

## D.C. Cook 2

# 1Q/2004 Plant Inspection Findings

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## Initiating Events

**Significance:** N/A Nov 21, 2003

Identified By: NRC

Item Type: FIN Finding

### **Supplemental Inspection Summary for White Performance Indicator**

The NRC performed this supplemental inspection in accordance with Inspection Procedure 95001, "Inspection For One Or Two White Inputs In A Strategic Performance Area," to assess the licensee's evaluation associated with a White performance indicator in the Scrams With Loss of Normal Heat Removal area of the Initiating Events cornerstone. During this supplemental inspection, the inspector determined that the licensee's overall evaluation of the Scrams With Loss of Normal Heat Removal performance indicator was acceptable. The licensee utilized a structured approach to evaluate the circumstances of the individual plant trips and the collective significance of the three trips which led to the White performance indicator to identify potential common causes.

The licensee's corrective actions for each of the plant trips contributing to the White performance indicator were determined to correspond with the root and contributing causes identified by the root cause evaluations. At the conclusion of the inspection, the corrective actions were either completed or were being tracked for completion. The licensee had also established a process for performing reviews to assess the effectiveness of these corrective actions.

Inspection Report# : [2003014\(pdf\)](#)

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**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\(pdf\)](#)

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**Significance:** May 20, 2003

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

### **Inadequate Procedure For Off-Normal Forebay Conditions**

A finding of very low safety significance was self-revealed during an event when the licensee failed to develop and implement adequate procedures associated with operator response to off-normal forebay conditions.

The finding was more than minor because it could be reasonably viewed as a precursor to a significant event. The finding was determined to be of low safety significance because all mitigating systems were available during the event. This issue was determined to be a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings."

Inspection Report# : [2003008\(pdf\)](#)

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**Significance:** May 20, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Corrective Actions to Address 1996 Fish Intrusion Event**

A finding of very low safety significance was identified by the team regarding the ineffective implementation of a prior corrective action to develop and integrate into plant operations a rapid power reduction procedure for a 1996 fish intrusion event.

The finding was more than minor because it could be reasonably viewed as a precursor to a significant event. The finding was determined to be of low safety significance because all mitigating systems were available following the event. This issue was determined to be a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Actions."

Inspection Report# : [2003008\(pdf\)](#)

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## Mitigating Systems

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**Significance:** Nov 21, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Address Excessive Reactor Coolant System Cooldown**

A finding of very low safety significance was identified by the inspector when licensee personnel failed to take prompt and adequate corrective actions to address excessive reactor coolant system cooldown following a reactor trip. The primary cause of this finding was related to the cross-cutting area of Problem Identification and Resolution.

The finding was more than minor because the finding was associated with the Procedure Quality attribute of the Mitigating Systems cornerstone and adversely impacted the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. This finding was of very low safety significance, since it did not impact equipment operability, did not represent an actual loss of safety function of a system or train of safety-related or risk-significant equipment, and was not potentially risk significant due to external events. Corrective actions to address this issue included revising emergency operating procedures to reduce reactor coolant system cooldown by means that did not result in the loss of the normal heat removal path to the main condenser. One Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," was identified.

Inspection Report# : [2003014\(pdf\)](#)

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**Significance:** Nov 21, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

### **Concurrent Performance of Emergency Operating Procedures**

A finding of very low safety significance was identified by the inspector when licensee personnel failed to adhere to a procedure and closed main steam isolation valves prematurely following a reactor trip. The primary cause of this finding was related to the cross-cutting area of Human Performance.

The finding was more than minor, because the finding was associated with the Human Performance attribute of the Mitigating Systems cornerstone and adversely impacted the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. This finding was of very low safety significance, since it did not impact equipment operability, did not represent an actual loss of safety function of a system or train of safety-related or risk-significant equipment, and was not potentially risk significant due to external events. Corrective actions to address this issue included revising emergency operating procedures to reduce reactor coolant system cooldown by means that did not result in the loss of the normal heat removal path to the main condenser. One Non-Cited Violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified.

