Millstone 2
3Q/2011 Plant Inspection Findings

Initiating Events

Significance: G Jun 30, 2011
Identified By: Self-Revealing
Item Type: FIN Finding
(FIN 05000336/2011003-04 Failure to Follow Procedure for Starting a Second SGFP Results in Reactor Trip)
•Green. A self-revealing Green finding (FIN) was identified for Dominion's failure to follow procedure OP 2204, "Load Changes" when starting the second steam generator feedwater pump (SGFP). Specifically, the operating crew did not maintain SGFP suction pressure greater than 325 psig which led to a feed pump trip and subsequent reactor trip on low steam generator level. Dominion entered the issue into their corrective action program (CAP), revised procedure OP 2204, and conducted training exercises emphasizing safe operating envelopes, critical parameters to monitor, and actions to take to restore margin if plant conditions degrade.

The finding is more than minor because it is similar to NRC Inspection Manual Chapter 0612, Appendix E, "Examples of Minor Issues, Example 4b" in that a failure to follow procedures, led to a reactor trip. It is associated with the Human Performance attribute of the Initiating Events cornerstone and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. The finding was of very low safety significance (Green) because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. The inspectors determined that this finding had a cross-cutting aspect in Human Performance, Work Practices component, because Dominion personnel did not follow the load changes procedure. [H.4(b)] (Section 4OA3)

Inspection Report# : 2011003 *(pdf)*

Significance: W Apr 29, 2011
Identified By: Self-Revealing
Item Type: VIO Violation
VIO 05000336/2011008-01, Multiple Examples of Procedural Violations and Inadequate Procedures Relating to Control Room Crew Performance During a Plant Transient.
White: A self-revealing violation (VIO) of low to moderate safety significance (White) was identified involving the failure of Millstone personnel to carry out their assigned roles and responsibilities and inadequate reactivity management during main turbine control valve testing on February 12, 2011, which contributed to the unanticipated reactor power increase. Specifically, the Millstone Unit 2 operations crew failed to implement written procedures that delineated appropriate authorities and responsibilities for safe operation and shutdown and a procedure for controlling reactor reactivity. In addition, the licensee failed to establish written procedures for the Reactor Protection System (RPS) Variable High-Power Trip (VHT), and for power operation and transients involving multiple reactivity additions.

The finding is associated with two violations of NRC requirements specified by Technical Specifications. There were no immediate safety concerns following the transient because the event itself did not result in power exceeding license limits or fuel damage. Additionally, interim corrective actions were taken, which included removing the Millstone Unit 2 control room crew involved in the transient from operational duties pending remediation, and establishment of continuous management presence in the Millstone Unit 2 control room while long term corrective actions were developed. Dominion entered this issue, including the evaluation of extent-of-condition, into the corrective action program (CR413602) and performed a root cause evaluation (RCE).

The finding is more than minor because the performance deficiency (PD) was associated with the Human 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.

Additionally, the PD could be viewed as a precursor to a significant event. Because the finding primarily involved human performance errors, probabilistic risk assessment tools were not well suited for evaluating its significance. The team determined that the criteria for using IMC 0609, Appendix M, “Significance Determination Process Using Qualitative Criteria,” were met, and the finding was evaluated using this guidance, as described in Attachment 4 to this report. Based on the qualitative review of this finding, regional management concluded the finding was of low to moderate safety significance (White).

The team concluded that this finding had a cross-cutting aspect in the Human Performance area, Decision Making component, because Dominion licensed personnel did not make the appropriate safety-significant decisions, especially when faced with uncertain or unexpected plant conditions to ensure safety was maintained. This includes formally defining the authority and roles for decisions affecting nuclear safety, communicating these roles to applicable personnel, and implementing these roles and authorities as designed [H.1(a)]. (Section 2.1)

Inspection Report# : 2011008 *(pdf)*

Significance: G Apr 29, 2011
Identified By: Self-Revealing
Item Type: FIN Finding
FIN 05000336/2011008-02, Improper Operation of Turbine Control Valves During Testing.
Green: The team identified a self-revealing finding of very low safety significance (Green) for improper operation of the turbine controls during turbine control valve testing. Specifically, the inspectors identified that control room operators failed to correctly implement surveillance procedure SP-2651N, “Main Control Valve Testing.” Incorrect operation of the turbine controls caused an unplanned power increase from 88 percent to 96 percent. Dominion entered this issue into the corrective action program (CR415094).

The team determined that this finding was more than minor because it was similar to NRC Inspection Manual Chapter 0612, Appendix E, “Examples of Minor Issues,” Example 4b, in that the incorrect operation of the turbine load selector pushbutton caused a plant transient. The finding was associated with the human 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. The team concluded that the finding was of very low safety significance (Green) because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. Enforcement action does not apply because the performance deficiency did not involve a violation of a regulatory requirement. The team also determined that the finding had a cross-cutting aspect in the Human Performance area, Resources component, because Dominion did not provide adequate training of personnel and sufficient qualified personnel [H.2(b)]. (Section 2.2)
Inspection Report# : 2011008 *(pdf)*

Significance: G Dec 31, 2010
Identified By: Self-Revealing
Item Type: FIN Finding
(FIN 05000336/2010005-01, Failure to Provide an Adequate Procedure for Backwashing Condenser Water Boxes Results in Reactor Trip).
Green. A self-revealing finding of very low significance was identified for Dominion’s failure to provide an adequate procedure for backwashing the Unit 2 condenser water boxes in accordance with procedure MP-05-MMM, “Manuals, Procedures, Guidelines, Handbooks and Forms”. Specifically, in implementing the procedure, the ‘A’ circulating water (CW) pump automatically ramped down to zero speed shortly after securing the ‘B’ CW pump. This resulted in a loss of condenser vacuum, which caused an automatic turbine trip. The turbine trip caused an automatic reactor trip. Dominion entered the issue into their corrective action program and revised the backwashing procedure, OP 2325D.

