

Braidwood 1 2Q/2015 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance: G Mar 31, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

FAILURE TO ENSURE THAT TEMPORARY STRUCTURES DID NOT ADVERSELY IMPACT SAFETY DURING POSTULATED PROBABLE MAXIMUM PRECIPITATION EVENT

The inspectors identified a finding of very low safety significance and an associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control", when licensee personnel failed to establish adequate measures to ensure that temporary equipment and structures stored at the station did not create an unanalyzed condition during a probable maximum precipitation (PMP) event. Specifically, the licensee's processes did not prevent the placement and storage of temporary equipment in a manner that could result in a condition not bounded by the station's plant design that prevents rainwater from impacting safety-related equipment. This issue was entered into the licensee's Corrective Action Program (CAP) as Issue Report (IR) 2473324.

The inspectors determined that the performance deficiency was more than minor in accordance with IMC 0612, Appendix B, "Issue Screening," because it was associated with the Design Control attribute of the Mitigating Systems cornerstone 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). Specifically, the failure to ensure that credited rainwater runoff flow paths were not impeded by the storage of temporary structures resulted in the licensee not ensuring the availability, reliability, and capability of systems that would be needed to respond to an initiating event. This assessment was based upon the inspector's review of current flood barrier margins, assumed turbine building below-grade flooding levels, the number of safety-related or risk-significant systems that could be adversely affected, and the absence of an abnormal operating procedure or any other similar procedure that could create additional margin. The inspectors determined that because the finding did not involve a confirmed loss or degradation of equipment or function specifically designed to mitigate a PMP external flooding event, the issue was of very low safety significance. The inspectors determined that the finding did not have a cross-cutting aspect because the performance deficiency was not indicative of current performance.

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

Significance: G Mar 31, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

FAILURE TO ADEQUATELY EVALUATE OPERABILITY OF A DEGRADED CONTROL ROOM CHILLER

The inspectors identified a finding of very low safety significance and an associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," when licensee personnel failed to adhere to the operability determination process after identifying a degraded condition on the 0B control room chiller. This issue was entered into the licensee's CAP as IR 2435363.

The inspectors determined that the performance deficiency was more than minor in accordance with IMC 0612, Appendix B, "Issue Screening," because it was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone 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). Specifically, the licensee did not provide an adequate basis to support 0B control room chiller availability, reliability, and capability to respond to an initiating event. The inspectors determined that the finding was of very low safety significance because all questions related to structures, systems, and components (SSCs) and functionality in the associated significance determination process (SDP) were answered "No." The finding had a cross-cutting aspect in the Design Margins component of the Human Performance cross-cutting area because the licensee failed to adequately evaluate whether the degraded oil return line in the 0B control room chiller had sufficient margin to assure operability (H.6).

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

Significance:  Dec 31, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

FAILURE TO ADEQUATELY EVALUATE OPERABILITY FOLLOWING THE DISCOVERY OF AN UNANALYZED CONDITION INVOLVING THE PROBABLE MAXIMUM PRECIPITATION EVENT

The inspectors identified a finding of very low safety significance (Green) and an associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," when licensee personnel failed to adhere to Operability Determination Process standards after identifying an unanalyzed condition that had the potential to adversely impact numerous safety-related systems during a probable maximum precipitation (PMP) event. The issue was entered into the Corrective Action Program (CAP) as Issue Report (IR) 2396124. Corrective actions for this issue included performing an operability evaluation. The performance deficiency was more than minor in accordance with IMC 0612, Appendix B, "Issue Screening" because the issue was associated with the Protection Against External Factors attribute of the Mitigating System cornerstone 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). Specifically, the licensee evaluated an unanalyzed condition utilizing another power plant's licensing basis in a manner that was not accurate and was not adequate. The finding was of very low safety significance (Green) because the potentially impacted systems remained operable. The finding had a cross-cutting aspect of Avoid Complacency in the Human Performance area. Specifically, the licensee failed to recognize and plan for the possibility of mistakes and plant specific differences between Braidwood and Byron while using Byron's current licensing basis to evaluate a Braidwood condition not previously analyzed (H.12).

