# Byron 1
# 3Q/2015 Plant Inspection Findings

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## Initiating Events

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## 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 sytem. 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 Sep 18, 2015
Identified By: NRC
Item Type: NCV Non-Cited Violation
**Failure to Evaluate Operability and Reportability in Accordance with the Issue Report Screening Procedure.**
The inspectors identified a finding of very low safety significance and an associated NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings", when the licensee failed to adequately evaluate an issue entered into the CAP for operabilitiy and associated reportability. Specifically, the licensee failed to evaluate operatility and reportability after DG fuel oil was identified to be unexpectedly overflowing into an "A train" DOST when a "B train" DG fuel oil transfer pump was operating. The licensee did not readily recognize that this issue

impacted the mission time of the 1B DG system due to fuel oil leaving the associated fuel oil train. In addition to entering this issue into their CAP, corrective actions included a review of past operability and submitting a Licensee Event Report (LER).

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 impact the operability of the DG for more than its Technical Specification (TS) allowed outage time (AOT). The finding had a cross-cutting aspect in the Teamwork component of the Human Performance cross-cutting area because individuals within the Operations department, as well as other workgroups within the licensee's organization, failed to communicate to ensure the safety impact of the leaking valve was adequately understood (H.4).
Inspection Report# : 2015007 *(pdf)*

**Significance:** G 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:** G 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:** G Dec 31, 2014
Identified By: NRC
Item Type: NCV Non-Cited Violation
**Welding Procedure Specifications Variables Changed Without Revision or Ammendment 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)*

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# Barrier Integrity

**Significance:** G 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 associted 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 availalbe and adequate to correct the condition adverse to quality (H.1).
Inspection Report# : 2015007 *(pdf)*

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# Emergency Preparedness

**Significance:** G 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)*

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# Occupational Radiation Safety

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# Public Radiation Safety

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# 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.

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# Miscellaneous

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