The inspectors determined that Dominion’s failure to provide an adequate procedure for backwashing the Unit 2 water boxes in accordance with procedure MP-05-MMM, “Manuals, Procedures, Guidelines, Handbooks, and Forms” was a performance deficiency. The finding is more than minor because it was similar to NRC Inspection Manual Chapter 0612, Appendix E, “Examples of Minor Issues,” Example 4b, in that an inadequate procedure led to a reactor trip. The finding was associated with the procedure quality 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. Specifically, Dominion's failure to provide an adequate procedure for backwashing Unit 2 condenser water boxes resulted in the variable frequency drive (VFD) logic securing only the CW pump running in that condenser and subsequently caused a reactor trip. The finding was of very low safety significance (Green) because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. The inspectors determined that this finding had a cross-cutting aspect in the Human Performance area, Resources component, and because Dominion did not provide an accurate and up-to-date procedure for the backwashing of the Unit 2 water boxes. [H.2(c)] (Section 4OA3)

Inspection Report# : 2010005 *(pdf)*

Mitigating Systems

Significance: G Sep 30, 2011
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
NCV 05000336/2011004-01, Failure to Electrically Isolate a Dissimilar Metal Flanged Joint Leads to Forced Shutdown Due to Service Water Leak
Green. A self-revealing NCV of 10 CFR 50, Appendix B Criterion V, "Instructions, Procedures, and Drawings," was identified for Dominion's failure to properly electrically isolate service water (SW) flanged joints of dissimilar metals. This caused a more rapid corrosion rate when a defect occurred in the lining of the carbon steel pipe and eventually led to a SW leak. On September 3, 2011, Dominion was forced to shut down Unit 2 when the spool leaked in excess of the limit allowed in the authorized relief. Dominion repaired the spool and electrically isolated the flanged joint. Dominion entered this issue into their corrective action program (CAP) CR441302.

The finding is more than minor because it is associated with the Human Performance attribute of the Mitigating Systems cornerstone and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding was of very low safety significance (Green) because the finding was not a design or qualification deficiency that did not result in loss of operability, did not represent an actual loss of system safety function, did not represent an actual loss of safety function of a single train for greater than its technical specification (TS) allowed outage time, did not represent an actual loss of safety function of one or more non-technical specification trains of equipment designated as risk significant per 10 CFR 50.65, and did not screen as risk significant due to a seismic, flooding, or severe weather initiating event. The inspectors determined that this finding had a cross-cutting aspect in Human Performance, Work Practices component, because Dominion personnel proceeded in the face of uncertainty and/or unexpected circumstances when they had difficulty installing the isolating sleeves in the flanged joint. [H.4(a)] (Section 71111.20)

Inspection Report# : 2011004 *(pdf)*

Significance: G Jun 30, 2011
Identified By: NRC
Item Type: NCV NonCited Violation
(NCV 0500336/2011003-02 Untimely Corrective Action for Safety Related Inverters Leads to Repetitive Out of Calibration Results)
Green. The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion XVI, Corrective Action in that Dominion did not take timely corrective action to address repetitive out of calibration conditions associated with safety related inverters. Specifically, Dominion continued to have out of calibrations conditions associated with the four safety-related inverters for the 120VAC vital instrument panels in April 2011, and had not taken corrective actions since March 2009, when Dominion received a NCV for the same issue. Dominion entered the issue into their CAP and adjusted the out of calibration parameters. The finding is similar to example 4.f in NRC Inspection Manual Chapter 0612, Appendix E, "Examples of Minor Issues," in that the failure to correct the out of calibration conditions affected operability of the inverters. 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 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, did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The inspectors determined that this finding had a cross-cutting aspect in Problem Identification and Resolution, CAP component, because Dominion did not take appropriate corrective action in a timely manner to address the repetitive out of calibration conditions with the safety related inverters.[P.1(d)](Section 71111.22)
Inspection Report# : 2011003 *(pdf)*

Barrier Integrity

Significance: G Jun 30, 2011
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
(NCV 0500336/2011003-03 Inadequate Corrective Action Results in Loss of Enclosure Building's Safety Function.)
Green. A self-revealing NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action" was identified in that Dominion did not take adequate corrective action to address the cause of main steam safety valve (MSSV) exhaust pipe bushings not seating which resulted in a loss of the Enclosure Building's safety function to control the release of radioactive material. Dominion entered the issue into their CAP, cleaned and lubricated the MSSV exhaust pipes, implemented a modification to upgrade the MSSV outlet boots and qualify them as part of the Enclosure Building filtration boundary, and successfully performed the Enclosure Building Filtration System (EBFS) negative pressure test.

The finding is more than minor because it is associated with the Procedure Quality attribute of the Barrier Integrity cornerstone and affected the cornerstone objective to provide reasonable assurance that physical design barriers (containment) protect the public from radionuclide releases caused by accidents or events. The finding was of very low safety significance (Green) because it only represents a degradation of the radiological barrier function provided for the auxiliary building. The inspectors determined that this finding had a cross-cutting aspect in Problem Identification and Resolution, CAP component, because Dominion did not take appropriate corrective action to address the Enclosure Building surveillance test failure in 2009.[P.1(d)](Section 4OA3)

Inspection Report# : 2011003 *(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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