

Millstone 2

2Q/2007 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance:  Jun 30, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Work Procedure for the Unit 2 'C' Charging Pump Results in Pump Failure

A self-revealing finding was identified when Dominion did not ensure an adequate work procedure was available for maintenance performed on the Unit 2 'C' charging pump on May 5, 2007, resulting in a failure of the pump on June 11, 2007. Specifically, the work procedure did not give specific guidance for assembly and installation of the suction poppet valve in accordance with direction provided in the vendor technical manual. On June 11, 2007, the 'C' charging pump failed and was declared inoperable due to a seized plunger shaft. This finding was determined to be an NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures and Drawings." Dominion's corrective actions for this issue included repair and retest of the 'C' charging pump, revising the work procedure to include vendor recommendations, and training for maintenance personnel on assembly and installation of charging pump poppet valves.

The finding was more than minor because it was associated with the procedural 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 inspectors conducted a Phase 1 SDP screening in accordance with IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations." The finding was determined to be of very low safety significance (Green) because the issue is not a design or qualification deficiency, does not represent the loss of a system safety function or safety function of a single train, and does not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The performance deficiency had a cross-cutting aspect in the area of human performance, resources component, because Dominion did not ensure that a complete, accurate, and adequate work procedure was available for maintenance performed on a safety-related component.

Inspection Report# : [2007003](#) (*pdf*)

Significance:  Jun 30, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Adequately Conduct Surveillance Testing and to Identify an Unsatisfactory Surveillance

The inspectors identified that Dominion personnel failed to identify a condition adverse to quality in that they failed to identify that test acceptance criteria had not been met on May 10, 2007. Specifically, the inspectors identified that the 'C' charging pump pulsation dampener post-maintenance test had cited incorrect data and had been accepted as satisfactorily complete, though the recorded test data was outside of the stated acceptance criteria. This finding was determined to be a NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action." Dominion's planned corrective actions for this issue included revising the surveillance to clarify test requirements and required reading for operations personnel on how to adequately document and review surveillance test data.

The finding was more than minor because it was associated with the human performance attribute of the Mitigating Systems cornerstone and affected the cornerstone objective of ensuring the availability of systems that respond to initiating events to prevent undesirable consequences. Additionally, the inspectors determined that this finding was similar to IMC 0612, Appendix E example 2a, and was more than minor because: (1) the licensee's process (including all levels of review and approval) did not identify the error, and (2) per the example, the maintenance history

regarding charging pumps - specifically pulsation dampeners - does not allow one to expect that testing would be successful. The inspectors conducted a Phase 1 SDP screening in accordance with IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," and determined the finding was of very low safety significance (Green). The finding was determined to be of very low safety significance (Green) because the issue is not a design or qualification deficiency, does not represent the loss of a system safety function or safety function of a single train (the equipment subsequently passed the surveillance that was performed on May 13, 2007), and does not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The performance deficiency had a cross-cutting aspect in the area of problem identification and resolution, corrective action program component, because Dominion did not promptly identify a condition adverse to quality.
Inspection Report# : [2007003](#) (*pdf*)

Significance:  Mar 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PROMPTLY CORRECT A DEGRADED CONDITION OF THE 480V MCCS PER CRITERION XVI OF APPENDIX B TO 10 CFR PART 50

A Green NRC-identified NCV of Criterion XVI of Appendix B to 10 CFR Part 50, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," was identified for failure to promptly correct a degraded condition associated with the air conditioning (A/C) for the B61 480VAC motor control center (MCCs). Corrective actions included the B51 and B61 A/C units, implementation of compensatory cooling, restoring both A/C units by adding freon, and changing the vendor technical manual and equipment drawings to reflect the proper amount of freon charge.

The finding was more than minor because the equipment performance attribute of the mitigating systems cornerstone and the objective of ensuring the availability of systems that respond to initiating events to prevent undesirable circumstances was affected. Specifically, the 480VAC MCCs provide vital power to a number of safety-related systems designed to mitigate design basis events. The inspectors determined this finding to be of very low safety significance (Green) through performance of a Phase 1 Significance Determination Process in accordance with Inspection Manual Chapter 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations." Specifically, the finding did not result in a loss of function because the 480VAC MCC would have been able to perform their function of providing electrical power to their respective 480 volt emergency loads over a probabilistic risk assessment mission time of 24 hours. This finding is related to the cross-cutting aspect of problem identification and resolution in that Dominion did not take appropriate corrective actions to address the degraded A/C units in a timely manner, commensurate with their safety significance and complexity.

