

# D.C. Cook 2

## 4Q/2007 Plant Inspection Findings

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### Initiating Events

**Significance:**  Mar 31, 2007

Identified By: Self-Revealing

Item Type: FIN Finding

#### **Failure to Identify Appropriate Contingency Actions During the Work Risk Review to Adjust Packing on Valve 2-NPS-121-II**

On December 14, 2006, a finding of very low safety significance was self-revealed when the valve packing on 2-NPS-121-II, (instrument shutoff valve for reactor coolant system (RCS) loop 2 hot leg wide range pressure instrument), blew out during a planned maintenance activity to adjust the packing. This resulted in a 6 gallon-per-minute (gpm) RCS leak that was subsequently isolated by operations personnel. Additional planned corrective actions included revisions to work control procedures, and an engineering inspection of the valve and investigation of the failure mechanism. No violation of regulatory requirements was identified.

This finding was of more than minor significance because it is related to the Equipment Performance attribute regarding RCS Barrier Integrity in the Initiating Events Cornerstone. The cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations was affected. Specifically, the resultant 6 gallon-per-minute (gpm) RCS leak continued for approximately three hours before it was isolated because contingency actions were not identified for credible failures and problems that could occur during the work activity. The finding was not greater than Green because the leak did not exceed the Technical Specification limit for identified RCS leakage and all other mitigating systems were available. The primary cause of this finding was related to the cross-cutting area of human performance because work control risk review procedures were not complete and accurate in that they did not identify packing adjustments on manual valves in the pressurized RCS as a high risk activity with respect to nuclear safety. (IMC 0305, H.3(b))

Inspection Report# : [2007003](#) (*pdf*)

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### Mitigating Systems

**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*)

**Significance:** SL-IV Sep 30, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Comply with TS 3.5.2, ECCS - Operating**

The inspectors identified a Non-Cited Violation of Technical Specification 3.5.2. Both Unit 2 residual heat removal discharge header safety valves failed pressure lift testing during the Unit 2 Cycle 16 refueling outage. A common cause (i.e., bonding of the disc and seating surfaces caused by the formation of an oxide film on the disc and seat) was identified for the two failed pressure lift tests. The two failed pressure lift tests resulted in two inoperable emergency core cooling system trains for greater than the Technical Specification allowed outage time. No performance deficiency was associated with this event because appropriate maintenance and testing had been performed in accordance with the regulatory requirements. Therefore, cross-cutting aspects were not assessed. Both valves were replaced during the refueling outage.

The violation was reviewed under the traditional enforcement process; however, the underlying technical issue was evaluated using the Significance Determination Process. The violation was of more than minor significance because it was related to the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the passive safety function of the piping system would not have been protected from an over-pressure condition. The violation was of very low safety significance because it was not a design or qualification deficiency, did not result in an actual loss of system safety function, and was not risk-significant due to external event initiators.

Inspection Report# : [2007005](#) (*pdf*)

**Significance:**  Jun 29, 2007

Identified By: Self-Revealing

Item Type: FIN Finding

**Inadequate Foreign Material Exclusion Controls During Painting Surface Preparations Affected Operability of the Unit 2 AB EDG**

A finding of very low safety significance was identified through a self-revealing event. During painting surface preparation activities in the Unit 2 AB emergency diesel generator (EDG) room, the licensee failed to establish appropriate foreign material exclusion controls by allowing foreign material to collect on the EDG fuel injector pumps' metering rods. This resulted in an inoperable EDG when foreign material on one of the fuel injector pump metering rods became lodged in the pump and prevented the metering rod from further movement. No violation of regulatory requirements was identified. Corrective actions included verifying that the affected fuel injector pump metering rod was free to move, cleaning and lubricating the engine governor linkage, and cleaning other light dust from the engine and the room. The licensee also ran the other three EDGs to verify no common cause failure existed and then cleaned and lubricated the engine governor linkage after each of the runs.

This finding was of more than minor significance because it is related to the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the Unit 2 AB EDG was rendered inoperable by foreign material present on the engine. The finding was of very low safety significance because it did not represent a design or qualification deficiency, loss of safety function for a single train for greater than its Technical Specification (TS) allowed outage time, and was not risk-significant due to external event initiators. The primary cause of this finding was not related to any of the cross-cutting areas because none of the cross-cutting aspects was determined to be a significant contributor to the finding.

Inspection Report# : [2007004](#) (*pdf*)

**Significance:**  Mar 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Demonstrate Performance or Condition of Nuclear Instruments Were Effectively Controlled Through Performance of Appropriate Preventive Maintenance**

The inspectors identified a finding of very low safety significance and an Non-Cited Violation of 10 CFR 50.65(a)(2). The licensee failed to demonstrate that the performance or condition of the Unit 1 and Unit 2 power range and intermediate range nuclear instruments was effectively controlled through appropriate preventive maintenance. As a result, the licensee failed to establish goals or monitor the performance of these instruments in accordance with paragraph (a)(1) of the Maintenance Rule to ensure that appropriate corrective actions were taken. The licensee was further evaluating corrective actions, including training, for this issue at the end of the inspection period and had placed the system into 10 CFR 50.65(a)(1) status.

