

D.C. Cook 2

1Q/2015 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance: G Mar 31, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Account for Essential Service Water Strainer Debris Loading and Isolation Valve Gross Leakage

The inspectors identified a finding of very-low safety significance, and associated NCV of Title 10 Code of Federal Regulations (CFR) Part 50, Appendix B, Criterion III, “Design Control,” for the failure to account for the effects of the maximum strainer debris loading, and isolation valve gross leakage in the emergency service water flow balance testing and hydraulic analysis. As a result, the hydraulic calculations and flow balance test acceptance criteria overestimated the system flow capacity and, thus, did not ensure the capability of the system to meet its flow demand. The licensee entered this finding into their Corrective Action Program (CAP) to evaluate and resolve, including revising the affected calculations and test procedures.

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. The finding screened as very-low safety significance (Green) because it did not result in the loss of operability or functionality. Specifically, the licensee reviewed the latest flow balance test results and determined sufficient margin existed between the as-found value and the minimum required flowrate value to account for the effects of the strainer maximum debris loading. In addition, the licensee performed a historical review which did not find instances of isolation valve leakage in excess of the remaining margin. The inspectors 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# : [2015001](#) (*pdf*)

Significance: G Mar 31, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Ensure NFPA-805 Sprinkler System Demands Met

The inspectors identified a finding of very-low safety significance with an associated NCV of the Donald C. Cook Operating Licenses for the failure to ensure minimum fire sprinkler head pressure would be available for all required sprinkler systems. Specifically, the licensee transitioned to National Fire Protection Association (NFPA)–805 fire regulations without assessing the impact of a previously identified NRC finding regarding the starting setpoints of the fire pumps. The licensee changed the pressure setpoints such that it became possible only one pump would be automatically started during certain fire scenarios. For those situations, the NRC identified that sufficient pressure may not be available to all required sprinklers per the requirements of NFPA 13, “Standard for the Installation of

Sprinkler Systems.” The licensee corrected the issue by performing calculations to demonstrate one pump would be sufficient. However, when the licensee subsequently transitioned to NFPA–805 fire regulations (which added more required sprinklers and continued compliance to NFPA 13), the licensee did not review the previous issue to ensure sufficient pressure would be maintained with the newly required systems. When identified by the NRC, the licensee performed additional calculations to demonstrate that one pump could provide sufficient pressure based on current pump performance. However, the licensee also discovered that current surveillance procedures for the pumps were inadequate, in that, for the full range of allowed performance; pumps could pass the tests yet be below the requirements of the new systems. The licensee initiated action to change the procedures.

The finding was more than minor because adversely affected the Protection Against External Factors (Fire) attribute of the Mitigating Systems Cornerstone. The licensee failed to incorporate previous issues with fire pump starting setpoints while validating fire system performance under the new NFPA–805 fire regulations and that failure impacted the design control attribute of the mitigating system cornerstone. Specifically, the licensee did not ensure that at least 7 psi would be available at all required sprinkler heads, as required by NFPA 13. The inspectors determined the finding had an associated cross-cutting aspect in the Problem Identification and Resolution area, specifically, P.5, Operating Experience. The licensee did not effectively evaluate and implement relevant internal operating experience with respect to the adoption of new fire protection regulations. As a result, a previously identified NRC issue was not assessed with regard to new demands on the fire protection system.

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

Significance: G Mar 31, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

Auxiliary Feedwater Pump Declared Operable Without All Post-Maintenance Testing Complete

The inspectors identified a finding of very-low safety significance with an associated NCV of TS 5.4.1.a, “Procedures,” for the failure to perform all required post-maintenance testing (PMT) before declaring the Unit 1 West Motor-Driven Auxiliary Feedwater Pump operable following maintenance. Following work to repair degraded room cooler piping for the pump, Essential Service Water (ESW) was restored to the piping. A report was made to the control room that no leakage was identified. During the following shift, after vibration testing was complete, operations staff reviewed the status of other maintenance tasks. In the electronic work management system, it was noted that a task to perform a leak check was in “Finished” status. Based on this review and the earlier report of no leaks, the associated Auxiliary Feedwater (AFW) pump was declared operable. However, approximately one hour later, the control room received a report that there were leaks from the pump’s room cooler. Subsequent investigation by the licensee revealed that when the pump was declared operable, the American Society for Mechanical Engineers (ASME) Code-required leakage check had not been completed yet. The task for the leak check had actually been closed to another “contingency” task, which the operations staff did not believe was applicable when declaring the pump operable. Contrary to procedure PMP–2291–WMP–001, “Work Management Process Flowchart,” the licensee did not ensure PMTs were complete and adequate for the work scope. The licensee declared the cooler and the pump inoperable and addressed the leakage.