Inspection Report# : [2007002](#) (*pdf*)

Significance:  Dec 31, 2006

Identified By: NRC

Item Type: FIN Finding

INADEQUATE CONTROL OF OUTSIDE MAINTENANCE ACTIVITIES THAT RESULTED IN UNEXPECTED FLOODING OF BOTH EDG ROOMS

The inspectors identified a Green finding because Dominion did not adequately control outside maintenance activities that degraded the Unit 2 storm drainage system and blocked a credited surface area runoff flow path protecting the emergency diesel generator (EDG) rooms from flooding in the event of rain. Consequently, on August 28, 2006, during a brief period of heavy rains, the Unit 2 storm drain system backed up due to the blocked rainwater runoff flow path causing flooding outside of the EDG access doors ultimately leading to one-half to two inches of standing water in both EDG rooms. Additionally, Dominion did not identify degraded and missing sealant in the EDG room removable equipment hatch following this event. This finding was entered into Dominion's corrective action program (CR-06-07890, CR-06-09352, and CR-07-00475). Corrective actions included: removing the EDG fuel oil polishing tank that diverted surface water runoff to the EDG rooms, removing the filters that degraded the Unit 2 storm drainage system, performing a visual inspection of the yard drains, evaluating a change in the EDG flood door design and other similar flood gates to allow the doors to be closed easier, and evaluating Unit 2 EDG room design for single point flooding vulnerabilities. In addition, CR-06-09352 addresses corrective actions to maintain design assumptions for alternate rainwater runoff flow paths when degrading site storm drains.

This finding is more than minor because it is associated with the Mitigating System's protection against external

factor's attribute (specifically, flood hazard) and affects the cornerstone objective of ensuring the availability, reliability and capability of system's that respond to initiating events to prevent undesirable consequences. This finding was determined to be of very low safety significance (Green) by performing a Phase 1 evaluation in accordance with NRC Inspection Manual Chapter (IMC) 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations." Specifically, the water level in both EDG rooms did not reach an elevation that would result in a confirmed loss of EDG operability. This finding is related to the cross-cutting area of Human Performance, work control component, in that Dominion did not effectively coordinate outside maintenance activities and predetermined job site assumptions that resulted in unexpected flooding in both EDG rooms.

Inspection Report# : [2006005](#) (*pdf*)

Significance:  Dec 31, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO IMPLEMENT SURVEILLANCE PROCEDURES RESULTED IN A TEMPORARY LOSS OF SPENT FUEL POOL COOLING

A Green self-revealing non-cited violation (NCV) of Technical Specification (TS) 6.8.1, "Procedures", was identified because Operations did not adequately implement procedures while performing a surveillance to manually cycle the "C" reactor building component cooling (RBCCW) outlet valve. This resulted in a temporary loss of RBCCW flow to the shutdown cooling heat exchanger which was aligned for cooling the spent fuel pool (SFP). This issue has been entered into Dominion's corrective action program (CR-06-10565). Corrective actions for this issue included temporarily removing individuals from shift until interviewed by the Supervisor of Nuclear Shift Operations, and an action to create and implement required reading for all operators identifying this event with emphasis on diligence, not rushing, and following proper place keeping and peer-checking during performance of any procedural guidance.

This finding is more than minor because it is associated with the Human Performance attribute of the Spent Fuel Pool Cooling system function under the Barrier Integrity cornerstone and affected the cornerstone's objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents and events. The inspectors determined the NCV to be of very low safety significance based on NRC management review. Specifically, the finding only represented a degradation to the spent fuel pool in that spent fuel pool cooling was lost for four minutes and spent fuel pool temperature did not significantly increase, and SFP cooling was promptly restored. This finding is related to the cross-cutting area of Human Performance, Work Practice component, in that Dominion's work practice techniques (placekeeping) were not effective in assuring procedural steps were implemented which resulted in a temporary loss of SFP cooling with the core off-loaded.

Inspection Report# : [2006005](#) (*pdf*)

Significance:  Dec 31, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO IDENTIFY SCAFFOLDING RENDERED THE #1 STEAM GENERATOR MAIN STEAM ISOLATION VALVE COULD RENDER THE MAIN STEAM ISOLATION VALVLE INOPERABLE

A Green self-revealing NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," was identified because Dominion did not identify that scaffolding had been constructed in a manner that would interfere with the Unit 2 #1 steam generator (SG) main steam isolation valve's (MSIV) ability to perform the intended safety function.

