

Duane Arnold 4Q/2005 Plant Inspection Findings

Initiating Events

Significance: SL-IV Nov 18, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

UFSAR CHANGE REDUCING CAPABILITY OF THE AUTOMATIC RUNBACK OF THE RECIRCULATION PUMPS ON A FEEDWATER PUMP TRIP.

The inspectors identified a Severity Level IV Non-Cited Violation associated with the failure to perform an adequate safety evaluation review as required by 10 CFR 50.59 for changes made to the facility as described in the Updated Safety Analysis Report (USAR). Specifically, the licensee adversely changed the license basis function of the recirculation pump runback in the UFSAR such that the recirculation runback feature could no longer prevent a reactor scram if a feedwater pump tripped. Within the 10 CFR 50.59 evaluation, the licensee failed to provide a basis for why this malfunction of the recirculation pumps' runback logic (equipment important to safety) did not present more than a minimal increase in the likelihood of occurrence of a malfunction of a Structure, System and Component (SSC) important to safety.

Because the issue affected the NRC's ability to perform its regulatory function, this finding was evaluated using the traditional enforcement process. The finding was determined to be more than minor because the inspectors could not reasonably determine that the UFSAR change, which adversely affected equipment important to safety, would not have ultimately required NRC approval. The finding was determined to be of very low safety significance (Green) based on the results of the SDP Phase 1 screening worksheet.

Inspection Report# : [2005013\(pdf\)](#)

G

Significance: Oct 25, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO IDENTIFY AND CONTROL TRANSIENT COMBUSTIBLES IN THE SOUTHEAST CORNER ROOM OF THE REACTOR BUILDING.

A finding of very low safety significance was identified by the inspectors for the failure to control and evaluate transient combustibles in the southeast corner room of the reactor building. The transient combustibles consisted of wood planking located on scaffolding within the room. The primary cause of this finding was related to the cross-cutting area of Human Performance for the failure to follow approved procedures. The licensee entered this issue into their corrective action program and processed the associated combustible permits.

This finding was more than minor because it matched example 4.a. in Appendix E, "Examples of Minor Issues and Cross-Cutting Aspects," of Inspection Manual Chapter (IMC) 0612, "Power Reactor Inspection Reports." This was due to the fact that the licensee routinely failed to perform evaluations on similar issues. The finding was of very low safety significance because of the low fire degradation rating associated with wood. The issue was an NCV of License Condition 2.C.(3) that requires the licensee to implement and maintain in effect all provisions of the approved fire protection program.

Inspection Report# : [2005005\(pdf\)](#)

G

Significance: Oct 25, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE CORRECTIVE ACTIONS FOR THE CONTROL OF TRANSIENT COMBUSTIBLES.

A finding of very low safety significance was identified by the inspectors for failure to correct deficiencies with the control of transient combustibles. The transient combustibles consisted of wood planking located on scaffolding. The primary cause of this finding was related to the cross-cutting area of Problem Identification and Resolution due to inadequate corrective actions for repeated deficiencies associated with the control of transient combustibles. The licensee entered this issue into their corrective action program, processed the associated combustible permits, and performed an apparent cause evaluation.

This finding was more than minor because it matched example 3.g. in Appendix E, "Examples of Minor Issues and Cross-Cutting Aspects," of IMC 0612, "Power Reactor Inspection Reports." This was due to the fact that the licensee failed to take actions to correct nonconforming conditions. The finding was of very low safety significance because of the low fire degradation rating associated with wood. The issue was an NCV of License Condition 2.C.(3), that requires the licensee to implement and maintain in effect all provisions of the approved fire protection program.

Inspection Report# : [2005005\(pdf\)](#)

G

Significance: Aug 25, 2005

Identified By: Self-Revealing

Item Type: FIN Finding

FAILURE TO ADEQUATELY VERIFY A VALVE LINEUP IN THE FIRE PROTECTION SYSTEM.

A finding of very low safety significance was identified through a self revealing event when an operator failed to adequately verify a valve lineup in the fire protection system. The valve that was inadvertently left open caused partial flooding and contamination of the first floor of the reactor building. The primary cause of this finding was related to the cross-cutting area of Human Performance (Personnel). The licensee entered this issue into their corrective action program and decontaminated the associated floor areas.

The finding was more than minor because the failure to verify proper a valve lineup prior to restoring the system has the potential to adversely impact plant equipment, thereby affecting plant safety. This finding was determined to be of very low safety significance since it did not impact any mitigating systems capability. Since no 10 Code of Federal Regulations (CFR) 50, Appendix B components were impacted by this finding, no violation of NRC requirements occurred.

