

# D.C. Cook 1

## 3Q/2008 Plant Inspection Findings

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### Initiating Events

**Significance:**  Dec 31, 2007

Identified By: Self-Revealing

Item Type: FIN Finding

#### **Inadequate Design Review of the Unit 1 Main Feedwater Pump Digital controls system**

The inspectors identified a finding of very low safety significance associated with a self-revealed event that resulted in a Unit 1 reactor trip. The licensee failed to correctly evaluate and incorporate the cooling needs of electrical equipment inside the Unit 1 main feedwater pump digital controls system cabinets into the design, which led to the loss of the east main feedwater pump due to overheated power supplies. Immediate corrective actions included replacement of affected power supplies and restoration of cooling to the cabinets. No violation of regulatory requirements was identified.

The finding was of more than minor significance because this issue was associated with the Equipment Performance attribute of the Initiating Events cornerstone and adversely affected the cornerstone objective of limiting the likelihood of events that upset plant stability and challenge critical safety functions during power operations. Specifically, inadequate design consideration for equipment temperature limitations and cooling needs led to the main feedwater pump failure that caused the reactor trip. The finding was of very low safety significance because the finding: (1) did not contribute to the likelihood of a primary or secondary system loss-of-coolant-accident initiator, (2) did not contribute to both the likelihood of a reactor trip AND the likelihood that mitigation equipment or functions would not be available, and (3) did not increase the likelihood of a fire or internal/external flooding event. The inspectors did not identify a cross-cutting area component related to this finding.

Inspection Report# : [2007006](#) (*pdf*)

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### Mitigating Systems

**Significance:**  Jun 30, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to identify unacceptable interference between the Unit 1 safety injection system piping and the remote strainer waterway in the annulus.**

The inspectors identified a finding of very low safety significance with an associated Non-cited Violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action." Licensee personnel failed to identify unacceptable interference between the Unit 1 Safety Injection (SI) system piping and the remote strainer waterway in the annulus, rendering the emergency core cooling system (ECCS) for Unit 1 in a degraded condition. For corrective actions, licensee personnel planned to install additional supports to the SI piping during the next scheduled Unit 1 refueling outage in the fall of 2009.

This finding was more than minor because it could become a more significant safety concern if left uncorrected. Specifically, the close proximity of the SI piping to the remote strainer waterway resulted in the ECCS being in a degraded condition because the SI piping would contact the strainer during an operating basis earthquake event concurrent with a loss of cooling accident. This finding was of very low safety significance because no actual loss of safety function occurred. This finding was associated with a cross-cutting aspect in the area of problem identification and resolution regarding corrective action program. (IMC 0305, P.1(c))

Inspection Report# : [2008003](#) (*pdf*)

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**Significance:**  Jun 30, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to review emergency operating procedures to determine if they were impacted by plant modification.**

The inspectors identified a finding of very low safety significance and an associated Non-Cited Violation of 10 CFR 50, Appendix B, Criteria V, "Instructions, Procedures and Drawings." Licensee personnel failed to review the Unit 1 emergency operating procedures to determine if the procedures were impacted by the plant modification that removed the check valves from the essential service water (ESW) cooling water supplies to the emergency diesel generators. Consequently, the emergency operating procedures were not revised to include appropriate guidance when aligning ESW cooling to the emergency diesel generators after the modification was installed. As an interim corrective action,

caution tags were placed on the control room switches utilized for aligning ESW to the emergency diesel generators to provide appropriate guidance to the operators. Licensee personnel also planned on revising the emergency operating procedures.

This finding could become a more significant safety concern if left uncorrected and therefore was more than minor. Specifically, the emergency operating procedures contained inadequate guidance that could result in opening both the normal and alternate ESW supply valves to the emergency diesel generators. Consequently, the design function of the valves to isolate one train of ESW from the other would be adversely impacted. This finding was of very low safety significance because no actual loss of safety function occurred. This finding was associated with a cross-cutting aspect in the area of problem identification and resolution regarding corrective action program. (IMC 0350, P.1(a))

Inspection Report# : [2008003](#) (*pdf*)



**Significance:** Jun 30, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to adequately implement surveillance test inspection requirements for the Unit 1 ECCS recirculation sump.**

The inspectors identified a finding of very low safety significance and a Non Cited Violation of 10 CFR 50, Appendix B, Criteria V, "Instructions, Procedures, and Drawings." The licensee failed to adequately implement surveillance test inspection requirements for the Unit 1 ECCS recirculation sump. The inspectors identified instances where the licensee did not correctly implement procedural requirements for conducting the recirculation sump inspection or where the sump inspection procedure lacked sufficient detail to ensure that the sump would support ECCS operability. In addition, procedural controls were inadequate to ensure that the main strainer bottom panel back rail was properly installed with all of the bolts torqued when installation of the remote strainer and waterway plant modification was completed. The licensee corrected the inspector identified problems with the recirculation sump prior to Unit 1 entering Mode 4.