The finding is more than minor because it adversely affected the equipment performance attribute of the Mitigating Systems Cornerstone, and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee returned the AFW system to an operable status prior to completing PMT. Further, the inspectors noted other recent examples of safety-related equipment that had been declared operable before the appropriate PMTs had been performed, indicating a more programmatic issue. In one case, new welds on charging system piping did not receive the ASME-Code inspections prior to the system being restored. In another instance, ESW flow was prematurely restored to a new control room chiller. As a result, a train of ESW and an associated AFW cooler became inoperable. The finding screened as Green, or very-low safety significance, because it did not represent an actual loss of function beyond

Technical Specification allowed outage times. The finding had an associated cross-cutting aspect in the area of Human Performance; specifically, the aspect of H.4, "Teamwork," because the performance deficiency occurred, in part, due to communication issues between and within organizations.

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

Significance:  Dec 31, 2014

Identified By: Self-Revealing

Item Type: NCV Non-Cited Violation

Unplanned Inoperability of the AB Fuel Oil Storage Tank Durung Maintenance

A finding of very low safety significance, with an associated non-cited violation of Technical Specification (TS) 5.4, "Procedures," was self revealed when a vacuum was inadvertently drawn on the AB Fuel Oil Storage Tank (FOST) during preparations for surveillance activities. The vacuum caused an indication of lowering level in the tank, alarms, and an unplanned TS Limiting Condition for Operation (LCO) action statement entry. The licensee was performing work activities in preparation for a leak test of the FOST. The general sequence of activities should have been a loosening of the vent filter for the tank, a transfer of fuel from the FOST to the Emergency Diesel Generator (EDG) day tanks, removal of the FOST from service, and finally removal of the vent filter so test equipment could be connected to the tank. Due to ambiguous work instruction steps and activities not being adequately controlled to ensure the proper sequence occurred, workers first removed the vent filter completely and placed a Foreign Material Exclusion (FME) bag over the vent. When operators later transferred fuel, a vacuum was drawn in the tank and level appeared to be going down. Utilizing a manual method of level measurement (which had also been affected by the vacuum), operators determined fuel was actually being lost from the tank to the environment. Shortly thereafter, the bag was found and removed, and level restored to normal (there was no actual loss of fuel). Technical Specification 5.4, "Procedures," states, in part, that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide 1.33. Regulatory Guide 1.33 states, in part, that maintenance that can affect the performance of safety related equipment should be properly preplanned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances. Contrary to these requirements, the FOST surveillance was performed with inadequate instructions and was not coordinated appropriately. The licensee entered the issue into the CAP and performed a root cause analysis.

The performance deficiency was more than minor because it adversely impacted the Configuration Control attribute of the Mitigating Systems cornerstone, whose objective is ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding screened as Green, or very low safety significance, utilizing IMC 0609, Appendix A, "The Significance Determination Process for Findings at Power." Specifically, all questions were answered 'no' under Section A of Exhibit 2 for Mitigating Systems, since that was the affected cornerstone. The FME bag was installed, which rendered the AB FOST inoperable, for approximately 16 hours. This was less than the TS allowed outage time of 48 hours. The finding had an associated cross cutting aspect in the human performance area, specifically, H.5, Work Management. Work activities should be planned, controlled, and executed with nuclear safety as the overriding priority. Contrary to the tenets of the cross cutting aspect, the work was planned and executed with inadequate work instructions. Further, there was a lack of coordination between a number of work groups and activities associated with the test.