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

Significance:  Dec 31, 2014

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

FAILURE TO CORRECT UNDERSIZE ESSENTIAL SERVICE WATER PUMP BEARING CASING DRAIN LINE RESULTED IN SYSTEM INOPERABILITY

A finding of very low safety significance (Green) and an associated NCV of 10 CFR 50, Appendix B, Criterion III, "Design Control" was self-revealed following the licensee's failure to design the 1B essential service water (SX) pump inboard bearing casing drain line in a manner that ensured pump operability. Specifically, the licensee had re-designed the 1B SX pump inboard bearing drain line by replacing a hard pipe drain with a flexible hose drain line consisting of fittings of a smaller diameter when compared to the previous hard pipe drain line. This design change resulted in unplanned 1B SX pump inoperability and required operator action to secure the pump to preclude pump damage. The licensee entered this issue into the CAP as IR 2413941. Corrective actions included restoring adequate drain flow by replacing the flexible hose drain line with a hard pipe of a larger diameter. The performance deficiency

was of more than minor safety significance because the issue was associated with the Equipment Performance attribute of the Mitigating Systems Cornerstone 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). Specifically, the failure to adequately design the 1B SX pump inboard bearing housing drain line resulted in an inoperable 1B SX pump. The finding was of very low safety significance (Green) because the inspector answered 'No' to all of the associated Mitigating Systems screening questions within IMC 0609, Attachment 4, "Initial Characterization of Findings." The finding is associated with the cross-cutting area of Problem Identification and Resolution with an aspect of Evaluation because the licensee did not thoroughly evaluate plant design in a manner commensurate with the safety significance. Specifically, the licensee inappropriately evaluated the design of the 1B SX pump inboard bearing housing drain line after identifying that the drain line size was the contributing cause for a loss of oil inventory in December 2013 (P.2).

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

Significance:  Dec 31, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

FAILURE TO EVALUATE IMPACT OF PROBABLE MAXIMUM PRECIPITATION EVENT ON TURBINE BUILDING FLOODING AS ASSOCIATED SAFETY-RELATED SSCs

The inspectors identified a finding of very low safety significance (Green) and an associated NCV of 10 CFR 50, Appendix B, Criterion III, "Design Control," for the licensee's failure to assess the impact of plant modifications on the PMP event analysis in the plan design basis. Specifically, the licensee failed to determine if modifications to plant grading that caused higher water levels during a PMP event would adversely affect safety-related equipment. The licensee entered this issue into the CAP as IR 2413941. Corrective actions included performing an operability determination to ensure safety until a formal quality design review can be completed at a later date. The performance deficiency was more than minor in accordance with IMC 0612, Appendix B, "Issue Screening," because the issue was associated with the Protection Against External Factors attribute of the Mitigating System cornerstone 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). Specifically, the licensee failed to evaluate the design to ensure that the consequences of the licensing basis PMP would be acceptable with respect to NRC regulations. The finding was of very low safety significance (Green) because it did not result in the loss or degradation of equipment or function specifically designed to mitigate a seismic, flooding, or severe weather initiating event. The finding had a cross-cutting aspect of Design Margins in the Human Performance area. Specifically, the licensee did not carefully guard design margins when making station grade modifications that could adversely affect safety-related equipment during a heavy rainfall event. This issue was determined to be indicative of recent performance based upon two recent major revisions to station calculation WR-BR-PF-10, Local PMP Analysis, which evaluated the acceptability of recent grade modifications at the station (H.6).

