

Byron 2

3Q/2015 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance: G Sep 18, 2015

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

Failure to Evaluate the Impact of a FLEX-Related Configuration Change on Available DG Fuel Oil Margin.

A finding of very low safety significance and an associated NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was self-revealed when the licensee failed to adequately consider the potential impact that a modification would have on the safety-related emergency diesel generator (DG) fuel oil supply credited for design basis events. Specifically, the DG fuel oil system was modified in a manner that reduced the DG fuel oil system train separation from two isolation valves to one isolation valve. The adverse impact of a leaking single isolation valve following the implementation of a diverse and flexible coping capability (FLEX) modification resulted in the IB DG fuel oil transfer pump(s) pumping fuel oil not only into its associated IB DG fuel oil day tank but also into the IA DG diesel oil storage tank (DOST). The safety-related 1B DG fuel oil system was categorized as a low margin system, and the inspectors identified that the licensee did not adequately follow the considerations provided in the design change process for a low margin system. In addition to entering this issue into their CAP, immediate corrective actions included restoring the fuel oil configuration to the previous dual isolation configuration until long-term corrective actions could be developed.

The inspectors determined that the performance deficiency was more than minor because it was associated with the Mitigating Systems cornerstone attribute of Design Control and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). The finding was of very low safety significance (Green) because the issue did not prevent the 1B DG from being able to operate for its mission time. The finding had a cross-cutting aspect in the Avoid Complacency component of the Human Performance cross-cutting area because the licensee failed to recognize that the configuration change resulted in the licensee operating the DG fuel oil system in a configuration that it had not routinely operated in, exposing previously unidentified deficiencies (H.12).

Inspection Report# : [2015007](#) (*pdf*)

Significance: G Mar 31, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Provide Work Instructions that Appropriately Address Foreign Material Exclusion from Safeguards Relays

The inspectors identified a finding of very low safety significance and associated non-cited violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for failure to provide work instructions appropriate to the circumstances for a work activity affecting quality. The licensee's work instructions for modifying safety-related relays on Unit 2 failed to include guidance on foreign material exclusion issues identified

previously during the same modification on Unit 1. This resulted in foreign material preventing the Unit 2 Safeguards Actuation Relay Train A from actuating during surveillance testing. The licensee replaced the affected relay prior to declaring the system operable, performed an extent of condition on similar relays on both Units 1 and 2, and entered the issue in their Corrective Action Program in Issue Report (IR) 2388711.

The inspectors determined the finding was more than minor because it adversely affected the Mitigating Systems Cornerstone objective to ensure the reliability of systems that respond to initiating events. The Senior Reactor Analysts performed a detailed risk analysis and concluded that the finding was of very low safety significance, or Green. The finding had a cross-cutting aspect of Evaluation in the area of Problem Identification and Resolution because the licensee failed to thoroughly evaluate the foreign material identified on Unit 1 to ensure that the resolution addressed the extent of condition. (P.2) [Section 4OA2.3]

Inspection Report# : [2015001](#) (*pdf*)

Significance:  Dec 31, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Measure Interpass Temperature

The inspectors identified a finding of very low safety significance and an associated NCV of 10 CFR Part 50, Appendix B, Criterion IX, "Control of Special Processes," for a failure to measure the interpass temperature while performing welding on the on the safety injection (SI) piping system. Consequently, welding was performed without the Code and procedure required interpass temperature being monitored on a number of welds, a parameter which can affect the mechanical properties of the material being welded. After identification of the issue, the welders restored compliance by measuring the interpass temperatures on the balance of the welds and verifying that the interpass temperature did not exceed that allowed by procedure. The licensee entered this issue into its Corrective Action Program (CAP) (IR 02391545).