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

Significance:  Sep 30, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Follow Operability Determination Procedure

A finding of very low safety significance with an associated non-cited violation of 10 CFR 50, Appendix B, Criterion V, Procedures, was identified by the inspectors for the failure to follow the Operability Determination Procedure, PMP-7030-OPR-001. Specifically, for instances of high oil level in the turbine-driven auxiliary feedwater (TDAFW) pump governor sight-glasses and high water concentrations in motor-driven auxiliary feedwater (MDAFW) pump bearings, components were assumed to be operable without supporting technical justification. Further, past operability assessments were not assigned for the conditions. During a review of action requests (AR's) associated with the auxiliary feedwater (AFW) system, the inspectors identified four instances since 2008 when the licensee identified that oil level was high-out-of-sight in a TDAFW pump governor sight-glass. The licensee did not assess certain impacts on operability even though several references identified potential adverse impacts with the noted oil level. The operations logs set an appropriate level as being between half-full (minimum) and "visible" in the sight-glass (maximum). The logs also contained a note stating if level was visible in the sight-glass, the pump was operable. Additionally, the vendor manual and a maintenance procedure cautioned against the level being high in the system. No documentation was provided that addressed these concerns. In regards to the MDAFW pumps, the inspectors identified AR's documenting periodic instances of high water concentrations in the pump bearings. When subsequent licensee analysis confirmed significantly high concentrations of water, no past operability assessments were done to assess any impacts the moisture may have had. In each instance of a high oil level or high moisture result, the licensee corrected the condition after discovery. The licensee also generated an AR to explore the inspectors' concerns with regard to a lack of documented justification for operability while the conditions existed.

The issue was more than minor because it adversely affected the Equipment Performance attribute of the Mitigating Systems Cornerstone. Specifically, the failure to properly assess the operability of safety related components (with all relevant information) can impact the availability, reliability, and capability of systems that respond to initiating events, in that components assumed to be operable may actually be in a condition where they cannot reliably perform their safety functions. Further, if left uncorrected, the issue could become a more significant safety concern as future operability determinations could also be deficient. The inspectors were also informed by IMC 0612, Appendix E, examples 3.j and 3.k, in that equipment inoperability is not a prerequisite for an issue being more than minor. Per the guidance, the inspectors determined reasonable doubt existed regarding the operability of components. The finding screened as Green, or very low safety significance, because the performance deficiency of failing to follow the Operability Determination procedure did not in itself represent a loss of system and/or function. The inspectors determined the finding had an associated cross-cutting aspect in the area of Problem Identification and Resolution. Specifically, the organization did not thoroughly evaluate issues to ensure resolutions address causes and extent of conditions commensurate with their safety significance (P.2). P.2, Evaluation, aligns with the Safety Culture Common Language attribute of PI.2, Evaluation, outlined in NUREG-2165. Examples under PI.2 include prioritizing and thoroughly investigating issues with regard to their safety significance. The licensee did not address all of the relevant information which could impact the operability determinations associated with the AFW pumps.

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

Significance:  Sep 30, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Classify the Internal Piping in the Auxiliary Feedwater Pump Room Coolers as ASME Code Class 3 Piping

The inspectors identified a finding of very low safety significance (Green) with an associated non-cited violation of 10 CFR 50, Appendix B, Criterion III, for failure to correctly translate regulatory requirements related to the American Society for Mechanical Engineers (ASME) code class boundary to the AFW pump room cooler. Specifically, the licensee failed to classify the internal piping in the AFW pump room coolers as ASME code class 3 piping when it should have been classified as such. As immediate action, the licensee declared the affected room cooler inoperable and repaired the leak. Because of low room temperature, the supported TDAFW pump remained operable.

The inspectors determined that the failure of the licensee to correctly translate regulatory requirements for a safety related system into a drawing, as described in 10 CFR 50, Appendix B, Criterion III, Design Control, was a performance deficiency warranting further evaluation in the Significance Determination Process (SDP). The issue screened as more than minor because it adversely affected the Design Control attribute of the Mitigating Systems cornerstone. Using Appendix A of IMC 0609, the inspectors concluded the finding was of very low safety significance, Green, because the supported AFW system remained operable. Because the performance deficiency occurred in 2000, the finding does not reflect current performance and no cross-cutting aspect exists. Because the violation was of very low safety significance and promptly entered into the licensee's Corrective Action Program (CAP) (AR 2014 7570), and the violation was not repetitive or willful, this violation is being treated as an NCV, consistent with Section of 2.3.2 of the NRC Enforcement Policy.

