

D.C. Cook 2

2Q/2003 Plant Inspection Findings

Initiating Events

Significance:  Jun 30, 2003

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

Failure to Assure That Prompt Corrective Actions Were Taken to Address Age-related Failures of Reactor Control Instrumentation Power Supplies to Prevent Repetition of Power Supply Failures

The licensee failed to take effective corrective actions to address age-related failures of reactor control instrumentation power supplies and prevent an automatic Unit 2 reactor trip on February 5, 2003, due to the failure of similar power supplies. This finding was more than minor because, if left uncorrected, it would become a more significant safety concern since continued failures of reactor control instrumentation power supplies could result in additional reactor trips and challenge safety-related equipment. The finding was of very low safety significance because all mitigating systems were available during the event. A Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," was identified.

Inspection Report# : [2003006\(pdf\)](#)

Significance:  Dec 28, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Implement a Corrective Action to Prevent Recurrence Associated with Reactor Control Instrumentation Power Supply Failures

The inspectors identified a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action." The licensee failed to take corrective action to preclude the repetition of reactor control instrumentation 24-volt direct current power supply failures. Specifically, the licensee failed to perform weekly verification of control group power supplies to ensure that the "power available" status lights were lit. This corrective action was identified by the licensee in response to the Unit 2 reactor trip on May 12, 2002, which was caused by the failure of redundant power supplies in reactor control instrumentation cabinet 2-PS-CGC-16. The licensee subsequently performed this check on November 22, 2002, and discovered a failed 24-volt direct current power supply in Unit 1 cabinet 1-PS-CGC-16. The inspectors assessed this finding using the Significance Determination Process (SDP). The inspectors concluded that this issue could be reasonably viewed as a precursor to a significant event (i.e., potentially result in a reactor trip similar to the Unit 2 trip on May 12, 2002), and was therefore more than a minor concern. The inspectors also concluded that this finding was associated with the initiating events cornerstone and adversely affected the cornerstone objective. Specifically, the failure of redundant power supplies in reactor control instrumentation cabinets would upset plant stability (cause a reactor trip) and challenge the function of critical safety equipment. The inspectors performed a Phase 1 SDP review of this finding using the guidance provided in NRC Inspection Manual Chapter 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations." Because this finding contributes to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available, the inspectors determined that this finding required a Phase 2 SDP analysis. After a review of additional information, the inspectors determined that a Phase 3 analysis was required. The Phase 3 SDP analysis, performed with the assistance of the NRC probabilistic risk analysis staff, determined that the resultant Core Damage Frequency and Large Early Release Frequency associated with this finding were less than 1E-6 per year and 1E-7 per year, respectively.

Based on these results, this issue was determined to be of very low safety significance.

Inspection Report# : [2002009\(pdf\)](#)



Significance: Dec 28, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Provide Appropriate Instructions for a Planned Shutdown of Unit 2 which Resulted in Unnecessarily Challenging the Automatic Start Function of Unit 2 Turbine Auxiliary Feedwater Pump

The inspectors identified a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings." The licensee failed to provide appropriate instructions for conducting a planned shutdown of Unit 2 on January 19, 2002, which resulted in unnecessarily challenging the automatic start function of Unit 2 turbine driven auxiliary feedwater pump (TDAFWP). This issue was self-revealed when the TDAFWP unexpectedly started due to low steam generator levels following the manual reactor trip. The inspectors assessed this finding using the Significance Determination Process (SDP). The inspectors concluded that this finding was associated with the initiating events cornerstone and adversely affected the cornerstone objective and was therefore more than a minor concern. Specifically, the function of critical safety equipment was challenged and plant stability was upset during the performance of a normal plant shutdown by the automatic start of Unit 2 TDAFWP. The inspectors performed a Phase 1 SDP review of this issue using the guidance provided in NRC Inspection Manual Chapter 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations." Because this finding did not cause or contribute to the likelihood of an initiating event, the inspectors concluded that this issue was of very low safety significance.