Inspection Report# : [2005004\(pdf\)](#)

G

Significance: Jun 03, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO IDENTIFY TRANSIENT COMBUSTIBLES.

A finding of very low safety significance was identified by the inspectors for failure to identify unapproved transient combustibles in the reactor building. The transient combustibles consisted of wood planking on scaffolding in the motor-generator set room of the reactor building. The primary cause of this finding was related to the cross-cutting area of Human Performance. Despite a license condition to perform periodic inspections to minimize transient combustibles, licensee personnel failed to identify that scaffolding contained unapproved combustibles for 231 days.

This finding was more than minor because the failure to identify transient combustibles, if left uncorrected, could lead to a more safety significant concern. Also, a fire involving scaffolding materials could affect cable trays containing cables important to safety, thereby increasing the probability that a safety function would be challenged. The finding was of very low safety significance because of the low degradation rating against the combustible control program, since wood will not ignite to a fire from existing sources of heat or electrical energy. The issue was a Non-Cited Violation (NCV) of license condition 2.C.(3) which required the licensee to implement and maintain in effect all provisions of the approved fire protection program.

Inspection Report# : [2005009\(pdf\)](#)

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Significance: Jun 01, 2005

Identified By: NRC

Item Type: FIN Finding

FAILURE TO CONTROL MATERIALS IN THE AREAS ADJACENT TO THE MAIN, STARTUP, AND STANDBY TRANSFORMERS AND THE SWITCHYARD.

A finding of very low safety significance was identified by the inspectors regarding the failure to control materials in the areas adjacent to the main, startup, and standby transformers and the switchyard. The licensee entered this issue into their corrective action program.

The finding was more than minor because it adversely impacted the initiating events cornerstone attribute for protection against external factors designed to limit the likelihood of events that upset plant stability. This finding was determined to be of very low safety significance since it did not impact any mitigating systems capability. No 10 CFR 50, Appendix B components were impacted by this finding, therefore, no violations of NRC requirements occurred.

Inspection Report# : [2005003\(pdf\)](#)

G

Significance: May 06, 2005

Identified By: NRC

Item Type: FIN Finding

FAILURE TO HAVE ALL SUPPORT HARDWARE ATTACHED TO THE DBD-3 DRAIN LINE FROM THE 6A & 6B FEEDWATER HEATERS.

A finding of very low safety significance was identified by the inspectors for the failure to have all supporting hardware attached to the DBD-3 Drain Line from the 6A & 6B Feedwater Heaters. The licensee installed the appropriate supporting hardware.

The finding was more than minor, since if left uncorrected, it would become a more significant safety concern due to potential weld failure from cyclic stress. This finding was determined to be of very low safety significance since it did not impact any mitigating systems capability. The DBD-3 drain line is not classified as a safety-related system, structure, or component, therefore, no violations of NRC requirements occurred.

Inspection Report# : [2005003\(pdf\)](#)

Significance:  Apr 14, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PROPERLY PREPLAN MAINTENANCE INSTRUCTIONS RESULTING IN AN INADVERTENT GROUP SEVEN ISOLATION.

A finding of very low safety significance was identified through a self-revealing event regarding the failure to have adequate maintenance procedures while working on the Drywell to Reactor Building Closed Cooling Water Loop Return Header Isolation. The inadequate procedure resulted in an inadvertent Group Seven Isolation. The licensee restored the inadvertent Group Seven Isolation and informed all site personnel of the issue through a yellow announcement sheet.

The finding was more than minor because this event had an adverse impact on the initiating events cornerstone attribute of procedural quality. The inadequate procedure resulted in an actual Group Seven isolation. This finding was determined to be of very low safety significance since the finding did not increase the likelihood of a loss of reactor coolant system (RCS) inventory, or degrade the ability to terminate a leak path, or degrade the ability to recover decay heat removal (DHR). An NCV of Technical Specification (TS) 5.4.1, "Procedures," was identified for the failure to have adequate maintenance procedures.

Inspection Report# : [2005003\(pdf\)](#)

Significance:  Apr 14, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO PROPERLY PERFORM MAINTENANCE INSTRUCTIONS RESULTING IN AN INADVERTENT GROUP THREE ISOLATION.

A finding of very low safety significance was identified through a self-revealing event for the failure to properly perform a maintenance procedure while working on the Reactor Protection System Trip Channel A1, "High Drywell Pressure." The improperly performed procedure resulted in an inadvertent Group Three Isolation. The licensee restored the inadvertent Group Three Isolation and informed all site personnel of the issue through a yellow announcement sheet.