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

Significance: G Jun 30, 2014

Identified By: NRC

Item Type: NCV Non-Cited 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-cited 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 Non-Cited Violation

Missed Event Notification

The inspectors identified a Severity Level IV non-cited 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:  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*)

Barrier Integrity

Significance:  Mar 31, 2015

Identified By: NRC

Item Type: NCV Non-Cited Violation

Inadequate Acceptance Criteria for Containment Spray Heat Exchanger Inspections

The inspectors identified a finding of very-low safety significance, and associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure to follow the containment spray (CS) heat exchanger inspection procedure. Specifically, the licensee did not develop acceptance criteria applicable for the visual inspection of these heat exchangers. The licensee entered this finding into their Corrective Action Program (CAP) to evaluate and resolve, including developing applicable visual inspection acceptance criteria for the CS heat exchangers.

The performance deficiency was determined to be more than minor because it was associated with the Barrier Integrity cornerstone attribute of structures, systems, components (SSCS), and barrier performance, and adversely affected the cornerstone objective of providing reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) can 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, containment isolation system, or heat removal components, and did not involve an actual reduction in function of hydrogen igniters in the reactor containment. The inspectors determined this finding had an associated cross-cutting aspect in the area of Human Performance because the licensee did not stop when faced with uncertain conditions. Specifically, the licensee did not develop shell-side visual inspection acceptance criteria because they did not challenge the applicability of the guidance contained in their procedures.

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

Significance:  Dec 31, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

Inadequate Review of Radiological Impact of the Removal of the Auxiliary Shield Blocks on the Containment Accident Shield Post LBLOCA

The inspectors identified a non-violation of 10 CFR Part 50, Appendix B, Criterion 3 "Design Control," for the licensee's inadequate radiological review of permanently removing the Auxiliary Missile Blocks (AMBs) from the Unit 1 and Unit 2 containment accident shields. The finding was determined to be more than minor because it was associated with the Barrier Integrity Cornerstone attribute of design control; and adversely affected the cornerstone objective of maintaining radiological barrier functionality of the safety related accident shield. Specifically, the failure to control plant design and adequately evaluate the radiological effects of permanently removing the AMBs from the Unit 1 and Unit 2 containment accident shields did not ensure that the accident shield will provide its design function to ensure safe radiation levels outside the containment building following a maximum design basis accident.

The inspectors evaluated the finding using the Significance Determination Process (SDP) in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings," dated June 19, 2012. Because the finding impacted the Barrier Integrity Cornerstone, the inspectors screened the finding through IMC 0609, Appendix A, "The Significance Determination Process for Findings At Power," dated June 19, 2012, using Exhibit 3, "Barrier Integrity Screening Questions." The finding screened as very low safety significance (Green) because the finding only represented a degradation of the radiological barrier function provided for the Auxiliary Building. The inspectors determined the cause of this finding did not represent current licensee performance and, thus,

no cross-cutting aspect was assigned.

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

Emergency Preparedness

Occupational Radiation Safety

Significance:  Dec 31, 2014

Identified By: NRC

Item Type: NCV Non-Cited Violation

Failure to Identify Deficient Locked High Radiation Area Controls Due to procedure Inadequacy

The inspectors identified a finding of very low safety significance for inadequate procedures used to verify Locked High Radiation Controls in the Unit 2 Containment with an associated non- violation of TS 5.4, “Procedures.” As a result, weekly, from November 1, 2013, to March 2014, multiple Radiation Protection Technicians verified the Unit 2 Upper Containment Cavity Gate was locked; however it did not secure the area against unauthorized access.

The inspectors determined that the performance deficiency was more than minor because if left uncorrected the performance deficiency could lead to a more significant safety concern. Specifically, the failure to identify deficient Locked High Radiation Area (LHRA) controls could result in unintentional exposure to high levels of radiation. The finding was determined to be of very low safety significance because the problem was not an as low as is reasonably achievable (ALARA) planning issue, there was no overexposure, nor substantial potential for an overexposure, and the licensee’s ability to assess dose was not compromised. The inspectors did not identify a corresponding cross cutting aspect for this performance deficiency. The licensee entered the deficiency in their Corrective Action Program as Action Request (AR) 2014 9001 immediately upon discovery and presentation by the inspectors.

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

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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