Millstone 2
4Q/2006 Plant Inspection Findings

Initiating Events

Significance: G Mar 03, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
FAILURE TO PERFORM EVALUATIONS ON BORIC ACID LEAKS
The inspectors identified a Green non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings" for Dominion's failure to follow Boric Acid Corrosion Control Program (BACCP) procedures. Specifically, plant personal routinely failed to perform boric acid leak evaluations as required per Dominion procedure DNAP-1004, "Boric Acid Corrosion Control Program," despite the specified threshold having been met. This finding is more than minor because it is associated with the Initiating Events Cornerstone attribute of human performance and it affects the cornerstone's objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. The licensee entered this condition into the corrective action program as CR-06-02088. This finding was characterized as a loss-of-coolant-accident (LOCA) initiator and was determined to be of very low safety significance (Green) because it did not result in exceeding the Technical Specification limit for identified reactor coolant system (RCS) leakage or affect other mitigation systems resulting in a total loss of their safety function. Corrective actions included a planned revision to the Boric Acid Corrosion Control program to ensure evaluations are performed and documented. In addition, the licensee conducted a Boric Acid Corrosion Control program peer review using another nuclear power station boric acid program owner. This finding is related to the cross-cutting area of human performance in that on at least 22 occasions, station personnel did not follow established station procedures requiring boric acid evaluation.
Inspection Report# : 2006006 *(pdf)*

Mitigating Systems

Significance: G 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 maintenance activities that degraded the Unit 2 storm drainage system, which blocked a credited surface area runoff flow path protecting the Unit 2 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 became overwhelmed 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 associated with 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 more easily closed, and evaluating the 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 external factors 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 has a cross-cutting aspect in the area of Human Performance, work control component, because Dominion did not effectively coordinate outside maintenance activities and predetermined job site assumptions which resulted in unexpected flooding of both Unit 2 EDG rooms.
Inspection Report# : 2006005 *(pdf)*

Significance: G 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 water (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) while the reactor core was fully off-loaded. 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 emphasizing diligence, controlled and deliberate actions, and 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 represented a degradation in that spent fuel pool cooling was lost for four minutes, pool temperature did not significantly increase, and SFP cooling was promptly restored. This finding has a cross-cutting aspect in the area of Human Performance, Work Practice component, because 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: G 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: G 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 alternating current (AC) switchgear cooling damper (2-HV-274D) from failing on July 2, 2006. This damper had previously failed on August 26, 2003, after 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-274D 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, this issue is considered to be of very low safety significance (Green). This finding is related to the cross-cutting aspect of Problem Identification and Resolution in that Dominion did not take effective actions to correct a condition adverse to quality after damper 2-HV-274D failed on August 28, 2003. As a result of the ineffective corrective actions, damper 2-HV-274D failed again on July 2, 2006.
Inspection Report# : 2006004 *(pdf)*

Significance: G Jun 30, 2006
Identified By: NRC
Item Type: FIN Finding
DID NOT IDENTIFY OR EVALUATE AIR VOIDS LOCATED IN AUXILIARY FEEDWATER SYSTEM
The inspectors identified a finding when Dominion did not recognize that a portion of the auxiliary feedwater (AFW) discharge header contained air voids after they determined that AFW flow instrumentation was behaving erratically as a result of air in the instrument line. Specifically, Dominion initiated a condition report after identifying that AFW flow instrumentation was air bound but closed out operability concerns based on air only affecting instrumentation and not the potential that air could exist in the discharge portion of the system. As a result, Dominion did not identify existing voids in AFW discharge piping or assess these air voids for impact on AFW operability. Dominion entered this condition into their corrective action program as CR-06-04677. Corrective actions for this issue included conducting ultrasonic testing of the discharge piping, quantifying the air voids in the system, and evaluating operability of the system with these air voids left in place. This finding is more than minor because it is associated with the Mitigating Systems Cornerstone and affects the cornerstone objective of ensuring the reliability of systems that respond to initiating events to prevent undesirable consequences. Specifically, Dominion did not investigate or evaluate the existence of air voids in the AFW system discharge piping when air was identified in the system. This finding was determined to be of very low safety significance (Green) because it did not result in a loss of function once the existing air voids were identified and evaluated. This finding is related to the cross-cutting aspect of problem identification and resolution in that Dominion did not fully investigate the existence of air voids in other parts of the AFW system and as a result did not fully evaluate the impact of existing air voids in the AFW system discharge piping.
Inspection Report# : 2006003 *(pdf)*

