

D.C. Cook 2

3Q/2012 Plant Inspection Findings

Initiating Events

Significance: G Jun 30, 2012

Identified By: Self-Revealing

Item Type: FIN Finding

Failure to Implement Volts per Hertz Differential Relay Modification per Design

One self-revealed finding of very low safety significance was identified for the failure to implement the Unit 2 main generator volts per hertz differential relay modification per design, as required by Engineering Change (EC) 50316, "Unit 2 Replacement of the Volts/Hertz Relay and the Overall Differential Relays with a Multifunctional Relay Unit." Consequently, while ascending in power, the relay actuated causing a main generator trip, resultant turbine trip and subsequent reactor trip on April 30, 2012. For corrective actions, the licensee programmed the correct preset settings into the volts per hertz differential relay prior to restarting Unit 2 and plans to add additional procedural requirements to ensure modification requirements are properly incorporated into the associated work orders. This issue was entered into the licensee's corrective action program (CAP) as Action Request (AR) 2012 5744.

The inspectors concluded the finding was more than minor because it is associated with the Initiating Events Cornerstone attribute of Procedure Quality. In addition, it adversely affected the Cornerstone objective to limit the likelihood of events that upset plant stability. Specifically, the failure to implement the SEL 487E relay modification per design, contributed to a main generator trip and resultant automatic reactor trip. The inspectors used IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 Initial Screening and Characterization of Findings," Table 4a for the Initiating Events Cornerstone to determine the significance. This finding was of very low safety significance because the finding did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment will not be available. This finding is associated with a cross cutting aspect in the resources component of the human performance cross cutting area. Specifically, the work order associated with installing the volts per hertz overall differential relay did not include sufficient guidance to ensure the SEL 487E relay modification was installed as designed

Inspection Report# : [2012003](#) (*pdf*)

Mitigating Systems

Significance: G Sep 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Properly Preplan and Perform Maintenance on Safety-related Equipment

The inspectors identified a finding of very low safety significance with an associated NCV of Technical Specification (TS) 5.4.1 for the failure to implement procedures to perform preventative maintenance in vaults containing safety related cabling subject to water intrusion. Specifically, licensee personnel failed to ensure the cables were not wetted as required by PMI 5053, "Cable Management Program." Cables were on the ground in the vaults exposing the cables to periodic wetting, which will degrade the cable insulation. On August 27, 2012, the inspectors noted that cables in

one vault were on the ground and the vault showed evidence of periodic wetting of the cables. For corrective action, the licensee is performing an apparent cause evaluation; inspecting all cable vaults that have had safety related cabling elevated since February 2010; and raising and re securing cabling in vaults subject to water intrusion. This issue was entered into the licensee's corrective action program as AR 2012 10680.

This finding affected the Mitigating Events Cornerstone and was more than minor because the issue could become a more significant safety concern if left uncorrected. Specifically, failure to properly perform preventative maintenance in vaults containing safety related cables subjected to water intrusion resulted in periodic wetting of cables. Wetting of cables has led to degradation of cable insulation at nuclear facilities. The inspectors used IMC 0609, "Significance Determination Process," Attachment 4, "Initial Characterization of Findings," which directed the inspectors to Exhibit 2, "Mitigating Systems Screening Questions," of Appendix A, to determine significance. This finding was of very low safety significance (Green) because the finding constituted a design or qualification deficiency but did not result in a loss of system safety function. This finding is associated with a cross cutting aspect in the work control component of the human performance cross cutting area. Specifically, engineering did not appropriately plan for maintenance personnel to assist with lifting the floor grating to ensure visual inspections were adequately performed.

Inspection Report# : [2012004](#) (*pdf*)

Significance:  Jun 01, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Vortexing was not evaluated for the volume control, containment spray additive, refueling water storage tanks.

The inspectors identified a finding of very low safety significance and associated Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to evaluate vortexing in the volume control, containment spray additive, and refueling water storage tanks. Consequently, the minimum allowable submergence for the suction piping of these tanks did not consider the potential for air entrainment due to vortices. This finding was entered into the licensee's corrective action program to evaluate the potential for vortexing at these tanks and revise the affected calculations.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating System cornerstone attribute of equipment performance and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. In addition, the finding was associated with the Containment Barrier cornerstone attribute of structure, system, component, and barrier performance 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: (1) the finding examples associated with the volume control and refueling water storage tanks were deficiencies confirmed not to result in loss of operability in that the licensee performed an evaluation that reasonably concluded the current limit setpoints prevent vortexing in these tanks; and (2) the finding example associated with the containment spray (CTA) additive tank was a design deficiency of the physical integrity of the reactor containment that did not affect the barrier function of the control room against smoke or a toxic atmosphere, represent an actual open pathway in the physical integrity of reactor containment, or involve an actual reduction in function of hydrogen igniters in the reactor containment. This finding did not have an associated cross-cutting aspect because it was not confirmed to reflect current performance due to the age of the performance deficiency.

