D.C. Cook 1
2Q/2014 Plant Inspection Findings

Initiating Events

Significance: G Mar 31, 2014
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Failure to Establish Procedures for Vacuum Fill
. A finding and associated non-cited violation of technical specification (TS) 5.4.1, Procedures, self revealed pertaining to establishing and maintaining procedures to ensure reliable indication of reactor vessel level during reduced RCS inventory and vacuum fill operations. Specifically, the licensee failed to include in procedures for vacuum fill methods to ensure the level detection system sensing lines were vacuum tight and to include provisions to normalize level indications. During the vacuum fill evolution for Unit 1, the licensee made 5 attempts to draw vacuum because of diverging level indications. The additional time spent in reduced inventory as well as the additional drain downs resulted in increased plant risk. As immediate corrective actions, the licensee corrected the leaking fitting, normalized level readings, and completed the vacuum fill evolution. The licensee has entered this issue into the corrective action program (CAP) as action request (AR) 2013-6907.

The inspectors concluded the finding was more than minor because it adversely affected the Initiating Event cornerstone objective of limiting the likelihood of events that upset plant stability while shutdown. Specifically, the issue impacted the Procedure Quality attribute. Based on the screening criteria of IMC 0609, the inspectors and regional SRA concluded a phase 2 or 3 evaluation was needed. The Office of Nuclear Reactor Regulatory (NRR) performed a phase 3 assessment and estimated the conditional core damage probability at 5.9E 7. Therefore, the finding is of very low safety significance (Green). The finding included a cross-cutting aspect of H.9, Training, in the human performance area because the licensee lacked understanding of the precision level instruments.

Inspection Report# : 2014002 *(pdf)*

Significance: G Mar 31, 2014
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
Failure to Establish Procedures for Vaccuum Fill
A finding and associated non-citied violation of TS 5.4.1, Procedures, self revealed pertaining to establishing and maintaining procedures to ensure reliable indication of reactor vessel level during reduced RCS inventory and vacuum fill operations. Specifically, the licensee failed to include in procedures for vacuum fill methods to ensure the level detection system sensing lines were vacuum tight. Although the licensee implemented some corrective actions prior to the scheduled vacuum fill evolution, the actions taken failed to prevent recurrence. During the vacuum fill evolution for Unit 2, the licensee made 2 attempts to draw vacuum because of diverging level indications. The additional time spent in reduced inventory as well as the additional drain down resulted in increased plant risk. As immediate corrective actions, the licensee corrected the leaking fitting, normalized level readings, and completed the vacuum fill evolution. The licensee has entered this issue into the CAP as AR 2013-18146.

The inspectors concluded the finding was more than minor because it adversely affected the Initiating Event cornerstone objective of limiting the likelihood of events that upset plant stability while shutdown. Specifically, the

issue impacted the Procedure Quality attribute. Based on the screening criteria of IMC 0609, the inspectors and regional SRA concluded a phase 2 or 3 evaluation was needed. Since the issue in Unit 2 was bounded by the phase 3 assessment performed for Unit 1, the inspectors and SRA concluded the finding was of very low safety significance, (Green). The finding included a cross-cutting aspect of P.3, Resolution, in the corrective action area because the licensee failed to implement corrective actions that prevented recurrence.

Inspection Report# : 2014002 *(pdf)*

Significance: G Sep 30, 2013
Identified By: Self-Revealing
Item Type: FIN Finding
Improper Setting in Digital Control System
A self revealed finding of very low safety significance (Green) occurred because the licensee failed to adjust a key parameter, (KWINIT), in the turbine digital control system after replacing and calibrating the turbine control system linear variable differential transformers. Vendor documents for the generator recommended an initial load of 2 to 5 percent of full load when the turbine generator is synchronized to the grid. For Cook Unit 1, this equates to 22 to 54 megawatts. However, the licensee did not adjust the KWINIT parameter, which is used to determine control valve position, after the turbine control system linear variable differential transformers were replaced and subsequently calibrated using a tighter tolerance than previously used. Consequently, when the turbine generator was synchronized to the grid the turbine control valves opened more than on previous synchronizations, which resulted in picking up excessive load. As a result, reactor cooling system (RCS) temperature momentarily lowered below the minimum temperature for criticality. As an immediate corrective action, the licensee stabilized the plant by taking manual control of the turbine generator. The licensee has entered the condition into the corrective action program (CAP) as AR 2013 7472.