Inspection Report# : [2003014\(pdf\)](#)

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**Significance:** Nov 21, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Reactor Trip Emergency Operating Procedure**

A finding of very low safety significance was identified by the inspector when licensee personnel failed to have an adequate reactor trip response procedure. The primary cause of this finding was related to the cross-cutting area of Problem Identification and Resolution.

The finding was more than minor because the finding was associated with the Procedure Quality attribute of the Mitigating Systems cornerstone and adversely impacted the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. This finding was of very low safety significance, since it did not impact equipment operability, did not represent an actual loss of safety function of a system or train of safety-related or risk-significant equipment, and was not potentially risk significant due to external events. Corrective actions to address this issue included revising emergency operating procedures to reduce reactor coolant system cooldown by means that did not result in the loss of the normal heat removal path to the main condenser. One Non-Cited Violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified.

Inspection Report# : [2003014\(pdf\)](#)

**Significance:** Sep 30, 2003

Identified By: Self Disclosing

Item Type: FIN Finding

**Incorrect Sensing Line Configurations on Control Room Air Conditioning Units**

A finding of very low safety significance was self-revealed when licensee personnel failed to control the sensing line configuration on the Control Room Air Conditioning (CRAC) chiller units in accordance with design documentation which resulted in spurious tripping of an idle CRAC chiller unit upon initial start following an extended shutdown period. The primary cause of this finding was related to the cross-cutting area of Human Performance. The licensee subsequently corrected the sensing line configuration and successfully tested the operation of all four chiller units.

The finding was more than minor because this finding was associated with the Design Control and Equipment Performance attributes 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 because the reliability of the CRAC chiller units was impacted. This finding was of very low safety significance because the design deficiency did not result in a loss of function of the CRAC chiller units per Generic Letter 91-18. No violation of regulatory requirements occurred.

Inspection Report# : [2003010\(pdf\)](#)**Significance:** Sep 30, 2003

Identified By: Self Disclosing

Item Type: FIN Finding

**Maintenance Errors Result in Delay of Motor Driven Auxiliary Feedwater Pump Replacement**

A finding of very low safety significance was self-revealed when maintenance craftsmen failed to accurately measure, machine and install a replacement coupling during a planned maintenance activity on the Unit 2 West motor driven auxiliary feedwater pump which resulted in the unavailability of the pump significantly beyond the original 18-hour planned maintenance period. The licensee was granted enforcement discretion for Technical Specification 3.7.2.1.a to preclude a plant shutdown. The licensee subsequently completed repairs to the motor driven auxiliary feedwater pump and returned the pump to service within the enforcement discretion period. The primary cause of this finding was related to the cross-cutting area of Human Performance.

The finding was more than minor because the finding was associated with the Equipment Performance and Human Performance attributes 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 since the motor driven auxiliary feedwater pump was rendered unavailable for an extended period of time. The finding was of very low safety significance because the unavailability of the motor driven auxiliary feedwater pump on overall plant risk was not significant. No violation of regulatory requirements occurred.

Inspection Report# : [2003010\(pdf\)](#)**Significance:** Sep 30, 2003

Identified By: Self Disclosing

Item Type: FIN Finding

**Inappropriate Procedure for Testing Switchyard Breaker**

A finding of very low safety significance was self-revealed when licensee personnel failed to accomplish testing of 345 kilovolt (kV) switchyard breaker "L" with an adequate procedure which resulted in the loss of the Class 1E reserve feed supply to Train "B" safety-related equipment for Unit 1 and Unit 2. The primary cause of this finding was related to the cross-cutting area of Human Performance. The licensee subsequently restored the switchyard Class 1E reserve feed supply and issued a standing order to control maintenance and testing in the switchyard.

The finding was more than minor because this finding was associated with the Procedure Quality 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 since the reliability of the offsite Class 1E reserve feed supply to safety-related equipment for both units was affected. This finding was of very low safety significance since it did not result in the actual loss of the safety function of any safety-related equipment. No violation of regulatory requirements occurred.