The finding was more than minor because of its adverse impact on the initiating events cornerstone attribute of procedural quality. The inadequately performed procedure resulted in an actual Group Three Isolation. This finding was determined to be of very low safety significance since the finding did not increase the likelihood of a loss of RCS inventory, or degrade the ability to terminate a leak path, or degrade the ability to recover DHR. An NCV of TS 5.4.1, "Procedures," was identified for the failure to properly perform maintenance procedures.

Inspection Report# : [2005003\(pdf\)](#)

Mitigating Systems

Significance:  Nov 18, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO CONSIDER ADVERSE AMPACITY EFFECTS OF HIGH TEMPERATURE CONDITIONS IN THE CONDENSER AND HEATER BAY ROOM.

A finding of very low safety significance was identified by the inspectors associated with a violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," where the licensee had not evaluated and updated the plant cable ampacity calculation to determine the potential consequences of adverse effects to cabling due to higher temperatures in the Condenser and Heater Bays. After identification by the team, the licensee was able to demonstrate that even though the higher temperatures decreased the ampacity margins for the effected cabling, it did not decrease the margins to the limit where the cabling would fail if called upon to provide power to equipment important to safety.

The finding was more than minor because it affected the mitigating system cornerstone attribute of "Design Control." Specifically, the licensee did not account for high temperature conditions in the Condenser and Heater Bay room that adversely affected the ampacity of cabling supplying power to equipment important to safety. This finding was of very low safety significance because it screened out using the Phase 1 worksheet. Specifically, the licensee's preliminary evaluation determined that the higher temperatures would not prevent pertinent equipment from functioning.

Inspection Report# : [2005013\(pdf\)](#)

Significance:  Aug 05, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO MEET TRAVEL DISTANCE REQUIREMENTS FOR FIRE EXTINGUISHERS IN THE REACTOR BUILDING.

A finding of very low safety significance was identified by the inspectors for a violation of the fire protection license condition. The licensee failed to ensure that travel distance requirements were met for fire extinguishers in the reactor building. Once this issue was identified, the licensee entered the issue into their corrective action program and initiated work requests to provide additional fire extinguishers. The primary cause of this violation was related to the Identification subcategory of the Problem Identification and Resolution cross-cutting area. Licensee fire protection personnel failed to identify that the placement of fire extinguishers did not satisfy fire protection code requirements during a self-assessment of code compliance for fire extinguishers performed in April 2004.

This finding was more than minor because the ability to manually fight a small fire in the area of the spent fuel pool cooling and cleanup pumps was adversely affected. The issue was of very low safety significance due to the limited impact a fire would have in the affected fire zones and the relatively low ignition frequency for the affected fire zones. The finding was a Non-Cited Violation (NCV) of License Condition 2.3.(C) which required the licensee to implement and maintain in effect all provisions of the approved fire protection program as described in Safety Evaluation Report dated June 1, 1978, which specified compliance to the applicable fire protection code for fire extinguishers. Inspection Report# : [2005004\(pdf\)](#)

G

Significance: Jul 11, 2005

Identified By: NRC

Item Type: VIO Violation

FAILURE TO COMPLY WITH THE REQUIREMENTS OF 10 CFR 50.59 FOR A CHANGE TO THE PROCEDURES FOR NON-NUCLEAR HEAT CLASS 1 SYSTEM LEAKAGE PRESSURE TEST.

The inspectors identified that a change to the procedures for the Non-Nuclear Heat Class 1 System Leakage Pressure Tests required prior NRC approval. The procedural changes lengthened the amount of time that the reactor coolant system would exceed 212 F, an unplanned mode change, and added control rod drive scram time testing. These procedural changes resulted in a need for a change in the Technical Specifications (TS) 3.10.1, "System Leakage and Hydrostatic Testing Operation."

The finding involved a violation of 10 CFR 50.59, an activity that may impact the regulatory process. Therefore, the finding was evaluated in accordance with the traditional enforcement process. Because the finding was not entered into your corrective action program and you did not restore compliance within a reasonable period of time, a Notice of Violation is being issued. The finding was determined to be of very low safety significance since the System Leakage Test was performed at the end of the refueling outage when the decay heat rate was very low and multiple trains of emergency core cooling systems were available for accident purposes. This finding was determined to be a Severity Level IV violation of 10 CFR 50.59. Inspection Report# : [2005011\(pdf\)](#)

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Significance: Jun 07, 2005

Identified By: NRC

Item Type: VIO Violation

Failure to Demonstrate Adequacy of Design Assumption for Torus Attached Piping

A violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control" having very low safety significance was identified by the inspector. Specifically, the licensee failed to demonstrate that a 1996 high pressure coolant injection (HPCI) modification was subjected to design control measures commensurate with those applied to the original design. The licensee also failed to apply design control measures to verify the adequacy of the design in order to assure that the design basis for torus attached piping was correctly translated into the modification's specifications, drawings, procedures and instructions.

