

Millstone 3

2Q/2008 Plant Inspection Findings

Initiating Events

Significance:  Oct 05, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Auxiliary Building Fire Safe Shutdown Procedure Lacked RCP Seal Thermal Shock Precautions

The team identified a Green NCV of the Millstone Unit 3 Technical Specification 6.8.1.g, in that the procedure for shutting down the plant in response to an auxiliary building fire scenario did not provide precautions to operators to prevent thermal shock to two reactor coolant pump (RCP) seal packages. This procedure deficiency was contrary to Westinghouse Technical Bulletin, TB-04-22, "Reactor Coolant Pump Seal Performance - Appendix R Compliance and Loss of All Seal Cooling," Rev. 1, which specifically recommended to all applicable licensees that if any plant specific procedure or guidance was not consistent with the Westinghouse recommendations, then the licensee should modify either the procedure or guidance to be consistent, or document the technical basis for any deviation. Dominion entered this issue into the corrective action program as CR-07-09685 and initiated corrective actions to expeditiously revise the procedure.

This finding was more than minor because it affected the procedure quality attribute of the initiating events 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. Specifically, not including precautions in EOP 3509.2, "Auxiliary Building Fire," Rev. 003-01, prior to RCP seal restoration does not limit the likelihood of an RCP seal loss of a coolant accident. The team assessed this finding in accordance with NRC IMC 0609, Appendix F, "Fire Protection Significance Determination Process (SDP)." This finding affected post-fire safe shutdown procedures and systems. This finding screened to very low safety significance (Green) in phase one of the SDP because it was assigned a low degradation rating. A low degradation rating was assigned because the procedural deficiency was compensated by operator experience and familiarity. The team noted that several other operating procedures provided adequate precautions to prevent thermal shock to RCP seals. Operators were further instructed on RCP thermal shock considerations in the requalification training program. The team determined that this finding has a cross-cutting aspect in the area of human performance because Dominion did not provide procedure precautions to prevent thermal shock to RCP seals for an auxiliary building fire scenario. [H.2(c)]

Inspection Report# : [2007007 \(pdf\)](#)

Significance:  Sep 30, 2007

Identified By: Self-Revealing

Item Type: FIN Finding

Failure to Perform Fill and Vent of TPCCW Heat Exchanger Resulted in Loss of Two TPCCW Pumps

A self-revealing finding was identified for Dominion's failure to implement procedure OP 3330B, "Turbine Plant Component Cooling Water" during restoration of the "B" turbine plant component cooling water (TPCCW) heat exchanger on August 28, 2007. Specifically, following maintenance that left the heat exchanger shell in a partially drained condition, Dominion did not fill and vent the heat exchanger in accordance with OP 3330B. This resulted in two of the three TPCCW pumps receiving an automatic trip signal on low suction pressure. Loss of the remaining TPCCW pump would have required the operators to manually trip the reactor within three minutes per plant procedures. Dominion entered this issue into their corrective action program as CR-07-09057. Corrective actions included revising OP 3330B to require the fill and vent section be used following maintenance to ensure the TPCCW side of the heat exchanger is completely full of water, and revising the work planning procedure to request operations work planning provide restoration packages for all applicable work orders.

This finding is more than minor because it 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 shutdown as well as power operations. Specifically, Dominion's failure to implement the fill and vent procedure, when required by heat exchanger conditions, could potentially have led to the loss of all TPCCW pumps and required operators to manually trip the reactor. This finding was determined

to be of very low safety significance (Green) by performing a Phase 1 evaluation in accordance with NRC IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations," 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 finding has a cross-cutting aspect in the area of Human Performance, work practices component, because Dominion did not implement proper procedures for the restoration of the "B" TPCCW heat exchanger. [H.4 (b)]

Inspection Report# : [2007004](#) (pdf)

Mitigating Systems

Significance:  Jun 30, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

Fire Protection Deficiency Resulting in Potential Loss of All Charging Pumps

The inspectors identified a Green, NCV of the Millstone Unit 3 operating license condition 2.H, "Fire Protection," in that Dominion failed to correct a fire protection program deficiency and assure that one train of charging would remain free of fire damage for fire scenarios that could produce spurious closure of a Volume Control Tank (VCT) outlet or charging pump suction motor operated valve. This issue was first identified by Dominion on September 16, 2004, but corrective actions to thoroughly evaluate the issue relative to the fire protection program were extended on several occasions. For this issue Dominion initiated corrective actions to implement fire protection program compensatory measures, maximize the availability of the C charging pump, and identify and implement a long term resolution.

The inspectors 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, the availability of the charging system for nine fire scenarios was not ensured. Phase 1, and a combination of Phase 2 and 3 of the NRC's IMC 0609, Appendix F, "Fire Protection Significance Determination Process" were used to determine that this finding was of very low safety significance (Green), with an estimated total core damage frequency (CDF) of 1 in 1,400,000 years in the range of 7E-7 per reactor operating year. The inspectors determined that this finding has a cross-cutting aspect in the area of problem identification and resolution because Dominion, since September 16, 2004, did not thoroughly evaluate the issue regarding potential fire induced spurious closure of charging pumps suction valves which could cause damage to the running charging pump and potentially impact post-fire safe shutdown operation. This issue is reflective of current licensee performance because Dominion recently extended corrective action due dates to perform a thorough safe-shutdown evaluation of the issue. [P.1(c)]. (Section 1R05)