Inspection Report# : [2003010\(pdf\)](#)**Significance:** Sep 30, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Correctly Implement a Design Modification on the Unit 2 West Residual Heat Removal System Train**

The inspectors identified a Non-Cited Violation of Technical Specification 6.8.1.a. The licensee failed to correctly implement a design modification on the Unit 2 West residual heat removal (RHR) train in accordance with the approved work instructions and design documents. Specifically, the licensee failed to correctly install the first weld of the new high point vent assembly per the approved weld detail and returned

the pump to service with the non-conforming condition. The inspectors identified this error after the weld had already been accepted by the licensee's quality control (i.e., performance verification) inspection process and the pump was returned to service. The licensee subsequently corrected the weld to meet the approved design.

The inspectors concluded that this issue was associated with the mitigating systems cornerstone and adversely affected the cornerstone objective. Specifically, the inspectors determined that the installed weld would be more susceptible to vibration induced fatigue failure than the approved weld, and if this condition were not corrected it could lead to a premature failure of the weld, affecting the function and integrity of the RHR system. The inspectors concluded that this finding was a licensee performance deficiency of very low safety significance because it did not result in loss of safety function for the West RHR train for greater than its Technical Specification allowed outage time.

Inspection Report# : [2003010\(pdf\)](#)



**Significance:** Jul 11, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

**Untimely Corrective Action For Diesel Fuel Oil Day Tank Level Issue**

A finding of very low safety significance was identified involving a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion XVI, Corrective Actions, for the failure to timely resolve Technical Specification interpretation inconsistencies associated with the total required volume in the emergency diesel generator fuel oil day tanks. These inconsistencies were identified by the licensee in August 2000, however, as of July 11, 2003, this issue remains unresolved.

This finding is greater than minor because the licensee corrective actions have not been timely in resolving this issue. This issue affected the mitigating systems cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. This finding is of very low safety significance because there was not a loss of function as each fuel oil system contains redundant, safety-related fuel oil transfer pumps that would start prior to reaching the unusable volume in the day tank; and that these pumps have shown good reliability.

Inspection Report# : [2003007\(pdf\)](#)



**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:** May 20, 2003

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

**Inadequate Strainer Material Review**

A finding of very low safety significance was self-revealed during an event when the licensee failed to adequately assess the suitability of a vendor's substitution of lighter weight stainless steel mesh in the construction of replacement safety-related essential service water discharge strainers.

The finding was more than minor because it could be reasonably viewed as a precursor to a significant event. The finding was determined to be of low safety significance because all mitigating systems were available following the event. This issue was determined to be a Non-Cited Violation of 10 CFR 50, Appendix B, Criterion III, "Design Control."

Inspection Report# : [2003008\(pdf\)](#)



**Significance:** Apr 11, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Ensure Alternative Shutdown Capability Could Accommodate Post-Fire Conditions Where Off-Site Power is Not Available**

A finding of very low safety significance was identified by the inspectors in that the licensee failed to ensure that alternative shutdown capability for a fire area could accommodate post-fire conditions where offsite power would not be available. Specifically, for a postulated fire in fire zone 41, onsite power (i.e., emergency diesel generators) may not be available due to fire damage.

This finding was more than minor because alternative shutdown capability was not assured for when off-site power would not be available. The finding was of very low safety significance because off-site power would not be affected by a fire in fire zone 41. This issue was a violation of 10 CFR 50.48 and 10 CFR Part 50, Appendix R, Section III.L.3 which required alternative shutdown capability to accommodate power-fire conditions where off-site power is available and where off-site power is not available for 72 hours.

