

Millstone 2

3Q/2009 Plant Inspection Findings

Initiating Events

Significance:  Sep 30, 2009

Identified By: NRC

Item Type: FIN Finding

(FIN 05000336/2009004-01 Inadequate and Untimely Corrective Actions Causes Reactor Trip)

Green. A self-revealing finding of very low safety significance (Green) was identified for Dominion's failure to provide timely and effective corrective actions for known degraded conditions on the Unit 2 VR-11 and VR 21 120 volt AC non-vital instrument power supplies. Specifically, VR-11 and VR-21 were known to cycle on and off repeatedly whenever an electrical disturbance on the grid affected the input supply voltages from their respective regulating transformers. The degraded condition on the instrument buses had not been corrected despite numerous prior opportunities and ultimately led to a reactor trip on July 3, 2009. Dominion entered this issue into their corrective action program (CR340569 and CR340579). Interim corrective actions included the installation of dedicated uninterrupted power supplies (UPS) for the Electric Hydraulic Control (EHC) system and feedwater level control system loads prior to reactor startup. Final corrective actions to install a larger UPS to power the VR-11 and VR-21 DC buses are under engineering evaluation.

This finding is more than minor because it was associated with the Equipment Performance attribute of the Initiating Events cornerstone and affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. Dominion did not implement effective interim corrective actions, nor did they take timely final corrective actions to prevent recurrence of the power cycling of the VR-11 and VR 21 instrument buses in time to prevent a reactor trip on July 3, 2009. The inspectors performed a Phase 1 screening, in accordance with IMC 0609, "Significance Determination Process," and determined that the finding is of very low safety significance (Green) because it did not contribute to the likelihood that mitigation equipment or functions would not be available. The finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program because Dominion did not take appropriate corrective actions to address safety issues and adverse trends in a timely manner, commensurate with their safety significance and complexity [P.1.d].

Inspection Report# : [2009004](#) (pdf)

Mitigating Systems

Significance:  Sep 30, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

(NCV 05000336/2009004-02 Inadequate and Procedures Caused a Leak from the Charging Header into the Auxiliary Building Drain System)

Green. A violation of 10 CFR 50, Appendix B, Criteria V dispositioned as an NCV was identified for Dominion's failure to provide adequate operating procedures that were appropriate for the circumstances to operate the Unit 2 charging pumps during reactor shutdown. Specifically, on July 9, 2009, the operators were required to raise pressurizer level while drawing a bubble in the pressurizer in preparation for transitioning from mode 5 to mode 4. Dominion started the "B" positive displacement charging pump without first opening the charging header isolation valves and damaged two relief valves in the charging line. Neither of the operating procedures in use for this evolution required the charging header isolation valves to be opened.

This event was more than minor because if left uncorrected, the performance deficiency had a potential to lead to a more significant safety concern. This finding is associated with the equipment performance attribute of the mitigating systems cornerstone. The finding has a cross-cutting aspect in the area of human performance, maintaining complete accurate and up-to-date procedures, because Dominion did not provide an operating procedure that was appropriate for accomplishing the task under the circumstances [H.2.c].

Inspection Report# : [2009004](#) (pdf)

Significance:  Mar 06, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Performance Testing of Safety Related Batteries

The team identified a finding of very low safety significance involving a non-cited violation of 10 CFR 50, Appendix B, Criterion XI, "Test Control," in that, Unit 2 and Unit 3 written test procedures for battery performance testing were not adequate and did not ensure that test results were properly documented and evaluated to assure that the test requirements were satisfied. Specifically, the battery performance test procedure did not ensure that the correct discharge rate was used, that the test was terminated correctly, and that the battery capacity and subsequent decrease in capacity were correctly calculated and evaluated. In response, Dominion entered the issue into the corrective action program and determined that there was sufficient battery margin to assure operability of the station batteries.

The finding is more than minor because it is associated with the procedure quality 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. The team determined the finding was of very low safety significance (Green) because it was not a design or qualification deficiency, did not represent a loss of system safety function, did not represent an actual loss of safety function of a single train, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding has a crosscutting aspect in the area of Human Performance, Resources Component, because Dominion did not ensure that complete, accurate, and up-to-date procedures were available and adequate to assure nuclear safety. Specifically, the battery performance test procedure did not ensure that the correct discharge rate was used, that the test was terminated correctly, and that the battery capacity and subsequent decrease in capacity were correctly calculated and evaluated.

Inspection Report# : [2009006](#) (pdf)

Significance:  Mar 06, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Corrective Action for Degraded Battery Cell

The team identified a finding of very low safety significance involving a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," in that, Dominion did not take did not take corrective actions for a degraded cell in a Unit 2 safety related battery. Specifically, although testing of the 'B' battery between 1996 and 2008 indicated a degraded cell, actions were not taken to initiate a condition report or evaluate the impact of the degraded condition. In response, Dominion entered the issue into the corrective action program and determined that there was sufficient battery margin to assure operability of the battery.

The finding is more than minor because it is associated with the equipment 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. The team determined the finding was of very low safety significance (Green) because it was not a design or qualification deficiency, did not represent a loss of system safety function, did not represent an actual loss of safety function of a single train, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding has a crosscutting aspect in the area of Problem Identification and Resolution, Corrective Action Program Component, because Dominion did not thoroughly evaluate the problem such that the resolution addressed the cause. Specifically, although data indicated cell 10 was degraded, no action was taken to evaluate the reduced cell capacity on the overall battery.

