

Byron 2

1Q/2016 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance:  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:  Jun 19, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Evaluate the Adverse Effects of Sharing the RWSTs of Both Reactor Units

The team identified a Severity Level IV NCV of 10 CFR 50.59(d)(1), "Changes, Tests, and Experiments," and an associated finding of very low safety significance (Green) for the licensee's failure to perform a written safety evaluation that provided the bases for the determination that a change which resulted in the sharing of the refueling water storage tanks (RWSTs) of both reactor units did not require a license amendment. Specifically, the licensee did not evaluate the adverse effect of reducing reactor unit independence. The licensee captured this issue into their CAP

with a proposed action to revise the associated calculation to remove the dependence on the opposite unit, and/or review the implications of crediting the opposite unit RWST under their 10 CFR 50.59 process.

The performance deficiency was more than minor because it was associated with the Mitigating Systems cornerstone attribute of design control, and affected the cornerstone objective of ensuring the availability, reliability, and capability of mitigating systems to respond to initiating events to prevent undesirable consequences. In addition, it was associated with the Barrier Integrity cornerstone attribute of design control, and affected the cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. In addition, the associated traditional enforcement violation was more than minor because the team could not reasonably determine that the changes would not have ultimately required NRC prior approval. The finding screened as very low safety significance (Green) because it did not result in the loss of operability or functionality, and it did not represent an actual open pathway in the physical integrity of the reactor containment. Specifically, the licensee reviewed the affected calculation and reasonably determined that enough conservatism existed such that adequate net positive suction head (NPSH) could be maintained without sharing the RWSTs of both reactor units. The team did not identify a cross-cutting aspect associated with this finding because it was confirmed not to be reflective of current performance due to the age of the performance deficiency.

Inspection Report# : [2015008](#) (*pdf*)

Significance:  Jun 19, 2015

Identified By: NRC

Item Type: FIN Finding

Failure to Evaluate the Adverse Effects of Sharing the RWSTs of Both Reactor Units

The team identified a Severity Level IV NCV of 10 CFR 50.59(d)(1), “Changes, Tests, and Experiments,” and an associated finding of very low safety significance (Green) for the licensee’s failure to perform a written safety evaluation that provided the bases for the determination that a change which resulted in the sharing of the refueling water storage tanks (RWSTs) of both reactor units did not require a license amendment. Specifically, the licensee did not evaluate the adverse effect of reducing reactor unit independence. The licensee captured this issue into their CAP with a proposed action to revise the associated calculation to remove the dependence on the opposite unit, and/or review the implications of crediting the opposite unit RWST under their 10 CFR 50.59 process.

The performance deficiency was more than minor because it was associated with the Mitigating Systems cornerstone attribute of design control, and affected the cornerstone objective of ensuring the availability, reliability, and capability of mitigating systems to respond to initiating events to prevent undesirable consequences. In addition, it was associated with the Barrier Integrity cornerstone attribute of design control, and affected the cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. In addition, the associated traditional enforcement violation was more than minor because the team could not reasonably determine that the changes would not have ultimately required NRC prior approval. The finding screened as very low safety significance (Green) because it did not result in the loss of operability or functionality, and it did not represent an actual open pathway in the physical integrity of the reactor containment. Specifically, the licensee reviewed the affected calculation and reasonably determined that enough conservatism existed such that adequate net positive suction head (NPSH) could be maintained without sharing the RWSTs of both reactor units. The team did not identify a cross-cutting aspect associated with this finding because it was confirmed not to be reflective of current performance due to the age of the performance deficiency.

Inspection Report# : [2015008](#) (*pdf*)

Significance:  Jun 19, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Adequately Implement a Design Change Associated with the RWSTs

The team identified a finding of very low safety significance (Green), and an associated NCV of 10 CFR Part 50,

Appendix B, Criterion III, “Design Control,” for the licensee’s failure to translate applicable design basis into Technical Specifications (TSs) Surveillance Requirement 3.5.4.2 implementing procedures. Specifically, these procedures did not verify the RWST vent line was free of ice blockage at the locations, and during all applicable MODEs of reactor operation assumed by the ECCS and containment spray (CS) pump NPSH calculation. The licensee captured this issue into their CAP to reconcile the affected procedures and calculation.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems cornerstone attribute of design control, and affected the cornerstone objective of ensuring the availability, reliability, and capability of mitigating systems to respond to initiating events to prevent undesirable consequences. Additionally, it was associated with the Barrier Integrity cornerstone attribute of design control, and affected the cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. The finding screened as very low safety significance (Green) because it did not result in the loss of operability or functionality, and it did not represent an actual open pathway in the physical integrity of reactor containment. Specifically, the licensee performed a historical review of the last 3 years of operation, and did not find any instances in which the vent path temperature fell below 35 degrees Fahrenheit. The inspectors did not identify a cross-cutting aspect associated with this finding because it was confirmed not to be reflective of current performance due to the age of the performance deficiency.