The inspectors determined that this issue was more than minor in accordance with IMC 0612, Appendix B, "Issue Screening," dated September 7, 2012, because the inspectors answered "Yes" to the More-than-Minor question, "If left uncorrected, would the performance deficiency have the potential to lead to a more significant safety concern?" Specifically, absent NRC intervention, the welders would have completed all of the welds without having measured the interpass temperature, a welding parameter which can affect the mechanical properties (e.g., impact properties) of some materials being welded, and if left uncorrected, could lead to a potential failure of the weld in service. In accordance with Table 2, "Cornerstones Affected by Degraded Condition or Programmatic Weakness," of IMC 609, Attachment 4, "Initial Characterization of Findings," issued June 19, 2012, the inspectors checked the box under the Mitigating Systems Cornerstone because leakage on the SI piping system could degrade short term heat removal. The inspectors determined this finding was of very-low safety significance (Green) using Part A of Exhibit 2, "Mitigating Systems Screening Questions," in IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued on June 19, 2012. Specifically, the inspectors answered "Yes" to the screening question "If the finding is a deficiency affecting the design or qualification of a mitigating Systems Structures and Components (SSC), does the SSC maintain its operability or functionality?" The welders proceeded to measure the interpass temperatures on the balance of the welds and verified that the interpass temperature did not exceed that allowed by procedure, and the issue did not result in the actual loss of the operability or functionality of a safety system. The finding had a cross-cutting aspect of Procedure Adherence in the area of Human Performance (IMC 0310 H.8). Specifically, the welders failed to follow procedures.

Inspection Report# : [2014005](#) (*pdf*)

Significance:  Dec 31, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

Liquid Penetrant (PT) Testing Procedure Did Not Meet ASME Code

The inspectors identified a finding of very low safety significance and an associated NCV of 10 CFR Part 50, Appendix B, Criterion IX, "Control of Special Processes," for the failure to perform a Liquid Penetrant Test (PT) in accordance with the American Society for Mechanical Engineers (ASME) Code while performing a surface examination on reactor coolant pump (RCP) flywheel 2A/D483. The vendor conducted a demonstration in an attempt to show the differences in bleed-out between the two dwell times, to demonstrate continued functionality of the flywheel. The results showed little if any difference in the growth of the bleed-out given the additional time. The licensee was developing an action plan to address the non-conformance and restore compliance. The issue was entered into the licensee's CAP as IR 02393595 and IR 02399248.

The inspectors determined that this issue was more than minor in accordance with IMC 0612, Appendix B, "Issue Screening," dated September 7, 2012, because the inspectors answered "Yes" to the More-than-Minor question, "If left uncorrected, would the performance deficiency have the potential to lead to a more significant safety concern?" Specifically, since the liquid penetrant testing developer minimum dwell time may not have been met, the liquid penetrant examination was not assured to accurately measure a rejectable flaw. Absent NRC intervention, the potential would exist for a rejectable flaw to remain in service, affecting the operability of affected systems. In accordance with Table 2, "Cornerstones Affected by Degraded Condition or Programmatic Weakness," of IMC 609, Attachment 4, "Initial Characterization of Findings," issued June 19, 2012, the inspectors checked the box under the Mitigating Systems Cornerstone because failure of the RCP flywheel could degrade core decay heat removal. The inspectors determined this finding was of very-low safety significance (Green) using Part A of Exhibit 2, "Mitigating Systems Screening Questions," in IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued on June 19, 2012. Specifically, the issue did not result in the actual loss of the operability or functionality of a safety system; and therefore the inspectors answered "Yes" to the screening question "If the finding is a deficiency affecting the design or qualification of a mitigating SSC, does the SSC maintain its operability or functionality?" The vendor subsequently performed demonstrations to show that the bleed-out from an indication would not change appreciably when implementing the additional dwell time. The licensee was still evaluating its planned corrective actions. However, the inspectors determined that the continued non-compliance did not present an immediate safety concern because the licensee/vendor reasonably determined the RCP flywheel remained functional. The finding had a cross-cutting aspect of Change Management in the area of Human Performance (IMC 0310 H.3) in that leaders failed to use a systematic process for evaluating and implementing change so that nuclear safety remains an overriding priority. Specifically, the licensee failed to ensure that the vendor changed its procedure to reflect the requirements of the current edition of the ASME Code adopted by the licensee.

Inspection Report# : [2014005](#) (pdf)

Significance:  Dec 31, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

Welding Procedure Specifications Variables Changed Without Revision or Amendment Contrary to ASME Code

The inspectors identified a finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion IX, "Control of Special Processes," for the failure to revise or amend a welding procedure specification (WPS) after changing welding variables, including an increase in amperage, for welding performed on the SI system. The licensee interviewed the welders who indicated that they would likely not have increased the amperage to the range permitted, to restore compliance. The licensee planned to review the use of vendor technical information (VTIP) manual information for welding criteria and cover this issue with the work order planners. Also, the site welding administrator planned to review the issue to be aware of possible WPS deviations in work instructions. The issue was entered into the licensee's CAP as IR 02392483.