The finding was more than minor because the finding was associated with the cornerstone attribute of design control in the mitigating system cornerstone and the finding was determined to affect the associated cornerstone objective of ensuring the availability of the HPCI system when called upon. Under the worst case scenario, movement of the torus with the additional valve weight on the HPCI turbine exhaust line would result in crimping of the line. Crimping of the line would create additional backpressure in the HPCI turbine and would result in a decrease in the amount of water being injected into the reactor vessel. The finding was determined to be of very low safety significance based upon a Phase 2 analysis of those transients which would involve movement of the torus.

The finding was cited since the licensee did not enter the issue into its corrective action program and did not take actions to correct the noncompliance.

Inspection Report# : [2005010\(pdf\)](#)

G

Significance: Jun 07, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Properly Vent HPCI Pump Discharge Piping

A non-cited violation of Technical Specification 3.5.1 having very low safety significance was identified. Specifically, the licensee failed to ensure that the HPCI discharge line was filled with water from the pump discharge valve to the injection valve as required by Technical Specification surveillance 3.5.1.1. The issue is considered NRC identified because the licensee vented the system in response to an NRC unresolved item from the safety system design and performance capability inspection and had not otherwise planned to vent the system. As

corrective action, the licensee planned to vent the system on a periodic basis.

The finding was more than minor because the finding could reasonably be viewed as a precursor to a significant event, specifically a hydraulic transient of the HPCI system when called upon to inject. The finding was determined to be of very low safety significance based upon a Phase 2 analysis of those transients where HPCI was required to operate.

Inspection Report# : [2005010\(pdf\)](#)

Significance:  Jun 03, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

UNTIMELY CORRECTIVE ACTIONS FOR DEGRADED FIRE BARRIERS.

A finding of very low safety significance was identified by the inspectors for failure to take timely corrective actions in addressing three degraded fire barriers. The primary cause of this finding was related to the cross-cutting area of Problem Identification and Resolution, since each of the fire barriers was degraded over 21 months without being repaired or replaced.

This finding was more than minor because three fire barriers used to mitigate the effects of a fire were degraded. The finding was of very low safety significance for the following reasons: the first barrier contributed an estimated risk of less than 1×10^{-6} per year; the second barrier would provide a minimum of 20 minutes fire endurance protection and would not be subject to direct flame impingement; and the third barrier provided a minimum of a 2-hour fire endurance rating. The finding was determined to be an NCV of license condition 2.C.(3), which required the licensee to implement and maintain in effect all provisions of the approved fire protection program.

Inspection Report# : [2005009\(pdf\)](#)

Significance:  Jun 03, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

UNTIMELY CORRECTIVE ACTIONS FOR SMOKE IN THE CONTROL ROOM.

A finding of very low safety significance was identified by the inspectors for the failure to take prompt corrective actions for identified procedural deficiencies in response to smoke in the control room. The primary cause of this finding was related to the cross-cutting area of Problem Identification and Resolution because the procedural deficiencies were identified by the NRC more than two years prior to this inspection.

This finding was more than minor because smoke in the control room could hinder the operators' ability to shutdown the plant. This finding was of very low safety significance because self-contained breathing apparatus (SCBA) were readily available in the control room and smoke intrusion would be limited. This finding was determined to be an NCV of 10 CFR 50, Appendix B, Criterion XVI, which required that conditions adverse to quality were promptly identified and corrected.

Inspection Report# : [2005009\(pdf\)](#)

Significance:  Apr 26, 2005

Identified By: NRC

Item Type: VIO Violation

FAILURE TO COMPLY WITH THE REQUIREMENTS OF TS 3.10.1 DURING THE PERFORMANCE OF THE NON-NUCLEAR HEAT CLASS 1 SYSTEM LEAKAGE PRESSURE TEST.

The inspectors identified that the licensee was not in compliance with Technical Specification 3.10.1, "System Leakage and Hydrostatic Testing Operation." The non-compliance occurred when the licensee remained above 212 F to performed SCRAM time testing after completion of the reactor coolant system hydrostatic testing and required VT- 2 leakage inspections on April 26 and 27, 2005. Therefore, the operating exemptions allowed by TS 3.10.1 for the system leakage tests would not be applicable.