Inspection Report# : [2015008](#) (pdf)

Significance:  Jun 19, 2015

Identified By: NRC

Item Type: FIN Finding

Failure to Evaluate the Adverse Effects of Changing the SXCT Tornado Analysis as Described in the UFSAR

The team identified a Severity Level IV NCV of 10 CFR 50.59(d)(1), “Changes, Tests, and Experiments,” and an associated finding of very low safety significance (Green) for the licensee’s failure to perform a written evaluation that provided the bases for the determination that the changes to the emergency service water cooling tower (SXCT) tornado analysis as described in the UFSAR did not require a license amendment. Specifically, the associated 10 CFR 50.59 Evaluation did not address the introduction of a new failure mode, the resulting loss of heat removal capacity during worst postulated conditions, and addition of operator actions that have not been demonstrated can be completed within the required time to restore the required SXCT heat removal capacity during worst case conditions. The licensee captured this issue in their CAP with a proposed action to revise the 10 CFR 50.59 Evaluation and submit a Licensee Amendment Request.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems cornerstone attribute of protection against external events, and affected the cornerstone objective of ensuring the availability, reliability, and capability of mitigating systems to respond to initiating events to prevent undesirable consequences. In addition, the associated tradition enforcement violation was determined to be more than minor because the team could not reasonably determine that the changes would not have ultimately required prior NRC approval. The finding screened as of very low safety significance (Green) using a detailed evaluation because a loss of SXCT during a tornado event would degrade one or more trains of a system that supports a risk significant system or function. The bounding change to the core damage frequency was less than 5.4E-8/year. The team did not identify a cross cutting aspect associated with this finding because the finding was not representative of current performance due to the age of the performance deficiency.

Inspection Report# : [2015008](#) (pdf)

Significance:  Jun 19, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Provide Proper Direction for Low Level Isolation of the RWST in EOPs

The team identified a finding of very low safety significance and an associated NCV of TS 5.4, "Procedures," for the failure to maintain emergency operating procedures (EOPs) for transfer to cold leg recirculation. Specifically, the EOPs for transfer to cold leg recirculation did not contain instructions for transferring the ECCS and CS systems to the recirculation mode that ensured prevention of potential pump damage when the RWST is emptied. The licensee captured this finding into their CAP to create a standing order instructing operators to secure all pumps aligned to the RWST when it is emptied, and implement long term corrective actions to restore compliance.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems cornerstone attribute of procedure quality, and affected the cornerstone objective of ensuring the availability, reliability, and capability of mitigating systems to respond to initiating events to prevent undesirable consequences. In addition, it was associated with the Barrier Integrity cornerstone attribute of procedure quality, and affected the cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. The finding screened as of very low safety significance (Green) because it did not result in the loss of operability or functionality of mitigating systems, represent an actual open pathway in the physical integrity of reactor containment, and involved an actual reduction in function of hydrogen igniters in the reactor containment. Specifically, the incorrect caution would only be used in the event that transfer to sump recirculation was not completed prior to reaching tank low level, or if the RWST suction isolation valves fail to close. With respect to transfer to sump recirculation prior to reaching tank low level, a review of simulator test results reasonably determined that operators reliably complete the transfer to sump recirculation prior to reaching this set point. With respect to the failure of the RWST suction isolation valves, a review of quarterly test results reasonably determined the valves would have isolated the tank when required. The team did not identify a cross-cutting aspect associated with this finding because it was not confirmed to reflect current performance due to the age of the performance deficiency.