This finding could become a more significant safety concern if left uncorrected and was therefore more than a minor concern. The failure to adequately perform surveillance testing could result in the failure to identify degraded or inoperable safety-related equipment. This finding was of very low safety significance because the recirculation sump was not required to be capable of performing a safety-related function immediately following the inadequate surveillance. This finding was associated with a cross-cutting aspect in the area of human performance regarding resources (IMC 0305, H.2(c))

Inspection Report# : [2008003](#) (*pdf*)

**Significance:** SL-IV Dec 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

**Lack of Safety Evaluation for Ice Condenser Operation with Insufficient Ice Fusion time**

The inspectors identified a Non-Cited Violation of 10 CFR 50.59(d)(1) associated with the licensee's failure to perform a 10 CFR 50.59 evaluation for operation of the plant with less than the design basis time allotted for ice condenser ice basket fusion. Specifically, the licensee failed to properly interpret design and licensing basis requirements associated with protection against external events (i.e., seismic) and as a result did not perform a 10 CFR 50.59 evaluation for plant operation with ice baskets that had less than the design basis time allotted for ice fusion. The licensee performed an evaluation of past operability and determined that the ice condenser would have continued to perform its pressure suppression function even with additional ice fall from the potentially unfused ice baskets.

Because this issue affected the NRC's ability to perform its regulatory function, the violation was reviewed under the traditional enforcement process; however, the underlying technical issue was evaluated using the Significance Determination Process. The violation was determined to be of more than minor significance because the inspectors could not reasonably determine that a 10 CFR 50.59 evaluation would not have ultimately required NRC prior approval. The inspectors reviewed the "Seismic, Flooding, and Severe Weather Screening Criteria" screening questions in Inspection Manual Chapter 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations" and determined that Question No. 3 was applicable. The violation was of very low safety significance because the finding did not involve the total loss of a safety function identified by the licensee through Probabilistic Risk Assessment, Individual Plant Examination of External Events or similar analysis, that contributes to external event initiated core damage accident sequences. The inspectors did not identify a cross-cutting area component related to this finding.

Inspection Report# : [2007006](#) (*pdf*)

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## Barrier Integrity



**Significance:** Jun 30, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Comply with TS SR 3.6.1.1. Failure to perform and as-found LLRT for containment isolation valves**

The inspectors identified a finding of very low safety significance with an associated Non Cited Violation of Technical Specification Surveillance Requirement 3.6.1.1. Licensee personnel failed to perform an as-found local leak rate test as required for containment isolation

valves 2-WCR-922 and 2-WCR-923 (Train 'A' and Train 'B' non essential service water return from upper containment ventilation unit #1) prior to performing maintenance that affected the valves' leak tightness. This condition prohibited by Technical Specifications was subsequently reported to the NRC in accordance with 10 CFR 50.73(a)(2)(i)(B) and as left leak rate tests were completed satisfactorily.

This finding was of more than minor significance because the Barrier Integrity cornerstone objective of providing reasonable assurance that the physical design barriers (e.g., containment) protect the public from radio-nuclide releases caused by accidents or events was adversely affected since the as-found condition of containment isolation valves 2-WCR-922 and 2-WCR-923 was unknown and could not be evaluated. This finding was of very low safety significance because it did not involve a failure to maintain the capability to close containment and did not involve the hydrogen igniters. This finding was associated with a cross-cutting aspect in the area of problem identification and resolution regarding corrective action program (IMC P.1(d)).  
Inspection Report# : [2008003](#) (*pdf*)

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## Emergency Preparedness

**Significance:** SL-IV Feb 22, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to properly report data associated with the Alert and Notification System (ANS) performance indicator (PI) for the second quarter of 2004 and subsequently failed to inform the NRC of the incorr**

The inspectors identified an NCV of 10 CFR 50.9, "Completeness and Accuracy of Information," when licensee personnel failed to properly report data associated with the Alert and Notification System (ANS) performance indicator (PI) for the second quarter of 2004 and subsequently failed to inform the NRC of the incorrect information after it was identified during a root cause evaluation for a similar event in 2007.