Inspection Report# : [2003005\(pdf\)](#)

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**Significance:** Apr 11, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Ensure Control Room Ventilation Would be Free of Fire Damage**

A finding of very low safety significance was identified by the inspectors in that the control room heating, ventilation, and air conditioning (HVAC) system would be damaged for a postulated fire in fire zone 41. The cause of this finding was related to the cross-cutting area of Problem Identification and Resolution. Despite previously identifying the issue, the licensee failed to properly address this issue in that they mistakenly believed that performing a repair to the control room HVAC system in the event of a fire would meet regulatory requirements.

This finding was more than minor because one train of systems (i.e., control room HVAC) necessary to achieve and maintain hot shutdown conditions would not be free of fire damage for a postulated fire. The finding was of very low safety significance because actions to repair the control room HVAC system were proceduralized and provisions for providing temporary ventilation existed. This issue was a violation of 10 CFR 50.48 and 10 CFR Part 50, Appendix R, Section III.G.1 which required that one train of systems necessary to achieve and maintain hot shutdown conditions be free of fire damage.

Inspection Report# : [2003005\(pdf\)](#)

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**Significance:** Apr 11, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Provide Adequate Emergency Lighting**

A finding of very low safety significance was identified by the inspectors in that the licensee had failed to ensure that there was adequate emergency lighting (i.e., in the shift manager's office) for required safe shutdown actions (i.e., the retrieval of safe shutdown emergency procedures and equipment). The cause of this finding was related to the cross-cutting area of Problem Identification and Resolution. Despite previously identifying this issue, the licensee failed to properly address this issue in that they mistakenly believed that the shift manager's office was not a safe shutdown pathway.

This finding was more than minor because the lack of emergency lighting could result in delay of accomplishing safe shutdown actions. The finding was of very low safety significance because of the availability of portable head lamps. This issue was a violation of 10 CFR 50.48 and 10 CFR Part 50, Appendix R, Section III.J which required that emergency lighting units with at least an 8-hour battery power supply be provided in all areas needed for operation of safe shutdown equipment and in access and egress routes thereto.

Inspection Report# : [2003005\(pdf\)](#)

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**Significance:** Apr 11, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate Carbon Dioxide Concentrations**

A finding of very low safety significance was identified by the inspectors in that the licensee had failed to ensure that minimum required carbon dioxide (CO<sub>2</sub>) system concentrations would be achieved for two fire zones. The cause of this finding was related to the cross-cutting area of Problem Identification and Resolution. Despite previously identifying this issue, the licensee failed to properly address this issue because they failed to address non-compliance with the applicable National Fire Protection Association (NFPA) code.

This finding was more than minor because a fire protection feature (i.e., a fixed suppression system) was adversely affected. The finding was of very low safety significance because of remaining available mitigation capability. This issue was a violation of a license condition which, by reference, invoked the applicable NFPA code which required a minimum CO<sub>2</sub> concentration.

Inspection Report# : [2003005\(pdf\)](#)



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**Significance:** Dec 27, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

**Non-Code Calibration Block Used For Examination of Vessel-to-Flange Welds**

The inspector identified a Non-Cited Violation of 10 CFR 50.55a(g)(4) associated with use of a non-Code calibration block for calibration of equipment used in ultrasonic examinations of the reactor vessel-to-flange welds for Unit 1 and Unit 2. Specifically, the calibration block exceeded the American Society of Mechanical Engineers (ASME) Code specified thickness, did not have reflectors (side drilled holes) located at the required locations and did not contain square notch type reflectors.

This finding was more than minor because it could have become a more significant safety concern if not corrected. Specifically, the licensee had scheduled an ultrasonic examination of the vessel-to-flange weld during the current outage and intended to use the non-Code calibration block. Had this issue not been identified, it would have resulted in a non-Code examination, which could have resulted in undetected weld flaws remaining in-service (e.g., a degraded reactor coolant system boundary). The finding was of very low safety significance because other examinations of the reactor vessel-to-flange welds had been conducted in accordance with the Code. To address this issue, the licensee planned to generate procedures to better control the process for these types of inspections.

