Millstone 2
4Q/2009 Plant Inspection Findings

Initiating Events

Significance: G Dec 31, 2009
Identified By: NRC
Item Type: NCV NonCited Violation
NCV 05000336/2009-03 RCS Drain Down Loss of Configuration Control
Green. A self revealing NCV (Green) finding of Technical Specification 6.8.1(a) was identified for the failure to adequately implement procedures during partial draining of the reactor coolant system (RCS) in preparation for defueling the core. On October 10, 2009, Dominion did not properly align the reactor vessel vent path prior while partially draining the RCS as required by OP 2301E, "Draining the RCS (ICCE)." This resulted in a loss of positive configuration control during an infrequently conducted risk-significant evolution. A plant equipment operator did not properly lock open the vent valve during a valve lineup prior to the drain down. Dominion entered this issue into their corrective action program as CR-351853. Corrective action was taken to reinforce the standards for valve line ups and independent verification, as well as enhancing the valve line up procedure.

This issue is more than minor because it was associated with the Initiating Events cornerstone objective to limit the likelihood of those events that challenge critical safety functions during shutdown operations. Dominion did not align valve 2-RC-447 to vent the reactor vessel head during a partial RCS drain down in preparation for defueling the core. This resulted in the reactor vessel remaining full of water while the pressurizer and steam generator (SG) tubes were being drained without realizing that the RCS level indication did not accurately reflect the level in the reactor vessel. This condition constituted a loss of positive control of reactor vessel level during the RCS drain down. The finding has a cross-cutting aspect in the area of human performance, component of work practices, where the licensee defines and effectively communicates expectations regarding procedural compliance and personnel follow procedures (H.4.b) (Section 1R20).

Inspection Report# : 2009005 *(pdf)*

Significance: G Oct 06, 2009
Identified By: NRC
Item Type: FIN Finding
FIN 05000336/2009005-02 Implementation of Design Change results in Rapid Shutdown of Reactor
Green. A self-revealing (Green) finding was identified for Dominion’s failure to take adequate precautions and/or adequately schedule maintenance on Unit 2’s motor operated disconnect switch (MOD) for their main transformer. Specifically, on October 6, 2009, maintenance personnel began performing a design change to the MOD with Unit 2 on-line at 100% power. While decoupling the vertical shaft of the MOD, the switch shifted. The shift resulted in arching across the phase conductor resulting in increasing conductor temperatures. If temperatures were allowed to continue to rise, the switch would have failed resulting in a turbine trip due to a load reject which would have caused a reactor trip. Dominion recognized the situation and performed a rapid shutdown of the Unit 2 reactor. Dominion has taken corrective action to modify a number of procedures and entered this issue into their corrective action system (CR351109).

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 adequately assess and manage the risk involved in implementing design change notice (DCN) DM2-00-093-09, resulting in the need to perform a rapid shutdown of the reactor on October 6, 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 human performance, licensee plans and

coordinates work activities, consistent with nuclear safety including the inclusion of risk insights, because Dominion did not adequately implement work scheduling and include risk insights and compensatory measures (H.3.a)(Section 1R20).

Inspection Report# : 2009005 *(pdf)*

Significance: G 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: G Nov 15, 2009
Identified By: NRC
Item Type: FIN Finding
FIN 05000336/2009005-04 Inadequate and Untimely Corrective Actions Causes Loss of Annunciators and Declaration of a NOUE
Green. A self-revealing (Green) finding was identified for Dominion's failure to provide effective corrective actions for known degraded conditions on the 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 prior opportunities. This condition led to a loss of annunciators and declaration of a Notification of an Unusual Event (NOUE) on November 15, 2009. This degraded electrical system response had previously caused a Unit 2 reactor trip on May 22, 2008, and again on July 3, 2009 and as well as several other events.

This finding is more than minor because it was associated with the procedure quality attribute of the Mitigating Systems cornerstone and affected the cornerstone objective of ensuring capability of systems that respond to initiating

events to prevent undesirable consequences. The main board annunciators provide operators with critical notification and assessment capability during plant upset or transient conditions. Annunciators are used to direct operators to appropriate alarm response procedures (ARP), which further direct operators to Abnormal Operating Procedures (AOP) and direct entry conditions into Emergency Operating Procedures (EOP). Annunciators also provide early warning to operators of adverse trends in key plant parameters before the degradation becomes critical. The Emergency Action Level (EAL) basis for the loss of annunciators EU3 states in part, "This EAL [is] intended to recognize the difficulty associated with monitoring changing plant conditions with the use of a major portion of the annunciation or indication equipment." No violation of regulatory requirements occurred because the annunciator system is not safety-related. Because this finding does not involve a violation of regulatory requirements and has very low safety significance, it is identified as a Green finding. Dominion took immediate action by documenting the issue in CR-358168 and expediting the installation of the uninterruptable power supply (UPS) for VR-11 and VR-21. 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) (Section 4OA3).

Inspection Report# : 2009005 *(pdf)*

Significance: G Sep 30, 2009
Identified By: NRC
Item Type: NCV NonCited Violation
(NCV 05000336/2009004-02 Inadequate 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: G 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: G 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: G 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)*

Barrier Integrity

Significance: G Nov 15, 2009
Identified By: NRC
Item Type: NCV NonCited Violation
NCV 05000336/2009005-01, TS Surveillance Channel Calibration of ICCMS Not Performed
Green. A NRC identified NCV of very low safety significance (Green) was identified for Dominion's failure to perform a channel calibration of the Unit 2 Inadequate Core Cooling Monitoring System (ICCMS) every 18 months as required by technical specification (TS) 4.3.3.8. Dominion entered the issue into their corrective action program and concluded that the ICCMS was operable, and performed a risk assessment of the missed surveillance in accordance with TS 4.0.3 and determined that the completion of the surveillance could be delayed up to the 18 month surveillance interval without a significant increase in risk.

This finding was more than minor because it is associated with the procedure quality attribute of the Barrier Integrity cornerstone and affected the cornerstone objective of providing reasonable assurance that physical design barriers (fuel cladding) protect the public from radionuclide releases caused by accidents or events. Specifically, in 1997, Dominion incorrectly revised the surveillance procedure SP 2407A so that it no longer met the requirements of TS 4.3.3.8. The finding was determined to be of very low safety significance (Green) because it is associated with the fuel barrier. This finding does not have a cross cutting aspect because the performance deficiency is not indicative of current performance (Section 1R15).

Inspection Report# : 2009005 *(pdf)*

Emergency Preparedness

Occupational Radiation Safety

Significance: G 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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