Inspection Report# : [2002009\(pdf\)](#)



Significance: Dec 28, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Assure that Prompt Corrective Actions were Taken to Address Age-Related Failures of Reactor Control Instrumentation Power Supplies to Prevent Repetition of Power Supply Failures

The inspectors identified a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action." The licensee failed to assure that prompt corrective actions were taken to address age-related failures of reactor control instrumentation power supplies to prevent repetition of power supply failures, a significant condition adverse to quality. This issue was self-revealed on May 12, 2002, when an automatic reactor trip of Unit 2 occurred due to the failure of redundant 24-volt direct current power supplies in reactor control instrumentation cabinet 2-PS-CGC-16. The failure of both power supplies caused the number 21 steam generator feedwater regulating valve to close. Unit 2 subsequently tripped on low steam generator water level coincident with low feedwater flow. The inspectors assessed this finding using the Significance Determination Process (SDP). The inspectors concluded that this issue, if left uncorrected, would become a more significant safety concern with the likelihood of continued failures of reactor control instrumentation power supplies and was therefore more than a minor concern. The inspectors also concluded that this finding was associated with the initiating events cornerstone and adversely affected the cornerstone objective. Specifically, the failure of redundant power supplies in reactor control instrumentation cabinets would upset plant stability (cause a reactor trip) and challenge the function of critical safety equipment. The inspectors performed a Phase 1 SDP review of this finding using the guidance provided in NRC Inspection Manual Chapter (IMC) 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations." Because this finding contributes to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available, the inspectors determined that this finding required a Phase 2 SDP analysis. After a review of additional information, the inspectors determined that a Phase 3 analysis was required. The Phase 3 SDP analysis, performed with the assistance of the NRC probabilistic risk analysis staff, determined that the resultant Core Damage Frequency and Large Early Release Frequency associated with this finding were less than 1E-6 per year and 1E-7 per year,

respectively. Based on these results, this issue was determined to be of very low safety significance.
Inspection Report# : [2002009\(pdf\)](#)

Mitigating Systems

Significance:  Jun 30, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Identify the Cause and Take Corrective Action to Preclude Repetitive Unit 2 CD Emergency Diesel Generator Load Oscillations

The licensee failed to take effective corrective actions to address Unit 2 CD emergency diesel generator (EDG) load oscillations that occurred on November 2, 2002, to prevent recurrence of these oscillations on January 26, 2003. This finding was more than minor since the repetitive Unit 2 CD EDG load oscillations were associated with the Configuration Control attribute of the Mitigating Systems cornerstone and affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The finding was of very low safety significance because the impact of the unavailability of the EDG on overall plant risk was not significant. A Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," was identified.

Inspection Report# : [2003006\(pdf\)](#)

Significance:  Mar 31, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Promptly Evaluate Operability of a Letdown Isolation Valve for Degraded Conditions

The licensee failed to promptly evaluate operability of the Unit 1 normal Reactor Coolant System letdown isolation valve 1-QRV-112 on two occasions when its ability to satisfy inservice testing program requirements could not be demonstrated. This issue was of very low safety significance since the redundant letdown isolation valve, 1-QRV-111, was available during the period that 1-QRV-112 was inoperable and therefore no actual loss of safety function occurred. One Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," was identified.

Inspection Report# : [2003002\(pdf\)](#)

Significance:  Mar 31, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Correctly Evaluate Inservice Testing Failures of a Steam Generator Power Operated Relief Valve

Licensee personnel failed to promptly evaluate operability of number 23 steam generator power operated relief valve (PORV) 2-MRV-233 following inservice testing failures on two occasions. This issue was of very low safety significance since the redundant steam generator PORVs were available and therefore no actual loss of safety function occurred. One Non-Cited Violation of Technical Specification 4.0.5.a was identified.