The inspectors determined that this issue was more than minor in accordance with IMC 0612, Appendix B, "Issue Screening," dated September 7, 2012, because the inspectors answered "Yes" to the More-than-Minor question, "If left uncorrected, would the performance deficiency have the potential to lead to a more significant safety concern?"

Specifically, the welding variables were changed without appropriate process or documentation, or meeting ASME Code, which resulted in the permitted use of a significant increase in amperage above that in the WPS. This permitted the welders to use an elevated heat input which could have been detrimental to the components being welded. In accordance with Table 2, "Cornerstones Affected by Degraded Condition or Programmatic Weakness," of IMC 609, Attachment 4, "Initial Characterization of Findings," issued June 19, 2012, the inspectors checked the box under the Mitigating Systems Cornerstone because degradation of the SI system could degrade short term heat removal. The inspectors determined this finding was of very-low safety significance (Green) using Part A of Exhibit 2, "Mitigating Systems Screening Questions," in IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued on June 19, 2012. Specifically, the inspectors answered "Yes" to the screening question "If the finding is a deficiency affecting the design or qualification of a mitigating SSC, does the SSC maintain its operability or functionality?" The welders indicated that they would likely not have used the elevated heat inputs; and therefore, would still comply with the original WPS, and the issue did not result in the actual loss of the operability or functionality of a safety system. The finding had a cross-cutting aspect of Documentation in the area of Human Performance (IMC 0310 H.7). Specifically, the organization failed to create and maintain complete, accurate and up-to-date documentation.

Inspection Report# : [2014005](#) (*pdf*)

Significance:  Dec 31, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Evaluate Operability of a TS SSC Upon Discovery of a Support System Degraded Condition

Inspectors identified a finding of very low safety significance and associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions Procedures, and Drawings," for failure to implement procedure OP-AA-108-115, "Operability Determinations (CM-1)," as written when a degraded condition was identified for a non-TS SSC that supported a TS SSC. Specifically, during a surveillance test of the flood barrier door to the 2B emergency diesel generator (EDG) fuel oil storage tank room in March 2014, maintenance technicians identified a degraded condition that, while not affecting immediate functionality of the barrier, was identified to have the potential to impact the door functionality prior to the next scheduled performance of the surveillance. An Operability Determination was not performed for the supported TS SSCs at that time as required by OP-AA-108-115 and in June of 2014 (the next surveillance performance), the door failed the test, and both Unit EDGs were declared inoperable. The issue was entered in the CAP as Issue Report (IR) 1675255. Upon discovery of the failure of the water-tight door, a temporary water-tight barrier was immediately installed, restoring operability of the Unit 2 EDGs. The permanent water-tight door was repaired and returned to service at a later date.

Failure to perform and document an operability determination of the Unit 2 EDGs and fuel oil transfer pumps upon discovery of the degraded condition of the support system (i.e., flood barrier door) is a performance deficiency. The finding was more than minor because, if left uncorrected, failure to evaluate operability through a SSC's surveillance interval can lead to more significant safety concerns and an unevaluated assumption of risk by the station. The finding affected the Mitigating Systems Cornerstone because it impacted an External Events Mitigation System (degraded flood protection). Because a complete loss of the water-tight door could impact both Unit 2 EDG trains, the NRC Senior Reactor Analysts (SRAs) performed a more detailed significance determination and determined that the finding was not greater than Green.

The finding had a cross-cutting aspect of Conservative Bias in the area of Human Performance (IMC 0310 H.14) because the licensee's decisions regarding disposition of the degraded condition did not indicate a conservative bias that emphasized prudent choices over those that were allowable. Even though mechanics identified the potential for the condition to degrade further in the near future, the work request was not given a high priority and continued functionality of the door was not evaluated through the next surveillance period by the licensee.

Inspection Report# : [2014005](#) (pdf)

Barrier Integrity

Significance:  Sep 18, 2015

Identified By: NRC

Item Type: VIO Violation

Failure to Analyze RHUT Inlet Piping Loads

The inspectors identified a finding of very low safety significance (Green) and an associated VIO of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," when licensee personnel failed to evaluate the effect of dynamic loads on inlet piping from Unit 1 and Unit 2 residual heat removal (RHR) suction relief valves that discharged to the recycle holdup tank (RHUT). The NRC previously issued two NCVs regarding this issue and corrective actions to date have been incomplete. In addition to entering this issue into their CAP, planned corrective actions included the installation of approximately 20 pipe supports.

