

Millstone 3

3Q/2016 Plant Inspection Findings

Initiating Events

Significance:  Sep 30, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Scope Safety Related Acoustic Valve Monitoring System into the Maintenance Rule

The inspectors identified a Green NCV of Title 10 of the Code of Federal Regulations (10 CFR) 50.65(b)(1), for Dominion's failure to include the safety-related Unit 2 Pressurizer Safety Valve, Acoustic Valve Monitoring System (AVMS) SSC within the scope of the maintenance rule program. Specifically, Dominion removed the Millstone Unit 2 AVMS, which is required to remain functional during and following a design bases event to provide indication to operators in the control room of significant abnormal degradation of the reactor coolant pressure boundary and monitor for loss of coolant due to an open safety relief valve, from the scope of the maintenance rule monitoring program. Dominion has documented this condition in their CAP as CR1049493.

The inspectors determined that the finding was more than minor because it was associated with the equipment performance attribute of the Initiating Events cornerstone and adversely affected the objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, Dominion's removal of AVMS from maintenance rule performance and condition monitoring and the failures observed have resulted in the complete loss of availability and reliability of each channel of AVMS such that they cannot perform their intended function. The finding was determined to be of very low safety significance (Green) because the conditions associated with the most applicable design basis event are bound by the small break loss of coolant accident (LOCA) analysis and did not affect other systems used to mitigate a LOCA. This finding has a cross-cutting aspect in the Human Performance cross-cutting area associated with Procedure Adherence, in that Millstone Maintenance Rule Expert Panel (MREP) members did not follow the Dominion maintenance rule program implementing procedure, ER-AA-MRL-100, which provides guidance for scoping systems into the maintenance rule.

Inspection Report# : [2016003](#) (*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:  Sep 30, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Review Standing Orders

The inspectors identified a Green NCV of Technical Specification (TS) 6.8.1.a, for Dominion’s failure to implement procedures as required by Regulatory Guide 1.33, Revision 2, Appendix A.1, “Administrative Procedures”, during the performance of watch turnover. This resulted in multiple operators across multiple crews in both Unit 2 and 3 standing watch without performing a review of the applicable standing orders for up to 4 months from March to July 2016. Dominion entered the condition in their corrective action program (CAP) as condition report (CR)1042287.

The inspectors determined that the finding was more than minor because if left uncorrected the performance deficiency could lead to a more significant event. Specifically, the operators did not review TS amendments, emergency action level classifications, emergency operating procedures, and plant computer issues impacting the plant prior to taking watch. Without reviewing the standing orders to understand the information contained within, operators could potentially take improper actions to control the plant during evolutions and abnormal conditions. The finding was determined to be of very low safety significance (Green) because it did not affect design or qualification of a mitigating structure, system, and component (SSC), did not represent a loss of system function, and did not involve external event mitigation systems. The inspectors determined that the finding has a cross-cutting aspect in the Human Performance cross-cutting area associated with Field Presence, where leaders are commonly seen in the work areas of the plant observing, coaching, and reinforcing standards and expectations. Specifically, Dominion leadership observations in the control room or management review of monthly standing order audits could have discovered the deviation from standards and expectations.

Inspection Report# : [2016003](#) (*pdf*)

Significance:  Jul 22, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Implement Corrective Actions for Chronic Leakage at Residual Heat Removal Heat Exchanger Bottom Head Flanges

The inspectors identified a finding of very low safety significance involving a NCV of 10 CFR 50, Appendix B, Criterion XVI, “Corrective Action,” for Dominion’s failure to correct conditions adverse to quality. Specifically, since 1985 Dominion has not corrected persistent leakage of borated water through the bottom head flanges of the Millstone Unit 3 RHS heat exchangers that is causing accumulating deposits of boric acid including discolored brown and black crystalized and liquid boric acid wastage. Dominion has scheduled repair of the ‘A’ RHS heat exchanger for refuel

outage 3R18 in 2017 and 'B' for 3R19 in 2019. Dominion entered the issue into the corrective action program as condition report CR1041881.

This finding is more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," because if left uncorrected, this performance deficiency has the potential to lead to a more significant safety concern based upon Dominion's failure to correct persistent boric acid leakage with evidence of rust formation and failure to identify the source of the rust and/or bound total lifetime material loss and corrosion of internal components to ensure operability. Specifically, if left uncorrected the availability, reliability, and capability of both trains of RHS has potential to be adversely impacted due to the potential for failure of internal heat exchanger components causing a loss of integrity, internal blockage, or interfacing and/or external loss of coolant. In accordance with Inspection Manual Chapter 0609, "Significance Determination Process," Attachment 4, "Initial Characterization of Findings," and IMC 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions", Section A, "Mitigating Systems, Structures or Components and Functionality," the finding screened to be of very low safety significance (Green), because the finding did not represent an actual failure of a system, function, or train of equipment and did not involve equipment specifically designed to mitigate a seismic, flooding, or severe weather initiating event (e.g., seismic snubbers, flooding barriers, tornado doors). The inspectors determined that this finding has a cross-cutting aspect in the area of Human Performance, Work Management, because the organization failed to implement the process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority. Specifically, Dominion continued to defer and reschedule corrective action for repair of the flange connections.

