

# Arkansas Nuclear 2

## 2Q/2007 Plant Inspection Findings

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### Initiating Events

**Significance:**  Dec 31, 2006

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **FIRE DURING HOT WORK ACTIVITIES ON THE CONTAINMENT SUMP STRAINER**

A self-revealing noncited violation of Unit 2 Technical Specification 6.4.1.c, Fire Protection Program Implementation, was identified for the failure of maintenance personnel to follow Procedure EN-DC-127, "Control of Hot Work and Ignition Sources," while performing hot work. Specifically, the licensee failed to ensure that combustible material within 35 feet of the work area was removed or protected. Consequently, torch cutting activities near the Unit 2 containment sump strainer caused a nearby plastic bag containing used protective clothing to ignite. This issue was entered into the licensee's corrective action program as Condition Reports CR-ANO-2-2006-1565 and CR-ANO-2-2006-1701. A number of additional examples of hot work activities that involved inadequate implementation of applicable hot work control procedures were also identified.

The finding is greater than minor because it is associated with the protection against external factors attribute of the initiating events cornerstone, and directly affects 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. Additionally, if left uncorrected, the practice of conducting hot work in a manner that results in unintended combustion of nearby materials would become a more significant safety concern in that it could result in a fire in or near risk important equipment. The finding is not suitable for evaluation with the significance determination process because neither the fire protection significance determination process nor the shutdown operations significance determination process addresses shutdown fire protection findings. However, the finding is determined to be of very low safety significance by NRC management review because the finding occurred while the unit was already in a cold shutdown condition, and the operability of equipment necessary to maintain safe shutdown was not challenged. The cause of the finding is related to the crosscutting element of human performance in that maintenance personnel failed to follow procedures.

Inspection Report# : [2006005](#) (*pdf*)

**Significance:**  Dec 31, 2006

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **INADVERTENT REACTOR COOLANT SYSTEM DRAINING WHILE IN MODE 5**

A self-revealing noncited violation of Unit 2 Technical Specification 6.4.1.a, "Procedures," was identified when an operator failed to close Valve 2DCH-11, resin sluice header drain valve, when securing from a resin transfer as required by procedure. One week later, while aligning the plant for alternate purification, with Valve 2DCH-11 being out of position, an unanticipated loss of approximately 230 gallons of reactor coolant system inventory occurred. This issue was entered into the licensee's corrective action program as Condition Report ANO-2-2006-1464.

The finding was determined to be more than minor because it affected the configuration control attribute of the initiating events 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. Using the shutdown operations significance determination process, the finding was determined to have very low safety significance because the finding did not result in a loss of two feet or more of reactor coolant system inventory and did not result in a loss of reactor coolant system inventory while in reduced inventory. The cause of the finding is related to the cross cutting element of human performance because an operator failed to follow a procedure.

Inspection Report# : [2006005](#) (*pdf*)

**G****Significance:** Dec 31, 2006

Identified By: Self-Revealing

Item Type: FIN Finding

**UNPLANNED INCREASE IN TIME WITH REACTOR VESSEL WATER LEVEL AT FLANGE LEVEL**

A self-revealing finding was identified associated with the licensee's practice of using a hammer to remove the main hook pin on the Unit 2 polar crane. Specifically, this practice resulted in both the polar crane main hook pin and the load cell pin being deformed and not usable with reactor vessel level lowered to just below reactor vessel flange level. As a result, Unit 2 was exposed to an increased likelihood of a loss of decay heat removal while the unit remained in a lowered vessel level condition for an additional unplanned 27 hours. This issue was entered into the licensee's corrective action program as Condition Report ANO-2-2006-1553.

The finding was determined to be more than minor because it affected the equipment performance attribute of the initiating events 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. This finding was determined to be a finding of very low safety significance using the shutdown operations significance determination process because the event did not involve a loss of shutdown control or a reduction in mitigation capability which would have increased the frequency of occurrence of a loss of decay heat removal. The cause of this finding is related to the crosscutting element of human performance because maintenance technicians received training that the use of hammers to remove the pins might be necessary.

