D.C. Cook 1
3Q/2015 Plant Inspection Findings

Initiating Events

Mitigating Systems

Significance: G Sep 30, 2015
Identified By: NRC
Item Type: NCV Non-Cited Violation
Failure to Evaluate Fire Brigade Fire Fighting Techniques
The inspectors identified a finding and associated non-cited violation of Facility Operating Licenses DPR 58 condition 2.C(4) and DPR 74 Condition 2. C(3)(o), “Fire Protection Program.” Specifically, the licensee failed to identify and subsequently critique the failure of the Fire Brigade and Operations to de energize a battery charger during a fire drill. On August 20, the inspectors observed an unannounced fire drill. In the scenario, the licensee simulated a fire in a nonsafety-related battery charger in the turbine building. The licensee fire brigade and on shift operations personnel responded. During the drill, the licensee failed to simulate securing direct current (DC) power to the battery charger and subsequently failed to critique this issue. The inspectors discussed the DC power issue with the licensee and the licensee agreed that the drill should have evaluated the DC power supply and the fire brigade should have simulated removing the DC power source. The licensee has briefed site personnel on de energizing equipment with multiple power sources and entered the condition into the corrective action program.

The licensee’s failure to demonstrate effective firefighting techniques and subsequent failure to critique the error was a performance deficiency of Green significance. The performance deficiency was more than minor because it was associated with the protection against external factors attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding screened as green using Inspection Manual Chapter 0609 Appendix M with insight from Appendix F. The finding included a cross cutting aspect of training, H.9, in the human performance area.

Inspection Report# : 2015003 *(pdf)*

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: NRC
Item Type: NCV Non-Cited Violation
Failure to Identify Conditions Adverse to Quality Associated with the Unit 1 TDAFW Pump Turbine Oil system
A finding of very low safety significance, with an associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion 16, "Corrective Actions," was identified by the inspectors for the licensee's failure to promptly identify and correct a condition adverse to quality (CAQ) associated with Unit 1 Turbine Driven Auxiliary Feedwater (TDAFW) pump turbine bearing oil. Specifically, the licensee failed to identify that water was entering the oil system after leakage had been identified directly above one of the TDAFW pump turbine bearings. On April 7, 2014, a cooling water leak was identified above the outboard turbine bearing. The leak was classified as about 1 drop per minute (dpm). On April 11, 2014, the licensee discovered the turbine bearing oil level was above the maximum mark on an attached sight glass. Several possible reasons were postulated for the high level (which had been steady in band for over a year), such as rising turbine building temperatures and the fact that it was not uncommon for personnel to do 'unnecessary' oil adds to the machine. Oil was drained out until level returned to the maximum mark. On May 22, 2014, the licensee again noted oil level to be above the maximum mark. Oil was drained again, and similar reasons provided for the level increase. Further, a statement was made that oil level had been steady for the past month, neglecting the previous high level condition. In parallel, NRC inspectors had questioned why level was being

maintained at the maximum mark when the operator logs and a sign stated level should be kept at the minimum mark. On May 23, the licensee decided to drain the oil system; 620 ml of water was found. New oil was added, and a temporary modification was installed which directed leakage away from the bearing. The issue was entered into the Corrective Action Program (CAP), and an apparent cause evaluation later determined the leakage to be the primary intrusion pathway for the water.

The issue was more than minor because it adversely affected the Configuration Control attribute of the Mitigating Systems Cornerstone, whose objective is to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Additionally, if left uncorrected, the issue could lead to a more significant safety concern. The inspectors assessed the finding for significance using IMC 0609, "Significance Determination Process." Per Appendix A, the finding screened as Green, or very low safety significance, in Exhibit 2. Specifically, all questions were answered 'no' under Section A for findings related to Mitigating Structures, Systems and Components (SSCs) and Functionality. The inspectors reviewed the licensee's past operability evaluation and concluded that given the projected amount of water that could be entrained in the oil during operation, along with the duration of operation assumed in the safety analyses, that operability of the pump would be maintained. The finding had an associated cross-cutting aspect in the Human Performance area, specifically, H.11, Challenge the Unknown. Regarding the TDAFW oil system, the licensee rationalized why the level was increasing without sufficient investigation given the significance of the system, and did not seek further information that was readily available regarding appropriate oil levels.