Inspection Report# : [2003002\(pdf\)](#)

Significance:  Mar 03, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Take Adequate Corrective Action to Revise Procedure 12-MHP-5021-056-007

The licensee failed to take adequate corrective action to revise procedure 12-MHP-5021-056-007, "Turbine-driven Auxiliary Feedwater Pump Trip and Throttle Valve Linkage Adjustment" to include the manufacturer's recommendations regarding the set-up of the turbine trip throttle valve. This finding was determined to be a Non-Cited Violation of 10 CFR 50 Appendix B Criterion XVI, "Corrective Action". This finding was of very low safety significance because the inadequate corrective action in revising the procedure did not affect the operability or availability of the auxiliary feedwater system

Inspection Report# : [2003004\(pdf\)](#)

 **Significance:** Mar 03, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Take Corrective Action to Ensure That Only Turbine Trip Throttle Valve Latch Hooks with the Correct Geometry Would be Installed in the Turbine-Driven Auxiliary Feedwater Pumps

The licensee failed to take corrective action to ensure that only turbine trip throttle valve latch hooks with the correct geometry would be installed in the turbine-driven auxiliary feedwater pumps after determining that the incorrect part had been supplied by the manufacturer. This finding was determined to be a Non-Cited Violation of 10 CFR 50 Appendix B Criterion XVI, "Corrective Action". This finding was of very low safety significance because failure to take corrective action did not result in parts of incorrect geometry being installed in the auxiliary feedwater system and therefore did not affect the operability or availability of the system.

Inspection Report# : [2003004\(pdf\)](#)

 **Significance:** Dec 28, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Assure that Corrective Actions were Taken to Preclude Repetition of EDG Starting Air System Relay Failures

The inspectors identified a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action." The licensee failed to assure that corrective actions were taken to preclude repetition of emergency diesel generator (EDG) starting air system relay failures, a significant condition adverse to quality. This issue was self-revealed when the failure of a starting air system relay for the Unit 2 AB EDG occurred on October 16, 2002, causing the engine to roll without a valid start signal. The inspectors subsequently identified that appropriate corrective actions to prevent repetition had not been taken following two previous age-related EDG air start relay failures in January 1999 and September 2000. The inspectors assessed this finding using the Significance Determination Process (SDP). The inspectors concluded that this issue, if left uncorrected, would become a more significant safety concern and was therefore more than a minor concern. The inspectors also concluded that this finding was associated with the mitigating systems cornerstone and adversely affected the cornerstone objective. Specifically, the repetitive EDG air start relay failures affected the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The inspectors performed a Phase 1 SDP review of this finding using the guidance provided in NRC Inspection Manual Chapter 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," and determined that this finding was a licensee performance deficiency of very low safety significance because the finding: (1) was not a design or qualification deficiency; (2) did not represent an actual loss of safety function of a system; (3) did not represent an actual loss of safety function of a single train for greater than its Technical Specification allowed outage time; (4) did not represent an actual loss of safety function of one or more Non-Technical Specification trains of equipment designated as risk significant; and (5) did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event.

Inspection Report# : [2002009\(pdf\)](#)



Significance: May 17, 2002

Identified By: NRC

Item Type: VIO Violation

Essential Service Water Strainer Maintenance Instructions Not Appropriate to the Circumstances

