valve Linkage**

The inspectors identified a self-revealing Green NCV of TS 6.8.1, “Procedures and Programs,” when Dominion did not maintain an adequate maintenance procedure to ensure reliable performance of the TDAFW system. Specifically, TDAFW properly started following the August 9, 2013, reactor trip, but was subsequently shut down after observed flow and pressure oscillations. Dominion staff discovered the control valve linkage misaligned due to a loose cam follower bearing retaining nut. As part of the repair, Dominion implemented a revision to the C MP 711 procedure to require application of thread-locker to the cam follower bearing retaining nut during reassembly. Additionally, Dominion entered this issue in their CAP as CR 522896.

The finding was more than minor because it is associated with the procedure quality 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 maintenance procedure did not provide sufficient written instructions to ensure adequate torque of the retaining nut and thereby reliable performance of the TDAFW system three months after reassembly. The finding was evaluated using IMC 0609, Attachment 4 and Appendix A, Exhibit 2.A, and determined to be of very low safety significance (Green) since it was not associated with a design or qualification deficiency, not a loss of system/function, and not an actual loss of its TS function. This finding had a cross-cutting aspect in the area of Human Performance, Documentation, in that licensee organizations are expected to create and maintain complete, accurate, and up-to-date documentation. Specifically, Dominion did not maintain a comprehensive, high-quality maintenance procedure that was thorough to assure assembly of critical TDAFW components. [H.7]

Inspection Report# : [2014008](#) (*pdf*)

**Significance:** **W** Jul 21, 2014

Identified By: NRC

Item Type: VIO Violation

#### **Failure to Identify and Promptly Correct a Condition Adverse to Quality**

The inspection team identified a self-revealing apparent violation of Title 10 of the Code of Federal Regulations (10 CFR) 50, Appendix B, Criterion XVI, "Corrective Action," involving Dominion's failure to promptly identify and correct a condition adverse to quality. Specifically, the Unit 3 turbine-driven auxiliary feedwater (TDAFW) pump was operated from May 2013 through February 2014 in an adverse configuration due to the installation of an incorrect cam follower bearing. As a result of this adverse configuration, the pump experienced three overspeed trips during the subject timeframe. As a consequence, Dominion violated Technical Specification (TS) 3.7.1.2, since TDAFW was determined to be either failed or unreliable for greater than the TS allowed outage time. Dominion installed the correct cam follower, entered this issue in their corrective action program (CAP) as condition report (CR) 538743 and CR 531536, and completed a root cause evaluation (RCE) (RCE 001111).

The issue was determined to be more than minor since 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, operation of the TDAFW pump with the incorrect spherical bearing reduced the reliability of a risksignificant, safety-related mitigating system. The issue was evaluated in accordance with IMC 0609, Appendix A, Exhibit 2, and was determined to require a detailed risk evaluation based on the finding representing an actual loss of function of a single train for greater than its TS allowed outage time. The detailed risk evaluation concluded that the increase in core damage frequency of this issue is in the mid to high E-6 range, or White (low to moderate safety significance). The dominant core damage sequences involved fire scenarios resulting in control room abandonment that rely upon the TDAFW pump as the primary source of make-up to the steam generators and decay heat removal. This finding had a cross-cutting aspect in Human Performance, Consistent Process, where individuals use a consistent, systematic approach to make decisions and risk insights are incorporated as appropriate. Specifically, Dominion did not implement consistent, systematic approaches to resolve the condition as evidenced by their inadequate and inconsistent use of CAP and troubleshooting. [H.13]

Inspection Report# : [2014008](#) (pdf)

## **Barrier Integrity**

**Significance:** **G** Dec 31, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

#### **Failure to Review Additional Failures Against the SLCRS (a)(1) Monitoring Plan**

The inspectors identified a Green NCV of 10 CFR 50.65 (a)(1) for the failure to determine if the goals or corrective actions for the (a)(1) monitoring plan for the SLCRS system should be adjusted following an additional failure of the auxiliary building ventilation system in July 2014. ER-AA-MRL-100, Implementing Maintenance Rule, states that when a goal is not met the system engineer shall obtain expert panel review and approval of the goal not met and appropriateness of the new goal. This had not happened at the conclusion of the inspection period. Dominion entered the issue into the corrective action program as CR 528856 and 554215.

