

## D.C. Cook 1

### 4Q/2016 Plant Inspection Findings

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## Initiating Events

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## Mitigating Systems

**Significance:**  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:**  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:**  Jun 30, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

#### **Unanalyzed Scaffold Near Safety-Related Equipment**

. A finding of very low safety significance and associated NCV of Technical Specifications (TS) 5.4, "Procedures," was identified by the inspectors. The licensee constructed a scaffold storage rack adjacent to the Unit 1 Component Cooling Water (CCW) Surge Tank without a seismic evaluation. Specifically, contrary to 12-MHP-5021-SCF-00, "Scaffolding Procedure," the seismic adequacy of the rack was not evaluated prior to construction. The rack was built several weeks before the Unit 1 Spring 2016 refueling outage (RFO) and was assessed by inspectors during the outage as part of walkdown of the area. The licensee removed the scaffold storage rack and entered the issue into their Corrective Action Program (CAP).

The issue was greater than minor because it adversely affected the Protection Against External Factors attribute of the Mitigating Systems cornerstone, whose objective is to ensure the capability, reliability, and availability of systems that respond to initiating events to prevent undesirable effects such as core damage. Further, the inspectors determined examples 3.j and 3.k of IMC 0612 Appendix E, "Examples of Minor Issues," applied as there was reasonable doubt concerning the operability of the CCW system with the as found condition of the scaffold. The finding screened as Green, or very low safety significance, utilizing IMC 0609, "Significance Determination Process." Specifically, a seismic evaluation later demonstrated that safety functions were maintained. The inspectors determined the finding had a cross cutting aspect of Work Management (H.5.). Specifically, the work management process for scaffold construction was not implemented with nuclear safety as an overriding priority. The process did not identify and manage risks associated with work in the field nor did it ensure coordination between different work groups and activities.

Inspection Report# : [2016002](#) (*pdf*)

**Significance:**  Mar 31, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

#### **Incorrect Auxiliary Feedwater Mission Time**

The inspectors identified a finding of very low safety significance and associated NCV of with Title 10 of the Code of Federal Regulations (CFR) Part 50, Appendix B, Criterion III, "Design Control." Specifically, the licensee failed to

ensure that regulatory requirements and design bases were correctly translated into specifications and procedures, in that the licensee used an incorrect mission time for the turbine driven auxiliary feedwater (TDAFW) pump to determine operability. The licensee developed a procedure that permitted continued operability of the TDAFW pump without room ventilation provided room temperature remained below 104° F. The underlying engineering document assumed TDAFW pump mission time was 4 hours; however, this assumption was not supported by current license bases documents. This condition violates 10 CFR 50 Appendix B Criterion III, which requires licensees to establish measures to assure that applicable regulatory requirements and the design bases, as defined in 10 CFR 50.2 and as specified in the license application, for those systems structures and components to which the Appendix applies, are correctly translated onto specifications, drawings, procedures and instructions. The licensee has since restored the room coolers to an operable status, thus, no current safety concern exists. The licensee has entered the condition into the corrective action program (CAP).

The licensee's use of an incorrect mission time was a performance deficiency that warranted a significance review. Using IMC 0612 appendix B dated September 7, 2012, the inspectors determined that the finding was more than minor because it was associated with the Mitigating System cornerstone objective to ensure the availability, reliability and capability of systems that respond to initiating events and adversely affected the attribute of design control. Specifically, the licensee applied an incorrect mission time when determining room temperatures to ensure TDAFW pump operability. Using Inspection Manual Chapter 0609 Appendix A, Exhibit 2-1, dated June 19, 2012, the inspectors answered 'no' to Questions A. 1 thru 4. In particular, control room logs document about 6 hours with the TDAFW room ventilation not functioning; therefore the inspectors determined that the pump would not have been inoperable for longer than the 72 hour completion time in technical specifications.  
Inspection Report# : [2016001](#) (*pdf*)

## Barrier Integrity

**Significance:**  Jun 30, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Containment Closure Requirements During Unit 1 2016 Refueling Outage**

The inspectors identified a finding of very low safety significance with an associated non-cited violation (NCV) of Technical Specification (TS) 5.4, "Procedures," for the failure to implement all of the requirements of PMP-4100-SDR-001, "Plant Shutdown Safety and Risk Management," pertaining to the closure of containment airlocks in the event shutdown cooling is lost. Contrary to TS 5.4, the licensee failed to implement the procedure as demonstrated by lack of closure requirement knowledge by containment closure attendants, failure to include isolation valves on ice lines, missing a shiftly check, and lack of required anti contamination clothing. The licensee corrected the issues and entered them into the Corrective Action Program (CAP).

The issue was greater than minor because it adversely affected the Human Performance attribute of the Barrier Integrity cornerstone, whose objective is to provide assurance that principal design barriers (e.g., containment) can protect the public from radionuclide releases. Additionally, the inspectors were informed by IMC 0612, "Power Reactor Inspection Reports," dated May 6, 2016, because the issue was programmatic in nature and could lead to more significant issues if left uncorrected. The finding screened as Green per IMC 0609 Appendix H, "Containment Integrity Significance Determination Process," because the inspectors determined despite the issues identified, containment closure could be achieved within the time to boil. The inspectors determined the finding had an associated cross cutting aspect of H.1, "Resources," because leaders did not ensure personnel, equipment, procedures, and other resources were available and adequate to support nuclear safety.

Inspection Report# : [2016002](#) (pdf)

**Significance:**  Jun 30, 2016

Identified By: NRC

Item Type: NCV Non-Cited Violation

### **Procedure Failed to Establish Two Valve Isolation Between the Reactor Coolants System and Containment Atmosphere**

The inspectors identified a finding of very low safety significance (Green) and associated non-cited violation (NCV) of Technical Specification (TS) 5.4.1, "Procedures," for the licensee failing to maintain procedure 1-OHP-4021-002-001, reactor coolant system (RCS) fill and vent. When the licensee updated the procedure to Revision 42 they inadvertently omitted a step to shut valve 1-RC-144-L3, RCS half loop gauge glass isolation valve. Closing this valve establishes two valve isolation between American Society of Mechanical Engineers (ASME) code class 1 piping and non code class piping. The licensee closed the valve and updated the affected procedure in response to the inspector's inquiries.

The inspectors determined the issue was more than minor in accordance with IMC 0612 because, if left uncorrected the issue would have become more significant concern. Specifically, the licensee would have entered a higher operating mode without establishing the reactor coolant pressure boundary. The issue was not greater than green because actions taken by the licensee established the boundary prior to mode ascension. Therefore, the inspectors concluded the finding was of very low safety significance. The inspectors determined the issue included a cross cutting aspect of H.3, configuration management in the human performance area. For this issue, the licensee failed to update all applicable procedures following a change in methodology for filling coolant loops.

Inspection Report# : [2016002](#) (pdf)

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## **Emergency Preparedness**

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## **Occupational Radiation Safety**

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## **Public Radiation Safety**

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## **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.

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## Miscellaneous

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