Using IMC 0612 the inspectors concluded that this issue was more than minor because it is associated with the equipment performance attribute in the Initiating Events Cornerstone and it adversely impacted the cornerstone objective of limiting the likelihood of events that upset plant stability. Using IMC 0609, Appendix A, Exhibit 1, the inspectors concluded the finding was of very low safety significance (Green) because it did not cause both a reactor trip and a loss of mitigating equipment. The inspectors concluded the finding had an aspect in the Work Control component of the Human Performance cross-cutting area because the licensee did not coordinate work activities to address the impact of changes to work activities on plant performance

Inspection Report# : 2013004 *(pdf)*

Significance: G Jul 26, 2013
Identified By: NRC
Item Type: NCV NonCited Violation
Evaluate Routing of Fiber Optic Cable in Combustible Exclusion Zone.
The inspectors identified a finding of very low safety significance (Green) and associated NCV of Technical Specification 5.4.1.d, “Procedures,” for the failure to control combustibles in accordance with a Fire Protection Program (FPP). Specifically, the licensee failed to obtain the FPP engineering review when they routed a fiber optics cable in a combustible exclusion area which was designated to establish separation between two fire areas required per 10 CFR Part 50, Appendix R. A twenty feet separation space with no intervening combustibles was located between Fire Areas AA36 and AA42 in the Auxiliary Building at 609 foot elevation. The licensee subsequently entered the issue into their Corrective Action Program and performed a preliminary evaluation of this issue and concluded that the cable routing did not affect the requirements of the FPP.

The inspectors determined that this finding was more than minor because if left uncorrected, it would become a more

significant safety concern. Specifically, the licensee's failure to perform an engineering evaluation when introducing combustibles in the combustible exclusion zone or safety-related areas could potentially affect the validity of future evaluations. The inspectors determined that the finding screened as having very-low-safety significance in Task 1.3.1 of IMC 0609, Appendix F. This finding has a cross-cutting aspect in the area of human performance, work control, because the licensee failed to coordinate the routing of the fiber optics cable through a combustible exclusion area with the Fire Protection Engineer (FPE).

Inspection Report# : 2013009 *(pdf)*

Mitigating Systems

Significance: G Jun 30, 2014
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Control Nonconforming Delivery Valve Holders on Emergency Diesel Generators
The inspectors identified a finding of very low safety significance with an associated non-citied violation of 10 CFR 50, Appendix B, Criterion XV, Nonconforming Materials, Parts, or Components, for the failure to prevent nonconforming parts from being used on the emergency diesel generators (EDGs). In 2006, the licensee changed the material used to manufacture delivery valve holders to address cracking of the component. However, the licensee failed to ensure all delivery valve holders were replaced. In 2009 and in 2013, the licensee identified installed delivery valve holders made from the susceptible material. In addition, the licensee determined in 2013 that a manufacturing defect impacted a lot of delivery valve holders. The licensee failed to control the non conforming components and installed one in an EDG. In both cases, although the licensee found the discrepant parts, the site failed to explore broader programmatic issues with nonconforming material control or shortfalls in the root cause evaluation done to address previous issues with cracking. As corrective actions, the licensee has since replaced all suspect pumps and generated action requests to assess programmatic issues with nonconforming material control.