Inspection Report# : [2012008](#) (*pdf*)

Significance:  Jun 01, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Incomplete methodology for developing acceptance criteria for suction voids

The inspectors identified a finding of very low safety significance and associated Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure to correctly incorporate the interim methodology for developing acceptance criteria for suction voids in Emergency Core Cooling Systems, Decay Heat Removal, and Containment Spray Systems pumps into procedures. Specifically, the licensee did not translate the limitations of the acceptance criteria with respect to rated performance of pump operation. This finding was entered into the licensee's corrective action program to revise the affected procedure.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating System cornerstone attribute of equipment performance and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding screened as of very low safety significance (Green) because it was a design deficiency confirmed not to result in loss of operability. Specifically, a review of recent monitoring results determined that identified voids did not exceed the applicable acceptance criteria. The inspectors did not find an applicable cross-cutting aspect which represented the underlying cause of this performance deficiency; therefore, no cross-cutting aspect was assigned.

Inspection Report# : [2012008](#) (*pdf*)

Significance:  Jun 01, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Procedures were not developed for performance monitoring of plant parameters.

The inspectors identified a finding of very low safety significance and associated Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure to establish minimum flowrate and time required in procedures used to perform dynamic flushing activities affecting Emergency Core Cooling Systems, Decay Heat Removal, and Containment Spray Systems pumps. This finding was entered into the licensee's corrective action program to revise the affected procedures.

The performance deficiency was determined to be more than minor because, if left uncorrected, it would have the potential to lead to a more significant safety concern. Specifically, the failure to establish an appropriate procedure for flushing would have the potential of not removing voids to ensure system operability. The finding screened as of very low safety significance (Green) because it was a design deficiency confirmed not to result in loss of operability. Specifically, a historical review of previous dynamic flushing activities determined that sufficient flowrates and time values were achieved at the appropriate sequences. The inspectors did not identify a cross-cutting aspect associated with this finding because the finding was not confirmed to reflect current performance due to the age of the performance deficiency.

Inspection Report# : [2012008](#) (*pdf*)

Significance:  Jun 01, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Minimum flowrates and time requirements for dynamic flushing were not established

The inspectors identified a finding of very low safety significance and associated Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure to include adequate venting instructions in the procedure use to respond to a MODE 4 loss-of-coolant accident. Specifically, the procedure did not include instructions to address all of the affected residual heat removal system high points, including the discharge piping. The finding was entered into the licensee's corrective action program to leave one train of the system idle while the other train cools down the reactor coolant system below 200°F to ensure that the discharge side of one train of residual heat removal system is not vulnerable to steam formation.

The performance deficiency was determined to be more than minor because, if left uncorrected, it would have the potential to lead to a more significant safety concern. The finding screened as of very low safety significance (Green) using a Phase II evaluation. The inspectors determined that this finding had a cross-cutting aspect in the area of problem identification and resolution because the licensee did not thoroughly evaluate relevant external operating experience. Specifically, the licensee's evaluation of Information Notice 2010-11 incorrectly concluded that procedures contained sufficient direction to preclude flashing.

Inspection Report# : [2012008](#) (pdf)

Significance:  Jun 01, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Procedure for Responding to a MODE 4 LOCA

The inspectors identified a finding of very low safety significance and associated Severity Level IV violation of 10 CFR 50.59, "Changes, Tests, and Experiments," for the failure to perform a written evaluation, which provided the bases for the determination that a change did not require a license amendment. Specifically, the licensee failed to provide a basis for not applying for a license amendment associated with a modification of the residual heat removal pump casing drain lines. The finding was entered into the licensee's corrective action program to: (1) stage a hose and pipe couplings to support venting at the residual heat removal pump casing vent; (2) create a work order request to flush flow through the abandoned drain lines that were cut from the pump casing vent to show the lines could still pass water; (3) develop an alternate means to accomplish this activity; and (4) evaluate the change.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating System cornerstone attribute of equipment performance and affected the cornerstone objective of ensuring the capability and availability of systems that respond to initiating events to prevent undesirable consequences. Violations of 10 CFR 50.59 are dispositioned using the traditional enforcement process instead of the significance determination process because they are considered to be violations that potentially impede or impact the regulatory process. The finding screened as of very low safety significance (Green) using a Phase II evaluation. The inspectors did not identify a cross-cutting aspect associated with this finding because the finding was not confirmed to reflect current performance due to the age of the performance deficiency.

Inspection Report# : [2012008](#) (pdf)

Significance:  Jun 01, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

10 CFR 50.59 evaluation for modification of RHR pump casing drain lines was not performed

The inspectors identified a finding of very low safety significance and associated Severity Level IV violation of 10 CFR 50.59, "Changes, Tests, and Experiments," for the failure to perform a written evaluation, which provided the bases for the determination that a change did not require a license amendment. Specifically, the licensee failed to provide a basis for not applying for a license amendment associated with a modification of the residual heat removal pump casing drain lines. The finding was entered into the licensee's corrective action program to: (1) stage a hose and pipe couplings to support venting at the residual heat removal pump casing vent; (2) create a work order request to flush flow through the abandoned drain lines that were cut from the pump casing vent to show the lines could still pass water; (3) develop an alternate means to accomplish this activity; and (4) evaluate the change.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating System cornerstone attribute of equipment performance and affected the cornerstone objective of ensuring the capability and availability of systems that respond to initiating events to prevent undesirable consequences. Violations

of 10 CFR 50.59 are dispositioned using the traditional enforcement process instead of the significance determination process because they are considered to be violations that potentially impede or impact the regulatory process. The finding screened as of very low safety significance (Green) using a Phase II evaluation. The inspectors did not identify a cross-cutting aspect associated with this finding because the finding was not confirmed to reflect current performance due to the age of the performance deficiency.

