D.C. Cook 1 – Quarterly Plant Inspection Findings

2Q/2017 – Plant Inspection Findings

On this page:

Initiating Events

Mitigating Systems

Significance: G Mar 31, 2017
Identified By: Self-Revealing
Item Type: NCV Non-Cited Violation
Failure to Control Nonconformaing Delivery Valve Holders on Emergency Diesel Generators
A self revealed finding of very low safety significance with an associated NCV of Title 10 of the Code of Federal Regulations (CFR) Part 50, Appendix B, Criterion XV, "Nonconforming Materials, Parts, or Components," occurred when the delivery valve holder (DVH) on a fuel injection pump failed during a run of the 1AB emergency diesel generator (EDG). Each cylinder on an EDG has a fuel injection pump. The DVH is the part of the fuel injection pump where the high pressure fuel line meets the pump discharge. A thru wall crack developed from a machined portion inside the DVH that had too sharp of a corner. This same phenomenon occurred onsite and caused a leak in 2013 as well. In 2013, the licensee identified the tight radius as an issue and also identified a particular manufacturing lot of DVHs that might have the tight radius. Contrary to their commercial grade dedication (CGD) procedures, the licensee did not update their CGD plan for these parts to include the radius as a critical characteristic. Further, the licensee relied on informal communications from the commercial grade supplier of the parts to conclude only a certain subset of the suspected lot of DVHs were susceptible to cracking. Finally, several management approved actions to remove all affected DVHs of the lot were not performed, as there was the belief by some that only certain DVHs were affected. As a result, the licensee installed many DVHs from the suspect lot they thought were acceptable. However, in December 2016, one of the DVHs thought to be acceptable developed a leak during an EDG run. The radius was discovered to be out of tolerance, as were numerous other radii in DVHs across all of the EDGs which were from the suspect manufacturing lot. The licensee declared three of the four onsite EDGs inoperable, replaced DVHs, and commenced a root cause evaluation to address the issue.

The issue was 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 evaluation adversely affects 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 Green because performance testing of representative DVHs and engine analysis demonstrated that the EDGs in the as found condition would have been able to perform their safety functions for the required lengths of time. The inspectors determined the issue had a cross cutting aspect in the Problem Identification and Resolution area, specifically, P.2, "Evaluation." Despite identifying a defect on a safety related part due to a failure in 2013, the licensee failed to properly evaluate the condition and ensure all susceptible parts were accounted for. Specifically, the failure to follow station processes for corrective action and CGD resulted in a defective part causing a leak on an EDG.
Inspection Report# : 2017001 *(pdf)*

Significance: G Sep 30, 2016
Identified By: Self-Revealing
Item Type: NCV Non-Cited Violation
Improper Backfill Severs Fire Main
A self revealed finding of very low safety significance (Green) and associated NCV of the license condition for a fire protection program occurred when the licensee failed to ensure excavation activities preserved the functionality of the fire main. Specifically, the licensee improperly backfilled an excavation performed to inspect buried piping. The improper backfill led to a catastrophic failure of the fire main. The performance deficiency was a violation. License conditions 2.C(4) and 2.C(3)(o) of the Donald C. Cook Nuclear Power Plant, Unit 1 and Unit 2 Operating Licenses, respectively, require, in part, that the licensee implement and maintain in effect all provisions of the approved fire protection program that comply with 10 CFR 50.48(a) and 10 CFR 50.48(c), "National Fire Protection Association (NFPA) Standard NFPA 805," as specified in the licensee's amendment request dated July 1, 2011, as supplemented, and as approved in the Safety Evaluation dated October 24, 2013. Section 3.3.1.1(3) of NFPA 805 requires that, "Administrative controls addressing the review of plant modifications and maintenance to ensure that both fire hazards and the impact on plant fire protection systems and features are minimized." Immediate actions included isolation of the faulted section of the fire main and repair of the break. The issue has been entered into the CAP as AR-2016-7626.

The inspectors determined that the finding was more than minor because the performance deficiency was more than minor, because it impacted the mitigating system cornerstone attribute of protection against external factors and adversely impacted the cornerstone objective of ensuring the availability of systems to respond to initiating events to prevent undesirable consequences. Using Appendix F, Attachment 1 dated September 20, 2013, the inspector determined that the licensee probable risk assessment should be reviewed to determined significance. With the short duration, the licensee determined the delta cdf to be less than (1e-6). These results were reviewed and accepted by the Senior Reactor Analyst. The inspectors determined the finding included a cross cutting aspect of Challenge the Unknown, H.11, in the human performance area.