Inspection Report# : [2006005](#) (*pdf*)

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## Mitigating Systems

**G****Significance:** Mar 24, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

**NONCONSERVATIVE BATTERY INTERCELL CONNECTION RESISTANCE VALUE SPECIFIED IN TS SR**

An NRC identified noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified for the failure of the licensee to ensure that the 125 Vdc safety-related batteries would remain operable if all the intercell and terminal connections were at the resistance value of 150 micro-ohms as allowed by Unit 2 Technical Specification Surveillance Requirement 4.8.2.3. This issue was entered into the licensee's corrective action program as Condition Report ANO-2-2007-0085.

The finding was greater than minor because it is associated with the mitigating systems cornerstone attribute of design control and affected the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding was determined to have very low safety significance because the condition did not result in a loss of safety function of the equipment and did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding had crosscutting aspects in the area of human performance associated with decision making because the licensee did not use conservative assumptions and failed to verify the validity of the underlying assumptions.

Inspection Report# : [2007002](#) (*pdf*)**G****Significance:** Mar 24, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

**FAILURE TO FOLLOW WORK MANAGEMENT PROCEDURES WHILE ADJUSTING REACTOR PROTECTION SYSTEM PARAMETERS**

An NRC identified noncited violation of Unit 2 Technical Specification 6.4.1.a, "Procedures," was identified for the

failure of operations personnel to follow applicable work management procedures while conducting instrumentation and control maintenance. In an effort to comply with the requirements of Technical Specifications following a dropped control element assembly event, licensee personnel adjusted the high linear power level trip setpoints without explicit work order instructions and prior to the formal revision of the applicable procedure. Licensee Procedure EN-WM-100 "Work Request Generation, Screening, and Classification," Revision 1, did not allow the shift manager to direct these work activities to commence prior to the completion of detailed work package planning. This issue was entered into the licensee's corrective action program as Condition Reports ANO-2-2007-0125 and ANO-2-2007-0503.

This finding was greater than minor because, if left uncorrected, the conduct of maintenance activities on safety-related systems prior to the formal development of associated work order instructions and/or applicable procedural guidance would become a more significant safety concern. Specifically, the misunderstanding by Unit 2 operations department management of the circumstances under which expedited work order provisions apply could result in the inappropriate bypassing of established work control processes. The finding affected the mitigating systems cornerstone. Using Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding was determined to have very low safety significance (Green) since the finding did not represent an actual loss of system safety function and posed no risk significance due to a seismic, flooding, or severe weather initiating event. The finding had crosscutting aspects in the area of human performance associated with decision making in that operations personnel failed to verify the validity of underlying assumptions that factored into a safety-significant decision involving procedural non-compliance.

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

**Significance:**  Mar 08, 2007

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **INEFFECTIVE CORRECTIVE ACTIONS RESULTS IN A FIRE IN MOTOR CONTROL CENTER 2B-53**

The team reviewed a self-revealing noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, for failure of the licensee to take effective corrective action for earlier events in 1991 and 2001. This failure to ensure positive engagement of 480 volt circuit breakers resulted, on October 30, 2006, in a fire in Motor Control Center 2B-53 and declaration of an alert. The licensee initiated Condition Report 2-2006-02444 to enter this issue into the corrective action program. In 1991, a fire occurred in Motor Control Center 2B-64 because misaligned breaker stabs created a high resistance connections that overheated when energized. For corrective action, the licensee trained electricians emphasizing the need to use care when installing breakers into breaker cubicles and proposed a revision to the maintenance procedure to inspect and ensure proper stab connections. In 2001, during inspections of Motor Control Center 2B-85, electricians discovered the center stab of one breaker in the breaker cubicle misaligned and found part of the spring clip burned away and part of the bus bar damaged. For corrective action, the licensee trained on proper insertion of a cubicle breaker into the motor control center and initiated a long-term action to perform a visual inspection of all Unit 2 motor control centers and their breakers.