Inspection Report# : [2012008](#) (*pdf*)

Significance:  Jun 01, 2012

Identified By: NRC

Item Type: FIN Finding

10 CFR 50.59 evaluation for modification of RHR pump casing drain lines was not performed

The inspectors identified a finding of very low safety significance and associated Severity Level IV violation of 10 CFR 50.59, “Changes, Tests, and Experiments,” for the failure to perform a written evaluation, which provided the bases for the determination that a change did not require a license amendment. Specifically, the licensee failed to provide a basis for not applying for a license amendment associated with a modification of the residual heat removal pump casing drain lines. The finding was entered into the licensee’s corrective action program to: (1) stage a hose and pipe couplings to support venting at the residual heat removal pump casing vent; (2) create a work order request to flush flow through the abandoned drain lines that were cut from the pump casing vent to show the lines could still pass water; (3) develop an alternate means to accomplish this activity; and (4) evaluate the change.

The performance deficiency was determined to be more than minor because it was associated with the Mitigating System cornerstone attribute of equipment performance and affected the cornerstone objective of ensuring the capability and availability of systems that respond to initiating events to prevent undesirable consequences. Violations of 10 CFR 50.59 are dispositioned using the traditional enforcement process instead of the significance determination process because they are considered to be violations that potentially impede or impact the regulatory process. The finding screened as of very low safety significance (Green) using a Phase II evaluation. The inspectors did not identify a cross-cutting aspect associated with this finding because the finding was not confirmed to reflect current performance due to the age of the performance deficiency.

Inspection Report# : [2012008](#) (*pdf*)

Significance:  Jun 01, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Procedure for RCS Vacuum Fill During Reduced Inventory Operations

The inspectors identified a finding of very low safety significance and associated Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” for failure to establish procedures for reduced inventory operations that were appropriate to preclude air entrainment into Residual Heat Removal (RHR) and Reactor Coolant Systems (RCS). Specifically, a procedure allowed operation of RHR while in reduced inventory operations with a minimum RCS level and maximum pump flowrate combination that was determined to result in air-entrainment vortices. The finding was entered into the licensee’s corrective action program to place an administrative hold to the procedure until proper documentation is revised and updated and to revise the procedure to require stricter use of high accuracy level instrumentation.

The performance deficiency was determined to be more than minor because it was associated with the initiating event cornerstone attribute of procedure quality and affected the cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown operations. The finding screened as of very low safety significance (Green) using a Phase II evaluation. The inspectors did not identify a

cross-cutting aspect associated with this finding because the finding was not confirmed to reflect current performance due to the age of the performance deficiency.

Inspection Report# : [2012008](#) (*pdf*)

Barrier Integrity

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

Significance: N/A Sep 30, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Procedures for Implementation of Annulus Cooling to Remain in a Analyzed Thermal Condition

A Severity Level IV NCV of very low safety significance of Title 10 of the Code of Federal Regulations (CFR) Part 72.150, "Instructions, Procedures, and Drawings," was identified by the inspectors for the failure of the licensee to have procedures in place to ensure that the design basis peak fuel cladding temperature limit would not be exceeded during dry cask canister processing operations. The licensee took appropriate actions prior to conducting evolutions that may have challenged these limits. This has been documented in the licensee's corrective action program as Action Request (AR) 2012 9676.

Consistent with the guidance in Section 2.2 of the NRC Enforcement Manual, Independent Spent Fuel Storage

Installation (ISFSIs) are not subject to the Reactor Oversight Process enforcement and, thus, traditional enforcement will be used for these facilities. Therefore the violation was dispositioned using the traditional enforcement process using Section 2.3 of the Enforcement Policy. The violation was determined to be of more than minor significance using IMC 0612, "Power Reactor Inspection Reports," Appendix E, "Examples of Minor Issues," Example 3i, since the bounding conditions for the analyzed thermal condition was not reflected in the procedures to perform the port cap repair. Specifically, the licensee's lack of evaluation did not ensure spent fuel cladding temperatures during canister processing operations would remain less than Spent Fuel Storage and Transportation Interim Staff Guidance 11, "Cladding Considerations for the Transportation and Storage of Spent Fuel," safety limits. The inspectors determined that that the violation could be evaluated using Section 6.5.d.2 of the NRC Enforcement Policy, as a Severity Level IV violation, in that the licensee failed to establish, maintain, or implement adequate controls to ensure that the replacement of the port cap was performed under conditions bounded by a thermal analysis that ensured the integrity of the fuel would be maintained during the repair. Because the finding is associated only with traditional enforcement, there is not an associated cross cutting aspect.

Inspection Report# : [2012004](#) (*pdf*)

Last modified : November 30, 2012