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

Significance:  Sep 30, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

ADVERSE IMPACT OF FLOOR DRAIN DESIGN ON FLOODING ANALYSIS

The inspectors identified a finding of very low safety significance and an associated NCV of 10 CFR Part 50, Appendix B, Criterion III "Design Control," when licensee personnel failed to verify the design of bag-strainers in the floor drains of the auxiliary building and their impact on the associated flooding analysis. Specifically, when Calculation 3C8-0686-002, "Auxiliary Building Flood Level Calculation," was revised on May 16, 2013, the licensee credited the use of floor drains, which had bag-type strainers that were designed in such a way that they increased the

potential for blockage, and therefore adversely impacted the analysis of record for internal flooding. This issue was entered into the licensee's Corrective Action Program (CAP) as Issue Report (IR) 2385204, "NRC Questions on Aux [Auxiliary] Building Flood Evaluation." Corrective actions for this issue included instituting Standing Order 14-005 to prevent the interim removal of flood seals, and a plan to revise Calculation 3C8-0685-002 to resolve the identified non-conformances. The inspectors determined that the performance deficiency was more than minor in accordance with IMC 0612, Appendix B, "Issue Screening," because the issue was associated with the Design Control attribute of the Mitigating Systems Cornerstone 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). Specifically, the floor drain strainer bags were inadequately designed in such a manner that instead of ensuring that the floor drains would be able to function properly to remove flood water, they would act to increase the possibility that the floor drains would become plugged and unable to perform this function adequately. The inspectors concluded that the finding was of very low safety significance in accordance with IMC 0609, Appendix A, Exhibit 2 and Exhibit 4. The inspectors determined that the finding had a cross-cutting aspect in the Evaluation component of the Problem Identification and Resolution (PI&R) cross-cutting area because the licensee failed to thoroughly evaluate the issue to ensure that the resolution addressed the causes. Specifically, when the licensee made a major revision to Calculation 3C8-0685-002 in 2013 to, in part, incorporate minor revisions and address non-conservatism in the calculation, the licensee failed to adequately consider a previous minor revision that had removed credit for the drain system due to problems with its design that were previously identified by the NRC (P.2).

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

Significance:  Sep 30, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

MULTIPLE FAILURES TO FOLLOW OPERABILITY EVALUATION PROCESS FOLLOWING DISCOVERY OF A NON-CONFORMING CONDITION IN THE ULTIMATE HEAT SINK

The inspectors identified a finding of very low safety significance and an associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," when licensee personnel failed to follow procedure OP-AA-108-115, "Operability Determinations." Specifically, licensee personnel failed to adhere to numerous Operability Determination Process standards after identifying a non-conforming condition that had the potential to impact the operability of the Ultimate Heat Sink (UHS). This issue was entered into the licensee's CAP as IR 1674557, "Question on UHS License Amendment Request Impact on Pumps," and IR 1675291, "Unanalyzed Condition Identified During IR 1674557 Response." Corrective actions included correcting the non-conforming condition by revising the abnormal operating procedures to be aligned with the current licensing basis (CLB). The inspectors determined that the performance deficiency was more than minor in accordance with IMC 0612, Appendix B, "Issue Screening," because the issue was associated with the Design Control attribute of the Mitigating Systems Cornerstone 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). Specifically, based on the analysis of record, at the time of discovery there was reasonable doubt that the UHS could meet its mission time of 30 days. The inspectors determined that the finding was of very low safety significance in accordance with IMC 0609, Appendix A, Exhibit 2, since it was determined to not represent a confirmed loss of operability. The inspectors concluded that this finding had a cross-cutting aspect in the Conservative Bias component of the Human Performance cross-cutting area because the licensee failed to use conservative assumptions in their decision-making when evaluating the operability of the UHS. Specifically, operations did not request a documented evaluation to support understanding why the UHS was operable and to verify that their assumptions regarding operator actions were feasible (H.14).