Inspection Report# : 2016003 *(pdf)*

Significance: G Sep 30, 2016
Identified By: Self-Revealing
Item Type: NCV Non-Cited Violation
Charging System Thru-Wall Leak
A finding of very low safety significance with an associated NCV of Title 10 of the Code of Federal Regulations (CFR) 50 Appendix B, Criterion III, "Design Control," was self revealed when a thru wall leak was identified on a branch connection off of the Unit 1 west coolant charging pump (CCP) discharge piping while it was in service. The licensee failed to ensure the branch line design would remain intact when subjected to the vibratory conditions in the line. As a result, a vibration induced fatigue crack developed. This design issue caused a thru wall leak on a similar line associated with the opposite train charging pump in 2011. When the licensee addressed the prior leak, assumptions

were made regarding the Unit 1 west CCP line. Since the length was slightly different, the belief was it would not be subject to the same increase in vibrations. However, when measuring the vibrations after the recent leak was identified, the results indicated the same elevated vibrations existed. The licensee secured the pump to stop the leak, declared the 'B' train of the emergency core cooling system (ECCS) inoperable, and repaired the leaking weld.

The issue was more than minor because it adversely affected the Design 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 (i.e., core damage). The finding screened as Green, or very low safety significance, because there was no loss of system function and the repairs were completed within the 72 hour timeframe allowed by Technical Specifications (TS). No cross cutting aspect was assigned because the issue occurred in 2011 and was not reflective of current licensee performance.

Inspection Report# : 2016003 *(pdf)*

Significance: G Sep 02, 2016
Identified By: NRC
Item Type: NCV Non-Cited Violation
Inadequate Resolution for Double-Break Circuits Design for Several Valves
The inspectors identified a finding of very-low safety significance (Green) and an associated Non-Cited Violation of license conditions 2.C(4) and 2.C(3)(o) for the licensee's failure to implement the approved. Specifically, the licensee failed to analyze the double break circuits design for valves using risk-informed, performance-based techniques for several fire areas. In the event of a fire in several fire areas, fire induced circuit failures (i.e., inter-cable shorting) for a double-break design for several valves (i.e., Power Operated Relief Valves) could potentially result in spurious operation of the valves. The circuit analysis for these valves in these areas was analyzed using the deterministic approach instead risk-informed, performance-based techniques. The licensee entered the issue into their Corrective Action Program and took credit for existing fire protection features and controls as compensatory measures and planned to review the multiple spurious operations Expert Panel Report and properly disposition the scenario.

The performance deficiency was determined to be more-than-minor because if left uncorrected, it would potentially lead to a more significant safety concern. Specifically, the failure to properly evaluate and disposition all potential fire-induced circuit failures for all cables in a fire area could impair the plant's ability to safely shutdown in the event of a fire. The performance deficiency was also associated with the Mitigating Systems cornerstone. The finding was of very -low safety significance because it did not impact the reactor's ability to reach and maintain a safe shutdown condition. This finding did not have a cross-cutting aspect because it was not representative of current licensee performance. (Section 1R05.6.b)

Inspection Report# : 2016009 *(pdf)*

Barrier Integrity
Emergency Preparedness
Occupational Radiation Safety

Significance: G Mar 31, 2017
Identified By: Self-Revealing
Item Type: NCV Non-Cited Violation
Failure to Brief Worker Entry to High Radiation Area Resulting in the Unplanned Dose Rate Alarm
A finding of very low safety significance and an associated Non-Cited Violation of Technical Specification 5.7.1.b was self revealed for the failure to a make radiation worker aware of the radiation dose rate before entering a high radiation

area. The failure to brief the worker resulted in an unplanned electronic dosimeter dose rate alarm. The worker immediately exited the area and reported the event to the radiation protection staff. The licensee entered the event into their Corrective Action Program as Action Request 2016-13827.

The inspectors determined that the performance deficiency was more than minor in accordance with Inspection Manual Chapter (IMC) 0612, Appendix B, because the finding impacted the program and process attribute of the Occupational Radiation Safety Cornerstone and adversely affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation. Specifically, worker entry into a high radiation area without an adequate briefing could lead to unintended dose. The inspectors also identified an example in IMC 0612, Appendix E, which is similar to the performance issue. Therefore, the finding was determined to be of very low safety significance in accordance with IMC 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," dated August 19, 2008. The violation was of very low safety significance (Green) because: (1) it did not involve as low as reasonably achievable planning or work controls, (2) there was no overexposure, (3) there was no substantial potential for an overexposure, and (4) the ability to assess dose was not compromised. The inspectors concluded that the cause of the finding involved a cross cutting component in the human performance area, H.4, in the area of teamwork and communication and coordination across organizational boundaries, specifically between radiation protection staff and the individual. This resulted in the worker proceeding into areas that they were not briefed to enter which contained unknown dose rates.
Inspection Report# : 2017001 *(pdf)*

Public Radiation Safety

Security

The security cornerstone is an important component of the ROP, which includes various security inspection activities the NRC uses to verify licensee compliance with Commission regulations and thus ensure public health and safety. The Commission determined in the staff requirements memorandum (SRM) for SECY-04-0191, "Withholding Sensitive Unclassified Information Concerning Nuclear Power Reactors from Public Disclosure," dated November 9, 2004, that specific information related to findings and performance indicators associated with the security cornerstone will not be publicly available to ensure that security-related information is not provided to a possible adversary. Security inspection report cover letters will be available on the NRC Web site; however, security-related information on the details of inspection finding(s) will not be displayed.

Miscellaneous

Current data as of : August 03, 2017

Page Last Reviewed/Updated Wednesday, August 10, 2016