Inspection Report# : [2016009](#) (*pdf*)

Significance:  Mar 31, 2016

Identified By: NRC

Item Type: VIO Violation

Repetitive Failures to Correct Unit 3 Turbine Driven Auxiliary Feedwater Pump Performance Issues

The inspectors identified a Green NOV of Title 10 of the Code of Federal Regulations (10 CFR) 50, Appendix B, Criterion XVI, "Corrective Action," for Dominion's repetitive failure to take effective corrective actions for significant conditions adverse to quality involving the degradation of the Unit 3 turbine driven auxiliary feedwater (TDAFW) pump turbine control valve linkage. Specifically, Dominion's corrective actions to correct the TDAFW control system have not fully considered all potential failure modes such that continued unreliable operation due to linkage and control systems problems resulted in an overspeed trip of the TDAFW system in February 2016. Inspectors have previously documented this condition under two separate violations of 10 CFR 50, Appendix B, Criterion XVI.

The performance deficiency 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. In accordance with IMC 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions," the inspectors determined this issue required a detailed risk evaluation based on the finding representing an actual loss of function of a single train for greater than its technical specification (TS) allowed outage time. A Region I Senior Reactor Analyst (SRA) completed a detailed risk evaluation and concluded the risk significance of this issue was in the high E-8 range, or very low safety significance (Green). In accordance with IMC 0310, "Aspects within the Cross-Cutting Areas," dated December 4, 2014, this finding has a cross-cutting aspect in Human Performance, Design Margins, in that the organization failed to operate and maintain equipment within design margins. The Unit 3 TDAFW has little margin to inoperability. Dominion did not pursue a thorough review of the potential interactions of different failure modes after correcting the obvious causes from past failures, which contributed to the February 22, 2016, overspeed event.

Inspection Report# : [2016001](#) (pdf)

Significance:  Mar 31, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure of Feedwater Isolation Valve to Close Due to Electrical Jumper Being Installed

The inspectors identified a self-revealing Green NCV of TS 3.3.2 for Dominion's failure to meet the operability requirements for the 'C' feedwater isolation valve (FWIV) testing and valve limit testing work associated with Design Change MP3-09-01030, an electrical jumper was left installed in the 'C' FWIV (3FWS*CTV41C) control circuit. This prevented both channels of the engineered safety features actuation system (ESFAS) signal from closing the 'C' FWIV when called upon during an actual feedwater isolation actuation associated with the reactor trip on January 25, 2016. The installed jumper rendered the 'C' FWIV inoperable for over one year. Dominion's immediate corrective actions included restoring the channels for 3FWS*CTV41C to operable status by removing the electrical jumper, inspecting the other FWIV control circuits for electrical jumpers, and retesting all of the FWIVs for proper operation.

The performance deficiency was determined to be more than minor because it adversely affected the configuration control attribute of the Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to remove an electrical jumper on the 'C' FWIV during the implementation of a design change led to the failure of the valve to perform its closure safety function when called upon. The finding was evaluated in accordance with IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," and determined to be of very low safety significance (Green) since it did not represent an actual loss of safety function of the system as there was a redundant means of feedwater isolation. The finding has a cross-cutting aspect in Human Performance, Work Management, because Dominion did not implement a process of planning, controlling, and executing work activities such that nuclear safety is the overriding priority. Specifically, maintenance and operations personnel did not follow the work management procedure for generating a new work order when the additional electrical jumper was installed. Inspection Report# : [2016001](#) (pdf)

Significance:  Nov 13, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

Change of Pump Reference Values Contrary to ASME OM

The inspectors identified a Green NCV of Millstone Unit 3 Technical Specification (TS) Surveillance Requirement 4.0.5 because Dominion did not implement the Inservice Testing (IST) Program in accordance with the American Society of Mechanical Engineers (ASME) Operation and Maintenance (OM) Code of Record, 2001 through 2003 incorporated addenda. On July 18, 2015, Dominion changed the reference values of the 'B' control building air conditioning booster pump, 3SWP*P2B, prior to determining the cause of the condition which resulted in the pump performing in the Action Range (ISTB-6200(b)) in April 2015.

This finding was 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 Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The reliability of 3SWP*P2B was challenged based upon Dominion's change in the pump's reference values contrary to the ASME OM code of record for Millstone Unit 3 which could result in the degradation of the equipment remaining undetected. The finding screened to be of very low safety significance (Green) because the safety function of 3SWP*P2B was not lost based on analysis of design basis flow requirements. The inspectors determined the finding has a cross-cutting aspect in Problem Identification and Resolution, Evaluation, in that the organization failed to evaluate the issue to ensure that resolution addressed causes and extent of conditions commensurate with their safety significance. Specifically, Dominion's analysis of the

April 2015 pump failures was not thorough enough to understand a new potential failure mode (impeller movement) and how it may impact system performance.