The inspectors determined the finding to be more than minor because it adversely affected the Design Control attribute of the Mitigating Systems cornerstone. Specifically, allowing nonconforming parts to be installed on safety-related equipment without proper controls or review adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The issue screened as Green, or very low safety significance, utilizing IMC 0609 Attachment 4, Initial Characterization of Findings. Specifically, per Exhibit 2, the finding was determined to be a deficiency affecting the design or qualification of a mitigating system, structure or component where operability was maintained. The inspectors determined the finding had an associated cross cutting aspect in the area of Problem Identification and Resolution. Specifically, programmatic issues associated with material control were not identified for resolution by the corrective action program.
Inspection Report# : 2014003 *(pdf)*

Significance: N/A Jun 30, 2014
Identified By: NRC
Item Type: NCV NonCited Violation
Missed Event Notification
The inspectors identified a Severity Level IV non-citied violation of 10 CFR 50.72, "Immediate Notification Requirements for Operating Nuclear Reactors," for the licensee's failure to make required event notifications within the specified time following the discovery of a condition which required an event report. Specifically, a member of the public informed the Berrien County Dispatcher about a sounding siren. The dispatcher notified the site; however, the

license failed to notify the NRC. Because of the age of this issue; the licensee did not make a late report. Since 2012, the licensee has conducted training regarding notifications for alarming sirens.

The inspectors determined that the licensee's failure to submit an event notification within the required time was a violation of 10 CFR 50.72(b)(2)(xi). Since the failure to submit a required event report may impact the NRC's ability to regulate, the violation

was evaluated using Section 2.2.4 of the NRC's Enforcement Policy. Per the enforcement policy, this violation was of Severity Level IV. The inspectors concluded the reactor oversight process aspects of the finding were minor; therefore there is no cross-cutting aspect.

Inspection Report# : 2014003 *(pdf)*

Significance: G Jun 30, 2014
Identified By: NRC
Item Type: FIN Finding
Deficient Annunciator/Plant Process Computer Design
The inspectors identified a finding of very low safety significance associated with the licensee's failure to design the annunciator and plant process computer (PPC) systems in accordance with design specifications. Specifically, the licensee failed to design the systems to preclude loss of the system on a single active failure. In part,
this issue would result in loss of the annunciator and PPC systems following a loss of offsite power. The licensee recognized a weakness during a loss of power (LOP)/loss-of-coolant accident (LOCA) testing when the annunciator system failed about 15 minutes into the test. Although the licensee corrected the condition related to rack fans, the inspectors identified a similar issue associated with the server rooms. The annunciator and PPC systems do not have regulatory requirements; therefore this finding did not include a violation. The licensee has modified the ventilation system to provide cooling and assure operation following a loss of offsite power.

The inspectors determined that failure to design and install the annunciator system in accordance with the design description of the applicable Engineering Calculation
(EC) was a performance deficiency that warranted a significance evaluation. Using
IMC 0612, Appendix B, issue screening, the inspectors determined the finding was more than minor because it is associated with mitigating system cornerstone objective of ensuring the availability and reliability of systems that respond to initiating events and is related to the human performance attribute, post event. Specifically, the annunciator and PPC systems aid human performance by alerting operators to degrading plant and equipment conditions. Using IMC 0609, Significance determination process for at power findings, the inspectors determined that the condition would result in loss of the annunciator and PPC function during some accident scenarios. Therefore the inspectors determined a detailed risk analysis was needed and forwarded the issue to the Region III Senior Reactor Analyst (SRA). The Region III SRA performed a detailed risk evaluation for the finding. To perform the risk evaluation, the SRA determined that the reliability of some operator actions modeled in the NRC's Standardized Plant Analysis Risk (SPAR) model for Donald C. Cook would be negatively impacted if annunciators were not available to cue operators to take action. The delta core damage frequency calculated was 5.5E 7/yr, which represents a finding of very low safety significance (Green). The SRA determined delta large early release frequency was minor as well. Because the licensee failed to identify the extent of condition, the inspectors concluded that the finding included cross cutting aspect, PI.2 Evaluation, in the area of problem identification and resolution.