Inspection Report# : [2003012\(pdf\)](#)

## Emergency Preparedness

## Occupational Radiation Safety

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**Significance:** Dec 05, 2003

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

**Failure to Follow the Radiation Work Permit and the Procedure Governing Radiation Worker Practices During Reactor Coolant Filter Change-Out Work**

A self-revealed finding of very low safety significance and an associated Non-Cited Violation (NCV) were identified when an individual continued to work through both accumulated dose and dose rate electronic dosimetry (ED) alarms, and failed to fully utilize intended radiation shielding while changing-out the Unit 2 reactor coolant filter. As a result, the worker received unintended dose for the work activity.

The finding was more than minor because the failure to stop work upon receiving ED dose and dose rate alarms, the failure to adequately use time, distance and shielding fundamentals in the execution of the filter change-out work coupled with inadequate radiation protection technician job coverage were associated with the "Human Performance" attribute of the Occupational Radiation Safety Cornerstone. The finding affected the cornerstone objective of ensuring adequate protection of worker health and safety from exposure to radiation. The finding was of very low safety significance because the worker's radiation exposure was low relative to regulatory limits, and because there was not a substantial potential for a worker overexposure; nor was the licensee's ability to assess worker dose compromised. To address this issue, the licensee implemented several corrective actions to ensure improved in-field oversight of work in high radiological risk areas, and to ensure workers better understand their responsibilities as radiation workers.

Inspection Report# : [2003016\(pdf\)](#)**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



**Significance:** Oct 28, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Conduct an Adequate Radiological Survey**

A finding of very low safety significance was self-revealed when a second survey of a valve that was previously surveyed and unconditionally released from the radiologically controlled area identified that the valve was contaminated. The primary cause of this finding was related to the cross-cutting area of Human Performance.

The finding was more than minor because this finding was associated with the Human Performance and Program and Process attributes of the Public Radiation Safety cornerstone and adversely impacted the cornerstone objective of ensuring adequate protection of the public health and safety from exposure to radioactive materials released or potentially released into the public domain. The finding was of very low safety significance because the public radiation exposure resulting from the problem was low and the finding was not repetitive. To address this issue, the licensee performed a thorough extent of condition evaluation to ensure that contaminated residue was identified which included radiation surveys in offsite areas and of personal items located outside the radiologically controlled area. One Non-Cited Violation of Technical Specification 6.8.1 regarding licensee procedures that govern the unconditional release of radioactive material was identified.

Inspection Report# : [2003010\(pdf\)](#)



**Significance:** Oct 08, 2003

Identified By: Self Disclosing

Item Type: VIO Violation

### **Failure to Prepare a Shipment of Radioactive Waste to Satisfy Department of Transportation External Package Radiation Level Limits**

A violation was identified for the failure to prepare a package of radioactive material for shipment, so that under conditions normally incident to transportation, the radiation level does not exceed 200 millirem/hour at any point on the external surface of the package. Package surface radiation levels in excess of 200 millirem/hour were identified by a waste processing contractor upon receipt of the shipment from the licensee. The finding was more than minor because it was associated with the "Program and Process" attribute of the Public Radiation Safety Cornerstone, and affected the cornerstone objective of ensuring adequate protection of public health and safety from exposure to radioactive materials released into the public domain. Also, the issue involved an occurrence in the licensee's radioactive material transportation program that was contrary to NRC and Department of Transportation (DOT) regulations. The finding was determined to be of low to moderate safety significance because the transportation problem involved an external package radiation level that exceeded limits by 25 percent and because the area of elevated radiation on the package was determined to be accessible to a member of the public during conditions normally incident to transportation. To address this issue, the licensee planned to revise procedures to require load plans and to specify which survey instrumentation is to be used for package surveys, and to provide training to its staff involved in radioactive material shipments.

Final Significance Determination for a White Finding and Notice of Violation Letter Issued on March 12, 2004, EA-04-006.

Inspection Report# : [2004005\(pdf\)](#)

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## Physical Protection

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## Miscellaneous

Last modified : May 11, 2004