Documented instructions for essential service water (ESW) pump discharge strainer maintenance did not contain adequate detail regarding critical parameters for basket installation. Consequently, faulty strainer basket installation practices contributed to the failure of an ESW pump discharge strainer basket and created the potential for debris to bypass the strainer and enter the ESW system. On August 29, 2001, the failed Unit 1 East ESW pump discharge strainer, in conjunction with the ESW system alignment with all normal and alternate diesel generator (D/G) ESW supply valves open, caused significant debris fouling of the D/G heat exchangers. While operator actions prevented the debris fouling from causing a complete loss of the D/Gs ability to perform their emergency AC power safety function, the potential for a complete loss of all emergency AC power during a loss of offsite power was determined to exist. This finding was assessed using the applicable SDP as a potentially safety significant finding that was preliminarily determined to be of substantial safety significance. Final Significance Determination for a White Finding and Notice of Violation Letter issued on October 3, 2002, EA-01-286. SUPPLEMENTAL INSPECTION SUMMARY - INSPECTION REPORT 2003-04 The NRC performed this supplemental inspection to assess the licensee's evaluation of two White findings in the Mitigating Systems Cornerstone. The first White finding involved the failure to take appropriate corrective action to prevent the repetitive failure of the Unit 2 turbine-driven auxiliary feedwater (TDAFW) pump. The second White finding involved a failed essential service water (ESW) strainer basket, caused by inadequate strainer basket installation instructions, which permitted debris to bypass the strainer and enter the essential service water system, resulting in the debris intrusion event experienced at the D.C. Cook Nuclear Power Plant on August 29, 2001. During this supplemental inspection, a significant weakness was identified with regard to the licensee's evaluation of the findings. The licensee's evaluation adequately assessed the root causes, and appropriate corrective actions were initially assigned. The inspectors identified that two corrective actions assigned to perform important extent of condition reviews were not adequately completed. These reviews were to determine the extent of condition of the adequacy of maintenance procedures and to determine the extent of condition of equipment-related condition reports that were inadequately evaluated or closed. The failure to adequately complete the extent of condition reviews was determined to be a significant weakness in the licensee's evaluation. As a result, the two White performance issues associated with the Degraded Cornerstone will not be closed at this time. SUPPLEMENTAL INSPECTION SUMMARY - INSPECTION REPORT 2003009 The NRC performed a follow-up supplemental inspection to assess the licensee's extent of condition evaluation for the two White performance issues associated with the Degraded Cornerstone. The failure to perform an adequate extent of condition evaluation was identified during the initial supplemental inspection and was considered a significant weakness in the licensee's evaluation. This resulted in the two White findings remaining open pending the licensee's completion of the extent of condition evaluation and the NRC's inspection of the evaluation. The inspectors concluded during the follow-up supplemental inspection that the licensee had completed an adequate extent of condition evaluation. As a result, the two White findings will be closed as of the end of the second quarter 2003.

Inspection Report# : [2001017\(pdf\)](#)

Inspection Report# : [2003009\(pdf\)](#)



Significance: Mar 31, 2002

Identified By: NRC

Item Type: VIO Violation

Failure to Take Prompt Corrective Action to Prevent Repetitive Failure of the Unit 2 Turbine Driven Auxiliary Feedwater Pump

A Violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Actions," was identified for the licensee's failure to take prompt corrective actions to prevent a repetitive failure of the Unit 2 turbine driven auxiliary feedwater pump (TDAFWP). Specifically, the Unit 2 TDAFWP failed to start on August 10, 2001, due to the failure of the trip throttle