Inspection Report# : 2014003 *(pdf)*

Significance: G Mar 31, 2014

Identified By: NRC
Item Type: NCV NonCited Violation
Degraded Latch Prevents Closure of Fire Door
The inspectors identified a finding of very low safety significance (Green) and associated non-citied violation of License Condition 2.C.4 for Unit 1, for the licensee's failure to ensure that a fire door would be closed at the time of a fire. Specifically, fire door 1 DR AUX387 was found with a degraded latch that prevented the door from closing. Donald C. Cook is required to comply with the National Fire Protection Association (NFPA) 80, 1970 which requires a closing device to ensure fire doors close and latch at the time of a fire. Contrary to this requirement, fire door 1 DR AUX 387 would not close and latch because the latching mechanism for the inactive leaf had failed in a manner preventing the door from closing. As immediate corrective action, the licensee started hourly fire watches on the door and performed an interim repair to restore the door to a functional status. The licensee has entered the condition into the corrective action program as AR 2014 0802.

The inspectors determined the finding was more than minor because it was associated with the Mitigating Systems cornerstone attribute of Protection Against External Events (Fire) and adversely affected the cornerstone objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Specifically, the licensee failed to maintain door 387 such that it could perform its required function as a 3 hour fire barrier. Using IMC 0609, Appendix F, the inspectors concluded that the finding was of very low safety significance (Green) because the fire loading was below the screening criteria of 120,000 btu/ft2. The inspectors concluded the finding included a cross cutting aspect of H.5, Work Planning, in the area of human performance because the licensee did incorporate risk insights.

Inspection Report# : 2014002 *(pdf)*

Significance: G Mar 27, 2014
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Evaluate the Adverse Effects of TRM Section Deletion
The inspectors identified a Severity Level IV Non-Cited Violation 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 the deletion of Technical Requirement Manual, Section 8.4.3, "ASME Code Class 1, 2, and 3 Components," did not require a license amendment. Specifically, the licensee did not evaluate the adverse effects of the change. The licensee entered this issue into their Corrective Action Program and initiated corrective actions to implement compensatory measures in accordance with the deleted section of the Technical Requirement Manual.

The performance deficiency was determined to be more than minor because, if left uncorrected, it would become a more significant safety concern. In addition, the associated traditional enforcement violation was more than minor because the inspector could not reasonably determine that the changes would not have ultimately required NRC prior approval. The finding was of very low safety significance (Green) based on the inspectors' review of corrective action documents associated with non-conforming conditions related to structural integrity of ASME components generated since the TRM removal. Specifically, the inspectors used the two most bounding cases for the evaluation and determined the issues did not result in the loss of operability or functionality, represent a loss of system and/or function, represent an actual loss of function exceeding the Technical Specification allowed outage time, or represent an actual loss of function of non-Technical Specification equipment designated as high safety significant in accordance with the licensee's Maintenance Rule Program. This finding had a cross-cutting aspect in the area of problem identification and resolution because the licensee did not take effective corrective actions to address the issue. Specifically, the licensee identified that they had not evaluated the adverse effects of deleting Section 8.4.3 of the Technical Requirement Manual and, as a result, they
performed a 50.59 evaluation. However, the evaluation did not address these adverse effects.

Inspection Report# : 2014007 *(pdf)*

Significance: G Mar 27, 2014
Identified By: NRC
Item Type: FIN Finding
Failure to Evaluate the Adverse Effects of TRM Section Deletion
The inspectors identified a Severity Level IV Non-Cited Violation 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 the deletion of Technical Requirement Manual, Section 8.4.3, "ASME Code Class 1, 2, and 3 Components," did not require a license amendment. Specifically, the licensee did not evaluate the adverse effects of the change. The licensee entered this issue into their Corrective Action Program and initiated corrective actions to implement compensatory measures in accordance with the deleted section of the Technical Requirement Manual.