The inspectors determined that not evaluating the SLCRS (a)(1) monitoring plan after the July 2014 failure as required by 10 CFR 50.65 was a performance deficiency which is more than minor because it would affect the Barrier Integrity cornerstone SSC and barrier performance attribute due to the damper failures. Maintenance rule failures of a system in (a)(1) monitoring status need to be evaluated for additional failure mechanisms not covered by the existing monitoring plan. The inspectors evaluated the significance of the finding using IMC 0609 Appendix A, SDP for

Findings at Power and screened it to Green using Exhibit 3, section B because the finding only represented a potential degradation of the radiological barrier function provided for the auxiliary building.

The inspectors determined this issue had a cross cutting aspect in the area of Problem Identification and Resolution, Resolution, where the organization takes effective corrective actions to address issues in a timely manner commensurate with their safety significance. As stated in NUREG 2165 PI.3 Example 2, “Deferrals of corrective actions are minimized; when required, due dates are extended using an established process that appropriately considers safety significance.” PI-AA-200, Corrective Action, requires an assessment of risk and vulnerabilities associated with extending corrective actions. Dominion did not assess the risk of extending the MRE as it related to the implementation of the maintenance rule and improperly allowed 6 extensions of the assignment. (P.3)

Inspection Report# : [2014005](#) (*pdf*)

**Significance:** G Oct 04, 2013

Identified By: NRC

Item Type: VIO Violation

**(VIO 05000423/2013004-01, Inadequate Corrective Actions to Restore Degraded Unit 3 Main Feedwater Isolation Valves**

Green. The inspectors identified a cited violation of 10 CFR 50, Appendix B, Criterion XVI, “Corrective Action,” for Dominion’s continued failure to take timely and effective corrective actions for conditions adverse to quality involving the degradation of the closing capability of four Unit 3 main feedwater isolation valves. Dominion had deferred correcting this condition over a period of six years (three refueling outages) which the inspectors noted in NCV 05000423/2012010-01, a Green NCV of 10 CFR 50, Appendix B, Criterion XVI, “Corrective Action.” Dominion has since deferred repairs from the April 2013 refueling outage until the October 2014 outage. The violation is cited because Dominion has failed to restore compliance or demonstrate objective evidence of plans to restore compliance at the first opportunity in a reasonable period of time following initial identification in 2007 and documentation in 2012 NRC inspection reports. Dominion entered the issue into their CAP as CR507299 and plans to modify the valves in the 2014 refueling outage.

The inspectors determined this issue was more than minor because it is similar to the more than minor examples, 4.f and 4.g of IMC 0612, Appendix E, “Examples of Minor Issues.” Specifically, Dominion did not correct a condition adverse to quality in a timely manner and resulted in a situation that impacted the operability of the feedwater isolation valves. Additionally, the finding is more than minor because it is associated with the design control attribute of the Barrier Integrity cornerstone, and adversely affected the cornerstone’s 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. The inspectors determined that the finding was of very low safety significance (Green) because the issue did not represent an actual open pathway in the physical integrity of the reactor containment. In the event of a ruptured feedwater line, the train ‘A’ main feedwater regulating valves and bypass valves would remain capable of closing to isolate feedwater flow.

This finding had a cross-cutting aspect in the Human Performance area, Resources component, because Dominion did not maintain long term plant safety by minimizing long-standing equipment issues and ensuring maintenance and engineering backlogs which are low enough to support safety. Specifically, Dominion deferred the feedwater isolation valve replacement project from 3RFO15 to 3RFO16 because the design change could not be issued to support online work on the project required prior to the outage. Additionally, there were a number of outstanding technical issues for the design change that were not resolved in time despite the condition existing since 2007 (H.2(a)). (Section 1R15)

Inspection Report# : [2013004](#) (*pdf*)

## Emergency Preparedness

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## Occupational Radiation Safety

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## Public Radiation Safety

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## Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

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## Miscellaneous

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