valve latch mechanism to remain engaged during pump start. On December 13, 2001, the licensee obtained information from the trip throttle valve vendor identifying critical parameters for the trip hook mechanism geometry and alignment and failed to promptly perform corrective actions to verify that the Unit 2 TDAFWP trip hook conformed to these critical parameters. Consequently, a second failure of the Unit 2 TDAFWP occurred on January 18, 2002, due to the failure of the trip throttle valve latch mechanism to remain engaged during pump start. The inspectors and Region III Senior Reactor Analysts assessed this finding using the Significance Determination Process (SDP). A Phase 3 SDP analysis was performed using insights from the licensee's updated Probabilistic Risk Assessment model. Based on the results of the Phase 3 SDP analysis, the NRC staff determined that this finding has a low to moderate safety significance because the resultant 80 day fault exposure time represented an actual loss of safety function for a single train of auxiliary feedwater for greater than its Technical Specification allowed outage time and the train would have been unavailable if called upon for actual mitigation purposes. Final Significance Determination for a White Finding and Notice of Violation Letter issued on May 6, 2002, EA-02-010. SUPPLEMENTAL INSPECTION SUMMARY - INSPECTION REPORT 2002005 This supplemental inspection was performed to assess the licensee's evaluation of a White inspection finding that resulted from the licensee's failure to take appropriate corrective actions to prevent the repetitive failure of the Unit 2 TDAFWP. The pump failures were due to the unlatching of the TDAFWP trip throttle valve caused by incorrect machining of the trip throttle valve trip hook. During this supplemental inspection, performed in accordance with NRC Inspection Procedure 95001, the inspector concluded that the licensee performed a thorough root cause evaluation of the pump failures and identified the root cause and contributing cause for the events. The licensee's corrective actions were reasonable and appropriately addressed the causes and the extent of condition of the pump failures. However, the inspector concluded that the licensee's apparent cause evaluation, which was supposed to address the cause for the corrective action violation itself, did not adequately address why the licensee failed to take appropriate corrective actions to prevent a repetitive failure of the Unit 2 TDAFWP in January 2002. In response to the inspector's questions, the licensee re-opened the evaluation and provided reasonable corrective actions. Given the licensee's acceptable performance in addressing the repetitive TDAFWP failures, the White finding associated with this issue will only be considered in assessing plant performance for a total of four quarters in accordance with the guidance in NRC Inspection Manual Chapter 0305, "Operating Reactor Assessment Program." SUPPLEMENTAL INSPECTION SUMMARY - INSPECTION REPORT 2003004 The NRC performed this supplemental inspection to assess the licensee's evaluation of two White findings in the Mitigating Systems Cornerstone. The first White finding involved the failure to take appropriate corrective action to prevent the repetitive failure of the Unit 2 TDAFWP. The second White finding involved a failed essential service water strainer basket, caused by inadequate strainer basket installation instructions, which permitted debris to bypass the strainer and enter the essential service water system, resulting in the debris intrusion event experienced at the D.C. Cook Nuclear Power Plant on August 29, 2001. During this supplemental inspection, a significant weakness was identified with regard to the licensee's evaluation of the findings. The licensee's evaluation adequately assessed the root causes, and appropriate corrective actions were initially assigned. The inspectors identified that two corrective actions assigned to perform important extent of condition reviews were not adequately completed. These reviews were to determine the extent of condition of the adequacy of maintenance procedures and to determine the extent of condition of equipment-related condition reports that were inadequately evaluated or closed. The failure to adequately complete the extent of condition reviews was determined to be a significant weakness in the licensee's evaluation. As a result, the two White performance issues associated with the Degraded Cornerstone will not be closed at this time. SUPPLEMENTAL INSPECTION SUMMARY - INSPECTION REPORT 2003009 The NRC performed a follow-up supplemental inspection to assess the licensee's extent of condition evaluation for the two White performance issues associated with the Degraded Cornerstone. The failure to perform an adequate extent of condition evaluation was identified during the initial supplemental inspection and was considered a significant weakness in the licensee's evaluation. This resulted in the two White findings remaining open pending the licensee's completion of the extent of condition evaluation and the NRC's inspection of the evaluation. The inspectors concluded during the follow-up supplemental inspection that the licensee had completed an adequate extent of condition evaluation. As a result, the two White findings will be closed as of the end of the second quarter 2003.

Inspection Report# : [2003009\(pdf\)](#)

Inspection Report# : [2002005\(pdf\)](#)

Inspection Report# : [2002002\(pdf\)](#)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Significance: SL-IV Jun 30, 2003

Identified By: NRC

Item Type: VIO Violation

Deliberate Failure to Follow Radiation Protection Requirements

Severity Level IV Violation. On May 16, 2003, the NRC issued a Notice of Violation to the licensee associated with an incident that occurred at the D. C. Cook Nuclear Power Plant on January 28, 2002. The incident involved an employee of the Framatome Corporation, a contractor at the D. C. Cook plant, that failed to follow the instructions of a radiation protection technician and subsequently failed to immediately exit the work area in the Unit 2 Containment Building when the employee's electronic dosimetry alarmed. The NRC Office of Investigations investigated the matter and concluded that the individual deliberately failed to follow radiation protection requirements. Since the violation was determined to be deliberate, the NRC did not assign a significance to the violation using the Significance Determination Process. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," NUREG-1600, the violation was categorized at Severity Level IV.

Inspection Report# : [2003006\(pdf\)](#)

Public Radiation Safety

Physical Protection

Miscellaneous

Last modified : September 04, 2003