Inspection Report# : [2009006](#) (pdf)

Significance:  Mar 06, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Corrective Action for Safety Related Inverter Out-of-Calibration Results

The team identified a finding of very low safety significance involving a non-cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," in that, Dominion did not take corrective actions for repeated out-of-calibration test results associated with Unit 2 safety related inverters. Specifically, although testing of the safety related inverters between 2005 and 2008 indicated that the as-found results were frequently outof-calibration, actions were not always taken to initiate a condition report; and condition reports that were generated, did not evaluate the repetitive failure to remain in calibration. In response, Dominion entered the issue into the corrective action program and determined that the out-of-calibration results did not render the safety related instrument panels inoperable.

The finding is more than minor because it is associated with the equipment 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. The team determined the finding was of very low safety significance (Green) because it was not a design or qualification deficiency, did not represent a loss of system safety function, did not represent an actual loss of safety function of a single train, and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding has a crosscutting aspect in the area of Problem Identification and Resolution, Corrective Action Program Component, because Dominion did not thoroughly evaluate the problem such that the resolution addressed the cause. Specifically, although testing of the safety related inverters between 2005 and 2008 indicated regular out-of-calibration as-found results, actions were not always taken to initiate a condition report; and condition reports that were generated, did not evaluate the repetitive failure to remain in calibration.

Inspection Report# : [2009006](#) (pdf)

Significance:  Dec 05, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

NCV 05000336/2008008-01, Failure to Ensure Equipment Necessary For Fire Safe Shutdown Available.

The team identified that Dominion failed to administratively control and ensure the availability of all necessary fire safe shutdown equipment to perform manual actions in the 4kV upper switchgear room. This finding was determined to be of very low safety significance (Green) and a NCV of the Millstone Nuclear Power Station, Unit 2 Operating License condition 2.C.(3), Fire Protection.

The team determined that this finding was more than minor because it was associated with the external factors attribute (fire) of the mitigating systems 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 ensure that an electrical flash jacket necessary to perform local breaker operations was available in the upper 4kV switchgear room. Actions to restore the A diesel generator would have been delayed for a fire in the lower 4kV switchgear room. The team assessed this finding in accordance with NRC IMC 0609, Appendix F, Fire Protection Significance Determination Process. This finding affected post-fire safe shutdown systems. This finding screened to very low safety significance (Green) in Phase 1 of the SDP because it was assigned a low degradation rating. A low degradation rating was assigned because additional electrical flash jackets were onsite and the local breaker operations would likely have been performed within 3 hours. The safe shutdown analysis most restrictive timeline for a fire in the lower switchgear room required a charging pump restored within 3 hours for reactor coolant system makeup. Local breaker operations in the upper 4kV switchgear room would be needed to support ac power to a charging pump. The team determined that this finding had a cross cutting aspect in the area of human performance because personnel did not return an electrical flash jacket to its proper storage location even though it was clearly labeled for the upper 4kV switchgear room. (H.4(b)) (Section 1R05.01)

Inspection Report# : [2008008](#) (*pdf*)

Significance:  Dec 05, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

NCV 05000336/2008008-02, Failure to Ensure Timely Manual Action Consistent with the Post-Fire Safe Shutdown Analysis.

The team identified that Dominion failed to ensure that a post-fire manual action to restore auxiliary feedwater (AFW) flow to a steam generator (SG) would be performed within 30 minutes of a plant trip consistent with the Millstone Unit 2 fire safe shutdown analysis. This finding was determined to be of very low safety significance (Green) and a NCV of the Millstone Nuclear Power Station, Unit 2 Operating License condition 2.C.(3), Fire Protection.

The team determined that this finding was more than minor because it was associated with the external factors attribute (fire) of the mitigating systems 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, a timely manual action to restore AFW to SG 1 within 30 minutes of the plant trip for a fire in Fire Area R-2 was not ensured for all circumstances and was validated by Dominion in 1999 to take at least 40 minutes. This finding was similar to more than minor example 3.i in NRC Inspection Manual Chapter (IMC) 0612, Power Reactor Inspection Reports, Appendix E, Examples of Minor Issues. The team assessed this finding in accordance with NRC IMC 0609, Appendix F, Fire Protection Significance Determination Process. This finding affected post-fire safe shutdown systems. This finding screened to very low safety significance (Green) in Phase 1 of the SDP because it was assigned a low degradation rating. A low degradation rating was assigned because Dominion performed a sensitivity analysis of S-02824-S2, Millstone Unit 2, R-2 Fire, Appendix R Analysis, Rev. 2, and determined that restoring AFW flow to steam generator 1 could be delayed for 50 minutes and result in acceptable plant performance during a safe shutdown event. (Section 1R05.01)

Inspection Report# : [2008008](#) (*pdf*)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Significance:  Apr 20, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

NCV 05000336/2009003-01, Failure to Survey a Contaminated Component

Green. An NRC-identified finding of very low safety significance (Green) was identified for Dominion's failure to effectively survey, label, and control contaminated tools and equipment. Specifically, Dominion failed to perform adequate surveys to identify a hose fitting having a contact dose rate measurement of 160 mrem per hour as required by 10 CFR 20.1501. Dominion entered this issue into their corrective action program as CR322737.

This finding was more than minor because it was associated with the program and process attribute of the radiation safety cornerstone and affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation. By not surveying and labeling the hose fitting, workers could have received unplanned exposure by not being informed of the radiological hazard present. The finding has a cross cutting aspect in the area of work practices, because the licensee did not assure that personnel follow procedures [H.4(b)]. Specifically, procedure RPM 2.4.2, "Radiological Control of Material and Vehicles," was not properly implemented to assure compliance with 10 CFR 20 requirements. (Section 2OS1).

Inspection Report# : [2009003](#) (*pdf*)

Public Radiation Safety

Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

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