Inspection Report# : [2015008](#) (pdf)

Significance:  Jun 19, 2015

Identified By: NRC

Item Type: VIO Violation

Failure to Promptly Correct and NRC-Identified NCV Associated with the Capability to Detect and Isolate ECCS Leakage

The team identified a finding of very-low safety significance (Green), and an associated cited violation of Title 10, Code of Federal Regulations (CFR), Part 50, Appendix B, Criterion XVI, "Corrective Actions," for the failure to correct a Condition Adverse to Quality (CAQ). Specifically, on June 15, 2012, the U.S. Nuclear Regulatory Commission (NRC) issued a Non-Cited Violation (NCV) for the failure to provide means to detect and isolate a leak in the Emergency Core Cooling System (ECCS) within 30 minutes as described in the Updated Final Safety Analysis Report (UFSAR), which is a CAQ. As of May 22, 2015, the licensee had not corrected the CAQ. This violation is being cited because the licensee had not restored compliance, or demonstrated objective evidence of plans to restore compliance in a reasonable period following the identification of the CAQ. The licensee captured this finding into their Corrective Action Program (CAP) to promptly restore compliance.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating Systems cornerstone attribute of procedure quality, and affected the cornerstone objective of ensuring the availability, reliability, and capability of mitigating systems to respond to initiating events to prevent undesirable consequences. In addition, it was associated with the Barrier Integrity cornerstone attribute of procedure quality, and affected the cornerstone objective of providing reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. The finding screened as very low safety significance (Green) because it did not result in the loss of operability or functionality, and it did not represent an actual pathway in the physical integrity of reactor containment. Specifically, the licensee reasonably demonstrated that an ECCS leak could be detected and isolated before it could adversely affect long term cooling of the plant. The team determined that the associated finding had a cross cutting aspect in the area of human performance because the licensee did not use a consistent and systematic approach to make decisions. Specifically, the creation and management of the associated

corrective action assignments were not consistent with the instructions contained in their CAP procedure. [H.13]
 Inspection Report# : [2015008](#) (pdf)

Significance:  Jun 19, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

Operability Evaluation Relied on Probabilities of Occurrence of the Associated Event

The team 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," for the failure to make an operability determination without relying on the use of probabilistic tools. Specifically, an operability evaluation for an SXCT degraded condition used probabilities of occurrence of tornado events which was contrary to the requirements of the licensee procedure established for assessing operability of structures, systems, and components (SSCs). The licensee captured the team's concern in their CAP to revise the affected operability evaluation without using probability of occurrence of tornado events.

The performance deficiency was more than minor because it was associated with the Mitigating Systems cornerstone attribute of protection against external events, and affected the cornerstone objective of ensuring the availability, reliability, and capability of mitigating systems to respond to initiating events to prevent undesirable consequences. The finding screened as of very-low safety significance (Green) using a detailed evaluation because a loss of SXCT during a tornado event would degrade one or more trains of a system that supports a risk-significant system or function. The bounding change to the core damage frequency was less than $5.4E-8$ /year. The team determined that this finding had a cross-cutting aspect in the area of human performance because the licensee did not ensure knowledge transfer to maintain a knowledgeable and technically competent workforce. Specifically, the licensee did not ensure personnel were trained on the prohibition of the use of probabilities of occurrence of an event when performing operability evaluations, which was contained in licensee procedure established for assessing operability of SSCs. [H.9]

Inspection Report# : [2015008](#) (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:  Jun 19, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Maintain the Instrument Loops Used to Verify Compliance with the Containment Average Air Temperature TS Limit

The team 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,” for the failure to have procedures to maintain the accuracy within necessary limits of the instrument loops used to verify compliance with the containment average air temperature TS limit of 120 degrees Fahrenheit. Specifically, in 2007, the licensee cancelled the periodic preventive maintenance (PM) intended to maintain the necessary instrument loops accuracy. The licensee entered this issue into their CAP and reasonably established that the 120 degrees Fahrenheit limit was not exceeded by reviewing applicable historical records from 2002 to time of this inspection.

The performance deficiency was determined to be more than minor because it was associated with the configuration control attribute of the Barrier Integrity Cornerstone, and adversely affected the cornerstone objective to ensure that physical design barriers protect the public from radionuclide releases caused by accidents or events. The finding screened as very-low safety significance (Green) because it did not represent an actual open pathway in the physical integrity of reactor containment or involved an actual reduction in hydrogen igniter function. Specifically, the containment integrity remained intact and the finding did not impact the hydrogen igniter function. The team determined that this finding had a cross-cutting aspect in the area of problem identification and resolution because the licensee did not identify issues completely and accurately in accordance with the CAP. Specifically, on January 15, 2015, the licensee captured the lack of periodic PM activities for the containment air temperature instrument loops in the CAP. However, the licensee failed to completely and accurately identify the issue in that it was not treated as a CAQ. As a consequence, no corrective actions were implemented. [P.1]

Inspection Report# : [2015008](#) (*pdf*)

Emergency Preparedness

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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