This finding was of more than minor significance because violations of 10 CFR 50.65(a)(2), such as failure to demonstrate effective control of performance or condition and failure to classify the affected structure, system, or components (SSC) in (a)(1) status, involve degraded SSC performance or condition. The finding was of very low safety significance because the finding was associated with the Mitigating Systems Cornerstone and did not represent a design or qualification deficiency, loss of safety function for a train or system, and was not risk-significant due to external event initiators. The primary cause of this finding was related to the cross-cutting area of problem identification and resolution because the licensee failed to thoroughly evaluate multiple nuclear instrumentation component failures by appropriately completing the Maintenance Rule Evaluations. (IMC 0305, P.1(c))  
Inspection Report# : [2007003](#) (*pdf*)

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

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Submit a Required Licensee Event Report**

The inspectors identified a Severity Level IV Non-Cited Violation (NCV) of 10 CFR 50.73(a)(1). The licensee failed to submit a required Licensee Event Report within 60 days after discovery of an event requiring a report. The licensee failed to correctly evaluate the failure of two Unit 2 Residual Heat Removal (RHR) system pressure relief valves, which affected the operability of both trains of the RHR system. This was reportable as a condition prohibited by the plant's Technical Specification and as an event where a single cause resulted in two independent trains becoming inoperable in a single system designed to remove residual heat and mitigate the consequences of an accident. The licensee implemented several corrective actions to address a potential adverse trend in correctly identifying and evaluating the reportability of plant events, including additional training for selected operations, regulatory affairs, and plant engineering department personnel.

This finding was of more than minor significance because the NRC relies on licensees to identify and report conditions or events meeting the criteria specified in the regulations and the Technical Specification in order to perform its regulatory function. Because this issue affected the NRC's ability to perform its regulatory function, it was evaluated with the traditional enforcement process. Consistent with the guidance in Section IV.A.3 and Supplement I, Paragraph D.4, of the NRC Enforcement Policy, this finding was determined to be a Severity Level IV NCV. Although this NRC identified violation was repetitive, the inspectors concluded that it was not due to inadequate corrective actions for the previous violation. The primary cause of this finding was related to the cross-cutting area of problem identification and resolution because the licensee did not correctly evaluate the two safety valve test failures with respect to the reporting requirements in 10 CFR 50.73. (IMC 0305, P.1(c))  
Inspection Report# : [2007003](#) (*pdf*)

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**Significance:** Mar 02, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Identify and Correct a Condition Adverse to Quality**

The inspectors identified a finding having very low safety significance and an associated Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action" for the licensee's failure to promptly identify that the Unit 1 Train A (1-CD) emergency diesel generator (EDG) would exceed its capacity rating. Specifically, the 1-CD EDG's capacity rating would have been exceeded if the 1-CD EDG was allowed to run at the upper frequency band of 61.2 Hz as allowed by Technical Specifications (TS). As a result, the licensee performed corrective action calculations to assess the finding and on March 1, 2007, imposed an operational upper frequency limit of =60.5Hz on the station's Unit 1 EDGs. This finding has a cross-cutting aspect in the area of problem identification and resolution associated with the corrective action program because the licensee did not take appropriate corrective action to address the safety

issue in a timely manner commensurate with its safety significance and complexity.

This finding was more than minor because the 1-CD EDG would have exceeded its design load rating at the maximum TS allowed frequency of 61.2Hz. Without the evaluation and imposing an administrative limit, the licensee could not ensure that the 1-CD EDG would reliably perform its safety related-function. The finding was of very low safety significance based on a Phase 1 screening in accordance with Inspection Manual Chapter 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations."

Inspection Report# : [2007002](#) (*pdf*)

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## Barrier Integrity

**Significance:**  Mar 02, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Correct Inadequate Safety Analysis Dose Calculations**

The inspectors identified a finding having very low safety significance and an associated Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action" for failure to promptly identify and correct a condition adverse to quality regarding inadequate safety analysis dose calculations. Specifically, the licensee failed to address the aggregate effect of various nonconforming conditions on containment leakage rates for offsite dose and control room calculations to ensure that accurate and adequate margin remained available for offsite dose analyses and control room habitability. The finding was entered into the licensee's corrective action program and an operability determination evaluation was initiated during the inspection. The primary cause of this violation was related to the cross-cutting area of problem identification and resolution because the licensee did not thoroughly evaluate known discrepant conditions.

This finding was more than minor because the licensee did not verify the capability of containment to maintain the offsite and control room dose within required limits under post-accident conditions to the values assumed in the analyses. The finding was of very low safety significance based on a Phase 1 screening in accordance with Inspection Manual Chapter 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations."

Inspection Report# : [2007002](#) (*pdf*)

**Significance:**  Mar 02, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Maintain Previously Imposed Compensatory Measures**

The inspectors identified a finding having very low safety significance and an associated Non-Cited Violation of 10 CFR Part 50.36, "Technical Specifications." Specifically, the licensee failed to maintain previously imposed administrative limits (i.e., compensatory measures) required by non-conforming Updated Final Safety Analysis Report offsite and control room dose analyses. The station operated from April 25, 2003, through February 28, 2007, based on analyses that included assumed containment leakage values that were not bounded by the licensee's TS 5.5.14, "Containment Leakage Rate Testing Program." Once the finding was identified by the inspectors, the licensee re-imposed the required compensatory measures during the inspection. The primary cause of this violation was related to the cross-cutting area of human performance because the licensee failed to communicate decisions with respect to containment leakage and the basis for those decisions to personnel.

The finding was more than minor in accordance with Inspection Manual Chapter (IMC) 0612, Appendix B because the finding was associated with the configuration control (containment design parameters maintained) attribute of the Barrier Integrity Cornerstone and affected the cornerstone's objective of maintaining the functionality of containment. Specifically, the licensee did not re-impose compensatory measures to limit the maximum allowable containment leakage rate to the values assumed in the analyses. The finding was of very low safety significance based on a Phase 1 screening in accordance with IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations."

## **Emergency Preparedness**

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## **Occupational Radiation Safety**

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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**

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