The inspectors determined that the performance deficiency was more than minor, because it was associated with the Barrier Integrity Cornerstone attribute of Design Control and adversely affected the cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Specifically, the licensee's existing design and piping configuration had not addressed water hammer effects when the Unit 1 and Unit 2 RHR suction relief valves were aligned to discharge to the RHUT. A ruptured RHUT and/or associated piping outside of containment could adversely affect on-site and offsite dose consequences. An NRC Senior Reactor Analyst (SRA) performed a detailed risk evaluation and determination that the finding was of very low safety significance (i.e., Green). The finding had a cross-cutting aspect in the Resources component of the Human Performance cross-cutting area because leaders at the station did not ensure that personnel, equipment, procedures, and other necessary resources were available and adequate to correct the condition adverse to quality (H.1).

Inspection Report# : [2015007](#) (pdf)

Significance:  Dec 31, 2014

Identified By: NRC

Item Type: FIN Finding

Containment Penetration Valves Rendered Inoperable for Operational Convenience

Inspectors identified a finding of very low safety significance when the licensee impaired a flood protection boundary that supported a required safety function for operational convenience. Specifically, the licensee removed the flood barriers for auxiliary feedwater system containment isolation valves and rendered the valves inoperable prior to the plant reaching Mode 5 and thereby entered TS 3.6.3 Condition C for operational convenience contrary to the TS Bases associated with TS 3.0.2 Limiting Condition for Operability (LCO) Applicability. From 2010 on September 28, 2014, until 0536 on September 29, 2014, while transitioning from Mode 1 to Mode 5, the valves were rendered inoperable. This issue has been entered in the CAP as IR 2390265. Corrective actions included Senior Reactor Operator review of the LCO basis and creating a logic tie in the outage schedule template tying the barrier removal to Mode 5.

The finding was more than minor because it impacted the SSC and Barrier Performance attribute of the Barrier Integrity Cornerstone, and adversely affected the cornerstone objective to provide reasonable assurance that the physical design barrier of the containment system protects the public from radionuclide releases caused by accidents or events. Specifically, with inoperable containment isolation valves the potential for an open containment pathway is increased. The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609,

Appendix A, “The Significance Determination Process For Findings At-Power,” Exhibit 3–Barrier Integrity Screening Questions, item B for the Reactor Containment. Both questions were answered "No" and therefore the finding screened as Green.

The finding had an associated cross-cutting aspect of Work Management in the area of Human Performance (MC 0310 H.5) because the shutdown and outage work schedules did not contain the rigor required to ensure the isolation valves were maintained operable as required by TS.

Inspection Report# : [2014005](#) (*pdf*)

Emergency Preparedness

Significance:  Nov 07, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

Inadequate Evacuation Time Estimate Submittals

The NRC identified a Non-Cited Violation (NCV) of 10 CFR 50.54(q)(2) associated with 10 CFR 50.47(b)(10) and 10 CFR Part 50, Appendix E, Section IV.4, for failing to maintain the effectiveness of the Byron Station Emergency Plan, as a result of failing to provide the station evacuation time estimate (ETE) to the responsible offsite response organizations (OROs) by the required date.

Exelon submitted the Byron Station ETE to the NRC on December 12, 2012, prior to the required due date of December 22, 2012. The NRC completeness review found the ETEs to be incomplete due to Exelon fleet common and site-specific deficiencies; thereby, preventing Exelon from providing the ETEs to responsible OROs and from updating site-specific protective action strategies as necessary. The NRC discussed its concerns regarding the completeness of the ETE, in a teleconference with Exelon on June 10, 2013, and on September 5, 2013, Exelon resubmitted the ETEs for its sites. The NRC again found the ETEs to be incomplete. The issue is a performance deficiency because it involves a failure to comply with a regulation that was under Exelon’s control to identify and prevent. The finding is more than minor because it is associated with the emergency preparedness cornerstone attribute of procedure quality and because it adversely affected the cornerstone objective of ensuring that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. The finding is of very low safety significance (Green) because it was a failure to comply with a non-risk significant portion of 10 CFR 50.47(b)(10). The licensee had entered this issue into their CAP and re-submitted a new revision of the Byron Station ETE to the NRC on May 2, 2014, which was found to be complete by the NRC. The cause of the finding is related to cross-cutting element of Human Performance, Documentation. [IMC 0310 H.7]

Inspection Report# : [2014004](#) (*pdf*)

Occupational Radiation Safety

Public Radiation Safety

Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

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