Inspection Report# : 2014005 *(pdf)*

Significance: G Dec 31, 2014
Identified By: Self-Revealing
Item Type: NCV Non-Cited Violation
Unplanned Inoperability of the AB Fuel Oil Storage Tank During 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: G Dec 31, 2014
Identified By: Self-Revealing
Item Type: NCV Non-Cited Violation
Inadvertent Trip of the Unit 1 TDAFW Pump
A finding of very low safety significance, with an associated non- violation of TS 5.4, "Procedures," was self revealed on November 1, 2014, when the Unit 1 TDAFW pump tripped during an emergent dual unit shutdown. Both units were taken offline by operators due to debris intrusion from Lake Michigan into the cooling water screenhouse. The TDAFW pump started as expected but shutdown after a few minutes of operation. Investigation by the licensee revealed that a cover for the trip solenoid had been installed incorrectly. The cover was relatively loose and had been placed near components involved with the proper latching of the Trip and Throttle valve (TTV) (the valve which opens to let steam in to turn the pump on). After refuting several possible causes and running the pump several times for testing, the licensee determined the likely cause of the trip was the misplaced enclosure, which could have interfered with the proper latching of the TTV. 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 cause of the misplaced enclosure was due to a lack of detailed instructions regarding the installation and removal of the enclosure. The enclosure was most recently affected by maintenance performed during the fall 2014 refueling outage. The licensee worked with the vendor and reinstalled the enclosure correctly. The Unit 2 TDAFW pump trip solenoid enclosure was also found out of position and corrected. The licensee entered the issue into the Corrective Action Program.

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 inspectors utilized IMC 0609 Appendix A, "The Significance Determination Process for Findings at Power," to assess the significance of the finding. Per Exhibit 2, the finding represented a loss of function for one train of Auxiliary Feedwater (AFW) for greater than the TS allowed outage time. Therefore, the inspectors consulted the regional Senior Reactor Analyst for a detailed risk evaluation. The inspectors considered the Unit 1 TDAFW pump inoperable since the last successful surveillance on October 23, 2014. Given the evidence available, this was the likely opportunity for the conditions to be established to set up the improper engagement between the TTV and the trip hook. In the detailed analysis, the finding screened as Green, or very low safety significance. The finding had an associated cross cutting aspect in the area of human performance, specifically, H.8, Procedure Adherence. During maintenance, work proceeded on the trip enclosure despite a lack of detailed instructions on the removal/installation of the enclosure.

Inspection Report# : 2014005 *(pdf)*

Barrier Integrity

Significance: G 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: G 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-cited 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

Significance: N/A Sep 30, 2015
Identified By: NRC
Item Type: NCV Non-Cited Violation
Changes to Minimum 60-Minute Emergency Responder Staffing Without Prior Approval
The inspectors identified a finding of very low safety significance with an associated Severity Level IV (SL IV) Non-Cited Violation of Title 10, Code of Federal Regulations (CFR) 50.54(q)(3) and 10 CFR 50.54(q)(4) related to a staffing change in the licensee's Emergency Plan that reduced the effectiveness of the Plan, which was made without prior NRC approval. Specifically, in March 2004, the licensee made changes to wording in the Donald C. Cook Emergency Plan that allowed two Radiation Protection (RP) Technician positions to be augmented by staff that were not qualified RP Technicians. This issue was placed in the licensee's Corrective Action Program and was corrected by revising the Emergency Plan to the approved augmented staffing minimum.

The finding was of more than minor significance because it was associated with the Emergency Preparedness Cornerstone attribute of Procedure Quality, and affected the cornerstone objective of ensuring the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Specifically, a failure to evaluate changes to the Emergency Plan as required by 10 CFR 50.54(q)(3) resulted in unacceptable changes made to the plan that decreased its effectiveness without prior NRC approval as required by 10 CFR 50.54(q)(4) and reduced the licensee's capability to perform an emergency planning function in the event of a radiological emergency. The finding was of very low safety significance because it was a failure to comply that did not result in a loss of the planning standard function. In accordance with Section 6.6.d of the NRC Enforcement Policy, this violation was categorized as SL IV because it involved the licensee's ability to meet or implement a regulatory requirement not related to assessment or notification such that the effectiveness of the Emergency Plan decreases. The inspectors concluded that because the performance deficiency involved a change to the licensee's Emergency Plan in March 2004, this issue would not be reflective of current licensee performance and no cross cutting aspect was identified.

Inspection Report# : 2015003 *(pdf)*

Occupational Radiation Safety

Significance: G 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

Last modified : December 15, 2015