Significance: G Mar 31, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
FAILURE TO COMPLY WITH TS DURING WRNI SURVEILLANCES
The inspectors identified a Green NCV for the failure to comply with TS 3.3.1.1, “Reactor Protection Instrumentation,” during routine monthly surveillance testing of the Wide Range Nuclear Instrument (WRNIs). During a review of control room logs from January 1, 2006 through March 31, 2006, the inspectors identified that Operations did not enter TS 3.3.1.1 on two occasions during WRNIs testing and take action per Table 3.3-1 to place the Reactor Coolant Flow-Low and Thermal Margin/Low Pressure protective channels in either the bypassed or tripped condition within 1 hour. Dominion took immediate action to inform the operators of this deficiency and entered this issue into their corrective action program under CR-06-02295 and CR-06-03586 for resolution. The failure by the operators to comply with TS was more than minor because it affected the configuration control attribute of the Mitigating Systems Cornerstone. Specifically, deliberate operator action was required to ensure that proper reactor protection system coincidence was maintained. Because there was no loss of safety function and the zero power mode switch was later verified to be in the “OFF” position, the failure to meet the TS action statement was considered to be of very low safety significance (Green). This finding is related to the cross-cutting aspects of problem identification and resolution in that Dominion did not identify the requirement to enter TS 3.3.1.1 for WRNIs during testing and failures and take action to place the Reactor Coolant Flow-Low and Thermal Margin/Low Pressure protective channel in either the bypassed or tripped condition within 1 hour.
Inspection Report# : 2006002 *(pdf)*

Significance: G Mar 03, 2006
Identified By: NRC
Item Type: NCV NonCited Violation
INADEQUATE SUITABILITY OF APPLICATIONS EVALUATION FOR DAMPENER MODIFICATION
The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion III, "Design Control" associated with the Unit 2 charging system pump discharge dampener modification. Specifically, the licensee's review of the design modification failed to adequately consider the suitability of the dampener in that a potential common mode failure mechanism associated with gas binding of the charging pump suction was not considered nor evaluated. This condition was entered into the licensee's corrective action program as CR-06-02382. Corrective actions include performing a root cause to, in part, determine why the design process and other organizational factors that installed the bladders did not identifiy the potential common mode failure. The finding was more than minor because it affected the availability, reliability, and capability objective of the Mitigating System Cornerstone and its associated design control attribute. Specifically, inadequate design control caused Dominion to not fully consider the affects of a discharge dampener bladder failure on the common suction of the Unit 2 charging pumps, a condition which, on January 9, 2006, led to the momentary loss of the charging system. Based upon the IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," Phase 1 screening worksheets, this finding required a Phase 2 evaluation since the finding represented a loss of system safety function. Based upon the Phase 2 results, the Region 1 Senior Reactor Analyst (SRA) conducted a Phase 3 evaluation. The cumulative increase in core damage probability for this condition was determined to be in the low E-8 range and of very low safety significance (Green). This finding has a problem identification and resolution cross-cutting aspect in that evaluations and corrective actions performed by the licensee were inadequate to prevent charging system anomalies despite the identification of a small boric acid leak from the cap of the "B" charging pump discharge pulsation dampener, an indication of a failed pulsation dampener for which no corrective maintenance was performed.
Inspection Report# : 2006006 *(pdf)*

Barrier Integrity

Significance: G 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 Barrier Integrity Cornerstone attribute of maintaining the radiological barrier functionality of the control room. 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 or completely evaluate a condition adverse to quality prior to restoring the “B” control room emergency ventilation train system back to service on August 3, 2006, despite indications of 1) burning rubber smells when placing the “B” train in service (July 27, 2006 and August 2, 2006); and 2) system flow imbalances that only occurred with the “B” train in service (August 1, 2006, two occasions).
Inspection Report# : 2006004 *(pdf)*

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

Physical Protection information not publicly available.

Miscellaneous

Significance: N/A Mar 03, 2006
Identified By: NRC
Item Type: FIN Finding
PROBLEM IDENTIFICATION AND RESOLUTION TEAM INSPECTION RESULTS
The inspectors identified that the licensee was effective at identifying problems and entering them into the corrective action program (CAP). The licensee's effectiveness at problem identification was evidenced by the relatively few deficiencies were identified by external organizations (including the NRC) that had not been previously identified by the licensee, during the review period. The licensee effectively used risk in prioritizing the extent to which individual problems would be evaluated and in establishing schedules for implementing corrective actions. Corrective actions, when specified, were generally implemented in a timely manner. Licensee audits and self-assessments were found to be generally effective. On the basis of interviews conducted during this inspection, workers at the site felt free to input safety concerns and issues into

the CAP program. However, the inspectors did identify some missed opportunities to identify issues and enter them into their corrective action program. In addition, there were some instances where issue evaluations and corrective actions were not effective in resolving problems.
Inspection Report# : 2006006 *(pdf)*

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