Inspection Report# : [2015003](#) (pdf)

Barrier Integrity

Significance:  Jul 22, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Promptly Correct Inadequate Procedural Direction for Responding to a LOCA with Failure of an RSS Heat Exchanger Tube

The inspectors identified a finding of very low safety significance involving a NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," for Dominion's failure to promptly correct a condition adverse to quality. Specifically, Dominion did not take timely action to address a previously identified issue in which Millstone Unit 3 procedures did not adequately address mitigation and classification of a loss-of-coolant accident (LOCA) with a concurrent loss of containment caused by a recirculation spray system (RSS) heat exchanger tube rupture. In response, Dominion revised a procedure to provide the steps to respond to the event as described in the final safety analysis report (FSAR) and promulgated a briefing sheet to operators to ensure awareness of the issue and new procedure steps. Dominion entered the issue into the corrective action program as condition report CR1041881.

This finding is more than minor because it represented a challenge to the procedure quality attribute of the Barrier Integrity cornerstone to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. The lack of procedural direction to mitigate an RSS heat exchanger tube rupture during a LOCA could result in challenging the integrity of the containment barrier. In accordance with IMC 0609, "Significance Determination Process," Attachment 4, "Initial Characterization of Findings," and IMC 0609, Appendix A, Exhibit 3, "Barrier integrity Screening Questions," Section B, "Reactor Containment," the finding screened to be of very low safety significance (Green), because the deficiency did not represent an actual open pathway in the physical integrity of reactor containment (valves, airlocks, etc.), containment isolation system (logic and instrumentation), and heat removal components. The inspectors determined that this finding has a cross-cutting aspect in the area of Human Performance, Conservative Bias, because Dominion staff considered a needed procedural revision to be lower priority based on confidence in the ability of operators to recognize, diagnose, and implement required actions given the event, rather than exhibiting a conservative bias to ensure the procedure provided a barrier to adverse consequences.

Inspection Report# : [2016009](#) (pdf)

Significance:  Jun 30, 2016

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

Secondary Containment Inoperability Due to Inadequate Procedures

The inspectors identified a self-revealing Green NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," because Dominion did not develop a Unit 3 Supplementary Leak Collection and Release System (SLCRS) damper preventative maintenance procedure that was adequate to prevent the inoperability of the system. Specifically, deficiencies in maintenance procedure SP 3614I.3A, "Supplementary Leak Collection and Release System Boundary Isolation Damper Test," as well as the SLCRS damper monitoring program and

preventative maintenance strategy, led to both trains of the Unit 3 SLCRS failing their respective surveillance tests resulting in the inoperability of secondary containment. After the issue was identified, Dominion entered the condition into their CAP (CR1033408), declared the secondary containment inoperable until the plant entered a mode of tech Spec non-applicability, and conducted walkdowns and repairs to the system to restore it to compliance.

This performance deficiency was considered to be more than minor because it adversely affected the SSC and barrier performance attribute of the Barrier Integrity cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, inadequate maintenance of the SLCRS system led to a system differential pressure during operation that was not adequate to meet its design basis surveillance requirement and thus rendered the system inoperable. Additionally, the performance deficiency was similar to IMC 0612, Appendix E minor example 2.a. The finding was evaluated in accordance with IMC 0609, Appendix A, “The Significance Determination Process for Findings At-Power,” and determined to be of very low safety significance (Green) since it only represented a degradation of the radiological barrier function provided for the auxiliary building. The finding is related to the cross-cutting aspect of Human Performance – Design Margins, because Dominion did not operate and maintain equipment within design margins. Specifically, Dominion did not appropriately monitor and maintain the SLCRS system in such a way that declining damper performance trends were identified and prevented prior to the inoperability of the system.

Inspection Report# : [2016002](#) (pdf)

Significance: G Nov 13, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

Inadequate Procedural Direction to Mitigate a LOCA and Failure of an RSS Heat Exchanger Tube

The inspectors identified a Green NCV of Millstone Unit 3 TS 6.8.1, as specified by Regulatory Guide (RG) 1.33, associated with Dominion’s failure to implement adequate procedures to address a hypothetical large break loss of coolant accident (LBLOCA) inside containment with a failure of a recirculation spray system (RSS) heat exchanger tube resulting in a loss of coolant accident (LOCA) that bypasses the containment barrier.

Dominion did not provide adequate procedural direction or training to the operators for the control of the emergency core cooling systems (ECCS) during this hypothetical event in June of 2015. Dominion entered the issue into their corrective action program as condition report (CR) 1008205.

The finding was 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 procedure quality attribute of the Barrier Integrity cornerstone to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. The finding was screened to be of very low safety significance (Green) as the deficiency did not represent an actual open pathway in the physical integrity of reactor containment in accordance with IMC 0609, “Significance Determination Process,” Attachment 4, “Initial Characterization of Findings,” and IMC 0609, Appendix A, Exhibit 3, “Barrier integrity Screening Questions,” Section B, “Reactor Containment.” The inspectors identified a cross-cutting aspect in Problem Identification and Resolution, Evaluation, because the organization failed to evaluate the issue to ensure that resolution addressed causes and extent of conditions commensurate with their safety significance.

Inspection Report# : [2015003](#) (pdf)

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

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.

Miscellaneous

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