The performance deficiency was determined to be more than minor because, if left uncorrected, it would become a more significant safety concern. In addition, the associated traditional enforcement violation was more than minor because the inspector could not reasonably determine that the changes would not have ultimately required NRC prior approval. The finding was of very low safety significance (Green) based on the inspectors' review of corrective action documents associated with non-conforming conditions related to structural integrity of ASME components generated since the TRM removal. Specifically, the inspectors used the two most bounding cases for the evaluation and determined the issues did not result in the loss of operability or functionality, represent a loss of system and/or function, represent an actual loss of function exceeding the Technical Specification allowed outage time, or represent an actual loss of function of non-Technical Specification equipment designated as high safety significant in accordance with the licensee's Maintenance Rule Program. This finding had a cross-cutting aspect in the area of problem identification and resolution because the licensee did not take effective corrective actions to address the issue. Specifically, the licensee identified that they had not evaluated the adverse effects of deleting Section 8.4.3 of the Technical Requirement Manual and, as a result, they performed a 50.59 evaluation. However, the evaluation did not address these adverse effects.

Inspection Report# : 2014007 *(pdf)*

Significance: G Mar 27, 2014
Identified By: NRC
Item Type: NCV NonCited Violation
Inadequate Heat Exchanger Inspection Procedure
The inspectors identified a finding having very low safety significance and a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the licensee's failure to establish inspection procedures that were appropriate for the circumstances for the component cooling water heat exchangers. Specifically, the inspection procedure did not include instructions to verify the as-found essential service water flow rate through the heat exchangers met the minimum required value, which was a prerequisite for the licensee's inspection methodology. This finding was entered into the licensee's Corrective Action Program with a proposed action to revise the affected procedure.

The performance deficiency was determined to be more than minor because, if left uncorrected, it has the potential to lead to a more significant safety concern. The finding screened as of very low safety significance (Green) because it did not result in the loss of operability or functionality. Specifically, the licensee reviewed recent heat exchanger inspection results and reasonably determined the as-found macro fouling conditions did not impacted operability. 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# : 2014007 *(pdf)*

Significance: G Sep 30, 2013
Identified By: Self-Revealing
Item Type: FIN Finding
Faulted 4KV Qualified Off-site Circuit
A finding of very low safety significance was self-revealed on April 24, 2013, because the licensee failed to comply with requirements contained in procedure PMI 7030, "Corrective Action Program," prior to restoring power to the Unit 1 reserve auxiliary transformer CD-101. Specifically, following multiple trips of supply breaker 12 CD, the licensee failed to correct an issue, defined as a condition adverse to quality in their corrective action program, prior to restoring power to the transformer on April 21. This ultimately led to the supply breaker to the Unit 1 and 2 reserve auxiliary transformers opening due to a faulted cable. No violations of NRC requirements were identified for this issue since the degraded cable was on a non-safety related portion of the electrical system. The licensee entered the issue into the corrective action program as AR 2013 6194. The corrective actions for this issue included replacing the faulted cables and testing the unaffected cables.

Using IMC 0612, the inspectors concluded that the issue was more than minor because it was associated with the equipment performance attribute of the Mitigating System Cornerstone and it adversely impacted the cornerstone objective of ensuring the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the degraded insulation failed causing a loss of the qualified circuit; a condition which lessened the likelihood of its availability for some events. Using IMC 0609, Appendix A, Section 6, a detailed risk evaluation, assuming inoperability of four days, determined the delta Core Damage Frequency was less than 1E 6; therefore the finding screens as very low safety significance (Green). The inspectors concluded this finding was associated with an aspect in Operating Experience component of the Problem Identification and Resolution cross-cutting area because the licensee did not implement and institutionalize operating experience information from the Electric Power Research Institute (EPRI) and Institute of Electrical and Electronics Engineers (IEEE) into processes and procedures.