Because the issue was not entered into your corrective action program and you did not restore compliance within a reasonable period of time, a Notice of Violation is being issued. The finding was determined to be of very low safety significance since the procedure was performed at the end of an outage, when the decay heat rate was very low, and multiple trains of emergency core cooling systems were available for accident purposes. This was determined to be a TS 3.10.1 violation associated with a Green finding.

Inspection Report# : [2005011\(pdf\)](#)

Significance:  Apr 23, 2005

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO IDENTIFY A BROKEN SPRING HANGER ON A RCIC INSTRUMENT LINE DURING THE DRYWELL CLOSEOUT INSPECTION.

A finding of very low safety significance was identified by the inspectors regarding the failure to identify a broken Spring Hanger, during the drywell closeout, that affected the operability of a Reactor Core Isolation Cooling (RCIC) Instrument line. The licensee repaired the broken

Spring Hanger to original design specification.

The finding was more than minor due to its' effect on the mitigating systems cornerstone attribute of equipment availability and reliability for the RCIC system. This finding was determined to be of very low safety significance, since the finding did not increase the likelihood of a loss of RCS inventory, or degrade the ability to terminate a leak path, or degrade the ability to recover DHR. An NCV of TS 5.4.1, "Procedures," was identified for the failure to identify the broken Spring Hanger during the Drywell closeout.

Inspection Report# : [2005003\(pdf\)](#)

G

Significance: Jan 24, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO PERFORM PROMPT AND ADEQUATE CORRECTIVE ACTIONS FOR EXCESSIVE VIBRATION CONDITIONS ASSOCIATED WITH THE DIESEL FIRE PUMP MECHANICAL OVERSPEED SWITCH.

A finding of very low safety significance was identified through a self-revealing event when the licensee failed to ensure that the excessive vibration problem associated with the diesel fire pump mechanical overspeed switch was properly addressed following the initial failure. Since the vibration problem was not properly addressed, a subsequent failure occurred, which resulted in additional pump unavailability. The licensee replaced the mechanical overspeed switch and placed compensatory actions in place to verify that the mechanical overspeed switch is still properly attached to the mounting bracket following each pump run. In addition, a design modification will be put into place to change the overspeed trip to a magnetic pickup design.

The finding was more than minor due to the effect on the mitigating system cornerstone attribute of equipment availability and reliability for the diesel fire pump. This finding was determined to be of very low safety significance, since the electric fire pump was always available and the diesel fire pump did not exceed the allowable outage time. A Non-Cited Violation (NCV) of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," was identified for the failure to take prompt and adequate corrective actions.

Inspection Report# : [2005002\(pdf\)](#)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

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Significance: Jun 13, 2005

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

RADIATION WORK PERMIT DOSE EXCEEDED THE ESTIMATE BY 61 PERCENT ON TWO SEPARATE WORK ACTIVITIES.

The inspectors reviewed a self-revealing NCV of Technical Specification (TS) 5.4.1 for the failure to follow station as-low-as-reasonably-achievable (ALARA) procedure. During Refueling Outage (RFO) 19, the radiation dose estimate was exceeded by 61 percent and the total was greater than 5 rem on two separate work activities. The control rod drive push/pull and rebuild project was planned with a total dose of 3100 millirem, and the actual dose was 5253 millirem with no revisions to the estimate during the work implementation. The refueling project was estimated at 8500 millirem, and the actual exposure was 13648 millirem. The licensee determined that the work area dose rates were consistent with the plan, but time estimates or person-hours were not consistent with actual work implementation. The finding was entered into the licensee's corrective action program.

The finding was more than minor because it is associated with the Occupational Radiation Safety attribute of exposure control and affected the cornerstone objective of programs and procedures. The occurrence involved a failure to implement procedures needed to achieve occupational doses ALARA and that resulted in an unplanned, unintended occupational collective dose for two work activities. Using the Occupational Radiation Safety Significance Determination Process, the inspectors determined that the finding was of very low safety significance (Green) because while it did involve ALARA planning and controls, (1) the licensee three-year rolling average collective dose was less than 240 person-rem/unit, and it did not involve; (2) an overexposure; (3) a substantial potential for an overexposure; or (4) an impaired ability to assess dose.

Inspection Report# : [2005004\(pdf\)](#)

Public Radiation Safety

Physical Protection

[Physical Protection](#) information not publicly available.

Miscellaneous

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