Specifically, on August 29, 2006, Dominion constructed scaffolding adjacent to the MSIV to support replacing the operating cylinder. On October 7, 2006, the MSIV was declared inoperable after it failed to shut during the performance of MSIV stroke time testing. Dominion had multiple opportunities to identify the adverse consequences the scaffolding could have on the MSIV during scaffolding installation, engineering reviews prior to and following scaffolding installation, operations walkdowns of the area, and from site and industry operating experience available prior to the refueling outage. Corrective actions included removing a portion of the scaffolding to restore operability, reinforcing current scaffolding control process requirements, and modifying the scaffold evaluation process to ensure operability of safety-related structures, systems, and components (SSCs) potentially impacted by scaffolding installation. The finding was more than minor because it was associated with the equipment performance attribute for the Mitigating System cornerstone and affected the cornerstone objective of ensuring the availability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the scaffolding affected the MSIV steam generator isolation function. In addition, the finding was associated with the SSC and Barrier Performance

attribute of the containment isolation function under the Barrier Integrity cornerstone and affected the cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. A phase 2 and 3 SDP was performed by an NRC regional senior reactor analysis (SRA) based on the finding affecting multiple cornerstones and the large early release frequency (LERF) contributor. The SRA determined that this finding represented a change in core damage frequency of approximately 6.0E-8, for the 40-day exposure period. The dominant sequences for this conditional risk assessment involved main steam line break initiating events, coincident with the failure of the operator to isolate the steam line break and failure of the high pressure recirculation system. Based upon the dominant sequences involving main steam line breaks and a delta core damage frequency of less than E-7, LERF was determined not to be a risk consideration. Accordingly, this finding is of very low risk significance (Green). This finding has a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action Program Component, because Dominion did not identify this condition although multiple identification opportunities existed.

Inspection Report# : [2006005](#) (*pdf*)

Significance:  Sep 30, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO IMPLEMENT CORRECTIVE ACTIONS TO PREVENT REPEAT VITAL AC 480V SWITCHGEAR COOLING DAMPER FAILURES

A Green self-revealing non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," was identified because Dominion did not take effective corrective action to prevent the east 480 volt vital AC switchgear cooling damper (2-HV-274) from failing on July 2, 2006. This damper had previously failed on August 26, 2003, following which Dominion specified corrective actions to replace the damper and revise the damper preventive maintenance (PM) schedule and activities. The damper was not replaced and the PM activities were not conducted as planned. As a result, on July 2, 2006, 2-HV-274 failed again. This finding was entered into Dominion's corrective action program (CR-06-06396). Corrective actions for the 2006 failure were similar to those in 2003.

The finding is more than minor because it is associated with the equipment performance attributes under the Initiating Events, Mitigating Systems, and Barrier Integrity Cornerstone objectives. Inspection Manual Chapter 0609, Appendix A, was used to determine the risk associated with this finding. Phase 1 of Appendix A requires that a Phase 2 analysis be performed when multiple cornerstones are affected. The Phase 2 analysis assumes that the 480 volt system is inoperable. Since Dominion implemented compensatory cooling measures prior to actual room temperatures exceeding design limits and the equipment remained operable, there was no entry condition for evaluating this finding in the Phase 2 tables. Therefore, the safety significance of this issue is very low (Green). This finding is related to the cross-cutting aspect of Problem Identification and Resolution in that Dominion did not take effective corrective action after damper 2-HV-274 failed on August 28, 2003, in order to prevent the repeat failure of 2-HV-274 on July 2, 2006. Inspection Report# : [2006004](#) (*pdf*)

Barrier Integrity

Significance:  Sep 30, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO IDENTIFY AN ADVERSE CONDITION AFFECTING CONTROL ROOM EMERGENCY VENTILATION PERFORMANCE

The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," for failure to promptly identify and correct a condition adverse to quality affecting the "B" control room emergency ventilation (CREV) train's ability to operate as designed. On August 1, 2006, the "B" CREV train was declared inoperable after Operations detected an improper system flow balance. On August 3, 2006, the system was restored to service after troubleshooting activities were complete. However, the condition which resulted in the flow imbalance had not been identified or corrected. On August 6, 2006, the system was declared inoperable a second time after Operations detected a similar system flow imbalance. A second troubleshooting plan was developed which directed an inspection of the "B" exhaust fan belts. During the inspection, two "B" CREV exhaust fan belts were found stretched and scored.

On August 10, 2006, the belts were replaced and operability was restored. This finding was entered into Dominion's corrective action program (CR-06-07115). Corrective actions for this issue included replacing the associated belts, an extent of condition review, the creation of a specific PM to periodically inspect the associated belts, and an evaluation to modify the operating procedure to extend the fan belt life.

This finding is more than minor because it is associated with the control room's radiological barrier functionality performance attribute and affected the cornerstone's objective. This issue is of very low safety significance (Green) since this finding only represented a degradation of the control room's radiological barrier function. This finding is related to the cross-cutting aspect of problem identification and resolution because Dominion did not promptly identify and evaluate a condition adverse to quality prior to restoring the "B" control room emergency ventilation train system back to service.

Inspection Report# : [2006004](#) (*pdf*)

Emergency Preparedness

Occupational Radiation Safety

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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