Inspection Report# : 2013004 *(pdf)*

Significance: G Jul 26, 2013
Identified By: NRC
Item Type: NCV NonCited Violation
Propped Open Fire Doors Required Manual Actuation of the CO2 System to Close
The inspectors identified a finding of very low safety significance (Green) and associated NCV of the D. C. Cook Nuclear Power Plant facility operating licensee conditions for the Fire Protection Program for the licensee's failure to ensure fire doors that were propped open will automatically close at time of a fire. Specifically, Fire Doors 1-DR-AUX471 and 2-DR-AUX472 were found propped open and held by fusible links and CO2 devices. In the event of a fire in either Fire Area AA40 or Fire Area AA43, the associated door would not automatically close due to the location of the fusible link, and the CO2 pop-off devices would activate when the CO2 System is manually actuated. The licensee subsequently entered the issue into their Corrective Action Program and established fire tours of the affected fire areas.

The inspectors determined that this finding was more than minor because the failure to ensure the propped open fire doors would automatically close in the event of a fire did not ensure that the fire would not spread between the adjacent fire areas separated by the doors and could have potentially compromised the ability to safely shutdown the plant. Based on the Detailed Risk-Evaluation completed by the Region III Senior Reactor Analysts (SRA), the

inspectors determined the finding was of very low safety significance (Green) because the resulting change in the Core Damage Frequency (?CDF) was less than 1E-6/yr. The finding did not have a cross-cutting aspect because it was not reflective of current performance.

Inspection Report# : 2013009 *(pdf)*

Significance: G Jul 26, 2013
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Assure that a Second Fire Pump would Start upon Demand at the Setpoint
The inspectors identified a finding of very low safety significance (Green) and associated NCV of the D. C. Cook Nuclear Power Plant facility operating licensee conditions for the Fire Protection Program for the licensee's failure to ensure fire doors that were propped open will automatically close at time of a fire. Specifically, Fire Doors 1-DR-AUX471 and 2-DR-AUX472 were found propped open and held by fusible links and CO2 devices. In the event of a fire in either Fire Area AA40 or Fire Area AA43, the associated door would not automatically close due to the location of the fusible link, and the CO2 pop-off devices would activate when the CO2 System is manually actuated. The licensee subsequently entered the issue into their Corrective Action Program and established fire tours of the affected fire areas.

The inspectors determined that this finding was more than minor because the failure to ensure the propped open fire doors would automatically close in the event of a fire did not ensure that the fire would not spread between the adjacent fire areas separated by the doors and could have potentially compromised the ability to safely shutdown the plant. Based on the Detailed Risk-Evaluation completed by the Region III Senior Reactor Analysts (SRA), the inspectors determined the finding was of very low safety significance (Green) because the resulting change in the Core Damage Frequency (?CDF) was less than 1E-6/yr. The finding did not have a cross-cutting aspect because it was not reflective of current performance.

Inspection Report# : 2013009 *(pdf)*

Significance: G Jul 26, 2013
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Incorporate Required Shutdown Guidance into Fire Response Procedure.
The inspectors identified a finding of very low safety significance (Green) and associated NCV of Technical Specification 5.4.1.d, “Procedures,” for the licensee's failure to provide adequate guidance required for safe shutdown in the response procedures. Specifically, the licensee failed to provide adequate guidance to reset the associated Emergency Diesel Generator (EDG) lockout relays to support EDG operation, which were required to power safe shutdown components to achieve shutdown in the event of a fire in either Fire Zones 79 or 85 for Units 1 or 2 respectively. The licensee subsequently entered the issue into their Corrective Action Program and added steps into the fire response procedure.

The inspectors determined that this finding was more than minor because the failure to provide adequate procedural guidance to reset the EDG lockout relays could have potentially compromised the ability to safely shutdown the plant in the event of a fire. Based on the Detailed Risk Evaluation completed by the Region III SRA, the inspectors determined the finding was of very low safety significance (Green) because the resulting change in the Core Damage Frequency (?CDF) was equal to 4.17E-9/yr. The finding did not have a cross-cutting aspect because it was not reflective of current performance.
Inspection Report# : 2013009 *(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

Last modified : August 29, 2014