The performance deficiency resulted from licensee personnel failing to take adequate corrective actions (e.g. revising procedures to include appropriate guidance). The finding is greater than minor because it is associated with the mitigating systems cornerstone attribute of protection against external factors and affects the associated cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The Phase 1 worksheets in Manual Chapter 0609, "Significance Determination Process," were used to conclude that a Phase 2 analysis was required because the initiating events, mitigating systems, and barrier integrity cornerstones were affected. The team performed a Phase 2 analysis using Appendix A, "Determining the Significance of Reactor Findings For At-Power Situations," of Manual Chapter 0609 and the Phase 2 worksheets for Arkansas Nuclear One. From the Phase 2 analysis results, the team determined this finding had very low safety significance (Green). The team concluded the cause of the finding had no definitive cross-cutting aspects.

Inspection Report# : [2007007](#) (*pdf*)

**Significance:**  Dec 31, 2006

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

#### **FAILURE TO PERFORM MODIFICATION RESULTED IN AN INOPERABLE REACTOR COOLANT**

## PUMP OIL COLLECTION SYSTEM

A self-revealing noncited violation of ANO Unit 2 License Condition 2.C.(3)(b), "Fire Protection," was identified for failure of the licensee to maintain the lube oil collection system for reactor coolant Pumps C and D in an operable condition. Specifically, the licensee failed to perform a modification on the motor installed on reactor coolant Pump C which resulted in the oil collection tank and its associated overfill berm being filled with water from the component cooling water system. This issue was entered into the licensee's corrective action program as Condition Report ANO-2-2006-1407.

The finding was determined to be more than minor because it affected the protection against external factors attribute of the mitigating systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the fire protection significance determination process, the finding is determined to have very low safety significance because the condition constituted a low degradation of a fire prevention and administrative controls feature.

Inspection Report# : [2006005](#) (*pdf*)

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## Barrier Integrity

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## Emergency Preparedness

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## Occupational Radiation Safety

**Significance:**  Mar 24, 2007

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

### **FAILURE TO POSSESS A RADIATION MONITORING DEVICE THAT APPROPRIATELY ALARMS IN A HIGH RADIATION AREA**

The inspector reviewed a self-revealing noncited violation of Technical Specification 6.7.1.d because a worker entered a high radiation area without possessing a radiation monitoring device that appropriately alarmed when the device's set point was reached. The worker did not possess the required vibrating electronic alarming dosimeter and could not hear dosimeter's audible alarm. The problem was identified when the worker was prevented from logging out of the radiologically controlled area by the dosimetry software. The licensee's immediate corrective action was to counsel and restrict the access of the individual. The licensee plans to implement a software system that can place restrictions on workers such that they would not be able to log into the radiologically controlled area without the required monitoring device.

The finding was greater than minor because it was associated with the Occupational Radiation Safety Cornerstone attribute of program and process and affected the cornerstone objective to ensure the adequate protection of a worker's health and safety from exposure to radiation because the worker could have received additional dose. The finding involved the potential for a worker's unplanned or unintended dose resulting from actions contrary to technical specifications. When processed through the Occupational Radiation Safety Significance Determination Process, the finding was determined to be of very low safety significance because the finding did not involve ALARA planning or work controls, there was no overexposure or substantial potential for an overexposure, and the ability to assess dose was not compromised. In addition, this finding has crosscutting aspects in the area of human performance associated with work practices because the failure to implement human performance error prevention techniques such as peer checking or self checking directly contributed to the finding. The finding was entered into the licensee's corrective action program as Condition Report CR-ANO-2-2006-02342.

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

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# Public Radiation Safety

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## Physical Protection

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

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## Miscellaneous

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