Inspection Report# : [2008003](#) (pdf)

Significance:  Nov 14, 2007

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Complete Specified Requirements (10CFR55.53(f)) Prior to Allowing the Operator to Resume Control Room Watch Standing Activities

Green. The inspectors identified a non-cited violation (NCV) of 10 CFR 55.53(e) for the licensee's failure to complete the requirements of 10 CFR 55.53(f) prior to an inactive licensed operator resuming control room watchstanding duties. Specifically, because a Reactor Operator interrupted his shift for administrative functions (for over one hour) during one of five required proficiency watches in the first quarter of 2007, he did not fulfill the requisite number of 12 hour watches, and his license became inactive at the end of that quarter. When he subsequently stood Reactor Operator watches during the second and third quarters of 2007, prior to completing the requirements of 10 CFR 55.53(f), a violation of 10 CFR 55.53(e) requirements occurred. The licensee entered this deficiency into their corrective action program as CR-07-10776. The licensee completed a 100 percent review of all staff licenses for proficiency watches between July 2006 and September 2007 and found no further violations.

This finding was more than minor because the issue was associated with the human performance attribute of the Mitigating Systems Cornerstone and affected the cornerstone's objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, licensed operators that are not current in watchstanding proficiency may commit operator errors that could cause mitigating systems to fail to respond properly. The finding is of very low safety significance because, per the SDP Appendix I flowchart, more than 20 percent of records reviewed (1 out of 2 staff licensed Reactor Operators) had deficiencies.

Inspection Report# : [2007005](#) (pdf)

Significance:  Oct 05, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Auxiliary Shutdown Panel Reactor Head Vent Valves Not Isolated from Effects of a Control Room Fire

The team identified a Green NCV of Millstone Unit 3 operating license condition 2.H, "Fire Protection," in that Dominion did not ensure for a control room fire that the control circuits for the reactor head vent valves would not be damaged by fire when control was transferred to the auxiliary shutdown panel (ASP). As a result, the valves were subject to spurious failure even after ASP control was established. Immediate corrective actions included: fire protection compensatory measures were initiated to minimize the potential for a fire in the areas of concern; an extent of condition review was performed for other potential circuit issues for credited equipment operated from the ASP; and the affected control circuit seal-in relays were relocated outside of the control room. Dominion entered this issue into the corrective action program as CR-07-09905.

This 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 letdown path necessary to achieve cold shutdown boron conditions would be subject to spurious isolation during a control room fire. 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 procedures and systems. This finding screened to very low safety significance (Green) in phase 1 of the SDP because it only affected the ability to reach and maintain cold shutdown conditions. The reactor vessel head vent valves are also credited for hot standby conditions to maintain inventory control, but uncomplicated operator actions to reduce charging flow will maintain adequate inventory control during hot standby conditions.

Inspection Report# : [2007007](#) (pdf)

Significance:  Oct 05, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Emergency Light Unit High Failure Rate

The team identified a Green NCV of the Millstone Unit 3 operating license condition 2.H, "Fire Protection," in that Dominion failed to correct an adverse trend in emergency lighting unit (ELU) performance. Dominion entered this issue into the corrective action program as CR-07-09034 and CR-07-09319 and initiated corrective actions to: revise the ELU maintenance rule action plan; reevaluate and implement an accelerated battery replacement interval; consider additional actions for ELU batteries located in high temperature areas; and benchmark ELU preventive maintenance with other utilities.

This performance deficiency is more than minor because it affected 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, the reliability and availability of the ELUs were affected. ELUs illuminate access and egress paths for safe shutdown operations as well as areas where safe shutdown manual actions are performed. 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. 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 the issue did not have a significant impact on safe shutdown operations: operators as a good operating practice carry flashlights and the ELU failures were generally random in location, i.e., no plant areas had widespread ELU outages at any one time. The team determined that this finding has a cross-cutting aspect in the area of problem identification and resolution because

Barrier Integrity

Significance: G Nov 14, 2007

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Failure to Maintain Core Thermal Power at or below 3411 MWTH

Green. A Green self-revealing non-cited violation (NCV) of Dominion Nuclear Connecticut (DNC), Inc.'s Unit 3 License, Number NPF-49, Section 2.C.(1) was identified for Dominion's failure to maintain reactor core thermal power less than or equal to 3411 megawatts thermal (MWTH). Specifically, during performance of turbine overspeed protection system testing, the Unit 3 reactor's four minute power average exceeded 3479 MWTH. The power transient was due, in part, to Dominion's continuance of the surveillance following an unexpected plant response after turbine control was transferred to "load set." Corrective actions for this issue include performing the surveillance at a lower power and providing just-in-time training to operating crews prior to performing the surveillance.

The finding was more than minor because it was associated with the human performance attribute of the Barrier Integrity Cornerstone and affected the cornerstone objective of providing reasonable assurance that physical design barriers (i.e., fuel cladding) protect the public from radionuclide releases caused by accidents or events. The finding was determined to be of very low safety significance (Green) because it only involved the potential to affect the fuel cladding barrier. This finding has a cross-cutting aspect in the area of Human Performance, Decision-making, because Dominion did not use conservative assumptions in decision making in proceeding with turbine control valve testing after an unexpected plant response had a significant effect on reactivity [H.1(b)].

Inspection Report# : [2007005](#) (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