The inspectors determined the finding was more than minor in accordance with IMC 0612 and the Enforcement Manual. Specifically, had the licensee properly submitted the ANS data, the PI would have been categorized as White for the second quarter of 2004; therefore the data was inaccurate in a material respect. As part of the licensee's immediate corrective actions, this issue was entered into the corrective action program. In addition, the inspectors determined that the finding had a cross-cutting aspect in the area of Human Performance since the licensee failed to evaluate and report the erroneous data due to non-conservative decision-making (H.1(b)).  
(Section 02.06)

Inspection Report# : [2008502](#) (*pdf*)

**Significance:**  Feb 22, 2008

Identified By: NRC

Item Type: FIN Finding

**Between 1984 and 2007, the licensee made significant changes to the ANS without obtaining required Federal Emergency Management Agency (FEMA) approval for the changes as required by 44 CFR 350**

The inspectors identified that between 1984 and 2007, the licensee made significant changes to the ANS without obtaining required Federal Emergency Management Agency (FEMA) approval for the changes as required by 44 CFR 350, "Review and Approval of State and Local Radiological Emergency Plans and Preparedness."

The inspectors concluded that the finding was more than minor because the finding was associated with the Procedure Quality attribute of the Emergency Preparedness cornerstone and adversely impacted the cornerstone objective of ensuring the licensee was capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency since the licensee failed to obtain FEMA approval of significant changes to the ANS. The inspectors determined that the finding affected a Risk Significant Planning Standard (RSPS) since the finding was associated with the FEMA-approved ANS Design Report and supporting FEMA approval letter. However, because the finding did not result in the loss or significant degradation of the ANS, the finding was of very low safety significance (Green). As part of their immediate corrective actions, the licensee obtained FEMA approval for a Final ANS Design Report that addressed all of the modifications that had been made to the ANS. Due to the age of the performance deficiency, the inspectors concluded that no cross-cutting aspect was associated with the finding. No violation of NRC requirements occurred.  
(Section 02.06)

Inspection Report# : [2008502](#) (*pdf*)

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## Occupational Radiation Safety

**Significance:**  Jun 30, 2008

Identified By: Self-Revealing

Item Type: FIN Finding

### **Failure to effectively implement dose reducing radiological and engineering controls associated with modifications to the reactor recirculation sump strainer during U2C17.**

A self-revealed finding of very low safety significance was identified for the failure to effectively implement dose reducing radiological and engineering controls consistent with maintaining occupational doses as-low-as-is-reasonably-achievable (ALARA). The failure resulted in an actual dose outcome that was not consistent with the planned, intended dose for work associated with modifications to the reactor recirculation sump strainer during Refuel Outage U2C17. Corrective actions were implemented to address organization and programmatic deficiencies, as well as capturing lessons learned to support the detailed planning necessary for the installation of the modification on Unit 1.

The finding was more than minor because it was associated with the Occupational Radiation Safety Cornerstone attribute of ALARA planning/dose projection, and affected the cornerstone objective of programs and processes for ensuring adequate protection of worker health and safety from exposure to radiation, in that, ineffective work control and ALARA planning deficiencies contributed to an actual increase in worker doses in excess of five person-rem and exceeded the licensee's initial intended dose estimates by more than 50 percent. This finding was of very low safety significance because it did not involve: (1) an overexposure; (2) a substantial potential for an overexposure; or (3) an impaired ability to assess dose. It did involve ALARA planning and controls; however, the 3-year rolling average for DC Cook Plant is less than SDP threshold of 135-person-rem for Pressurized Water Reactors. The finding was determined to be associated with a cross-cutting aspect in the area of human performance regarding work controls (IMC 0305 H.3(a)).

Inspection Report# : [2008003](#) (*pdf*)

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## **Public Radiation Safety**

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## **Physical Protection**

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the [cover letters](#) to security inspection reports may be viewed.

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## **Miscellaneous**



**Significance:** Jun 30, 2008

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Comply with TS 5.2.2.d, Overtime Restrictions**

The inspectors identified a finding of very low safety significance and an associated Non-Cited Violation of TS 5.2.2.d. The licensee failed to adhere to the TS overtime restrictions for personnel performing safety related work during the Unit 1 Cycle 22 refueling outage specified in NRC Generic Letter 82-12, "Nuclear Power Plant Staff Working Hours." The licensee approved blanket overtime requests for several hundred workers performing outage work activities. Licensee personnel entered this issue into its corrective action program for evaluation.

This finding was of more than minor significance because the excessive work hours would increase the likelihood of human errors during refueling outage activities, which if left uncorrected could become a more significant safety concern. Consistent with the guidance in Inspection Manual Chapter (IMC) 0612, Section 05.04.c, this finding was reviewed by NRC management and was determined to be a finding of very low safety significance because there were no actual adverse plant or equipment conditions identified that were attributed to worker fatigue. This finding was associated with a cross-cutting aspect in the area of human performance regarding resources. (IMC 0305 H.2(c))

Inspection Report# : [2008003](#) (*pdf*)

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