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

Significance:  Sep 30, 2014

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

STATION DIESEL DRIVEN FIRE PUMP RESTORED TO SERVICE NON-FUNCTIONAL DUE TO INCORRECT STOP PUSH BUTTON SWITCH REPLACEMENT

A finding of very low safety significance and an associated NCV of Braidwood Operating License Condition 2.E, "Fire Protection Program," was self-revealed during the performance of a scheduled diesel-driven fire pump (DDFP) sequential start surveillance when the DDFP was observed by operators to start, but then cycle on and off. The DDFP was declared non-functional and a subsequent causal evaluation determined that an incorrectly designed DDFP stop pushbutton switch had been installed several months prior to the identification of the issue. The licensee entered this issue into their CAP as IR 1649515, "Incorrect Stop Pushbutton Installed on 0B Fire Pump." Corrective actions included replacing the switch with a switch of a correct design. The inspectors determined that the performance deficiency was more than minor in accordance with IMC 0612, Appendix B, "Issue Screening," because the issue was associated with the Equipment Performance attribute of the Mitigating Systems Cornerstone 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). Specifically, the performance deficiency resulted in a non-functional DDFP. The finding was determined to be of very low safety significance by a NRC Senior Reactor Analyst. The inspectors concluded that this finding had a cross-cutting aspect in the Avoid Complacency component of the Human Performance cross-cutting area because the licensee did not adequately recognize and plan for the possibility that the DDFP stop pushbutton replacement switch design could have been different than plant-specific design requirements (H.12).

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

Barrier Integrity

Emergency Preparedness

Significance: G Mar 31, 2015

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

FAILURE TO ACTIVATE THE EMERGENCY RESPONSE ORGANIZATION DURING AN ACTUAL EVENT

A self-revealed finding of very low safety significance and an associated NCV of 10 CFR 50.54(q)(2) and 10 CFR 50.47(b)(2) was identified on July 23, 2014, when after a Notice of Unusual Event was declared and the Shift Manager activated the Emergency Response Organization (ERO), several of the ERO members failed to respond as required. This issue was entered into the licensee's CAP as IR 2469494.

The inspectors determined that the performance deficiency was more than minor because it was associated with the Emergency Response Organization Readiness attribute of the Emergency Preparedness cornerstone and adversely affected the cornerstone objective of ensuring that the licensee was capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Since the finding involved a failure to comply with emergency preparedness requirements, the inspectors reviewed IMC 0609, Appendix B, Attachment 2, and determined that the finding was of very low safety significance because it involved a degraded planning standard function. The finding had a cross-cutting aspect in the Change Management component of the Human Performance cross-cutting area because the licensee did not appropriately evaluate and implement changes when the new ERO Augmentation System was implemented (H.3).

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

Significance:  Sep 30, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

INADEQUATE EVACUATION TIME ESTIMATE SUBMITTALS

The NRC identified a finding of very low safety significance and an associated NCV of 10 CFR 50.54(q)(2) related to 10 CFR 50.47(b)(10) and 10 CFR Part 50, Appendix E, Section IV.4, for failing to maintain the effectiveness of the Braidwood Station Emergency Plan as a result of failing to provide the station Evacuation Time Estimate (ETE) to the responsible offsite response organizations by the required due date. Exelon submitted the Braidwood Station ETE to the NRC on December 12, 2012, prior to the required due date of December 22, 2012. However, an NRC review found the ETE to be incomplete due to Exelon fleet common and site-specific deficiencies, thereby preventing Exelon from providing the ETE to responsible offsite response organizations 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. Subsequently, the NRC again found the ETE to be incomplete. Exelon's failure to submit a complete updated ETE for Braidwood Station by December 22, 2012, was a licensee performance deficiency because the issue was a failure to comply with a regulatory requirement and the issue was reasonably within the licensee's ability to foresee and correct, and therefore should have been prevented. The inspectors determined the performance deficiency was more than minor because it was associated with the Emergency Preparedness cornerstone attribute of Procedure Quality and adversely affected the cornerstone objective of ensuring that the licensee was capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. The finding was of very low safety significance because it was a failure to comply with a non-risk significant portion of 10 CFR 50.47(b)(10). The licensee entered this issue into their CAP and re-submitted a new revision of the Braidwood Station ETE to the NRC on May 2, 2014. The inspectors concluded that this finding had a cross-cutting aspect in the Documentation component of the Human Performance cross-cutting area (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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