

Arkansas Nuclear 1

1Q/2007 Plant Inspection Findings

Initiating Events

Significance:  Dec 31, 2006

Identified By: Self-Revealing

Item Type: FIN Finding

TRIP OF MAIN FEEDWATER PUMP DUE TO INADEQUATE DESIGN CONTROL

A self-revealing finding was identified when the Unit 1 main feedwater Pump A tripped, resulting in a plant run back to 40 percent reactor power. The trip occurred due to electromagnetic interference from an air conditioning unit recently installed on top of the main feedwater pump cabinet. This interference caused an overspeed trip signal on the digital speed monitor for the main feedwater pump turbine when no such actual condition occurred. This issue was entered into the licensee's corrective action program as Condition Report ANO-1-2006-1399.

The finding was determined to be more than minor because it affected the design 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 Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheet, the finding is determined to have very low safety significance because the condition only affected the initiating events cornerstone and did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions will not be available. The finding had crosscutting aspects in the area of problem identification and resolution because of the failure of the licensee to recognize that there was a history of electromagnetic interference effects on the main feedwater pump turbine control system, and the failure to use industry operating experience concerning electromagnetic interference effects with digital equipment.

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

Significance:  Sep 23, 2006

Identified By: NRC

Item Type: FIN Finding

LOSS OF RUNNING INTERMEDIATE COOLING WATER PUMP DUE TO HIGH AMBIENT TEMPERATURES IN THE TURBINE BUILDING

The inspectors reviewed a self-revealing finding associated with inadequate turbine building ventilation procedures which failed to maintain design temperatures within the turbine building. As a result, on July 19, 2006, Unit 1 experienced a trip of the thermal overloads for Intermediate Cooling Water Pump P-33C caused by high ambient temperatures in the turbine building. Due to the co-location of all of the intermediate cooling water pump circuit breakers in the same area of the turbine building and similarly installed thermal overloads in the breakers, the inspectors considered the possibility of a loss of all intermediate cooling water system cooling due to high ambient temperatures. The licensee entered the deficiency into their corrective action program as Condition Report ANO-1-2006-0967 for resolution.

The finding is more than minor because it affected the initiating events cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions and affected the cornerstone attribute of procedure quality. The finding was determined to be of very low safety significance because the auxiliary feedwater pump and the emergency feedwater system would have remained available for mitigation of any plant transient combined with a loss of the intermediate cooling water system, and because weather conditions which could have possibly induced a loss of all intermediate cooling water pumps were present for less than 30 days. This finding had a human performance crosscutting aspect which affected the resources component. Specifically, the licensee's turbine building ventilation procedures did not assure a proper turbine building ventilation lineup under hot weather conditions.

Inspection Report# : [2006004](#) (*pdf*)

G**Significance:** Jun 23, 2006

Identified By: Self-Revealing

Item Type: FIN Finding

REACTOR TRIP DUE TO AUTOMATIC ACTUATION OF THE REACTOR PROTECTION SYSTEM ON MAIN TURBINE TRIP AND INVALID ACTUATION OF THE EMERGENCY FEEDWATER SYSTEM

The inspectors reviewed a self-revealing finding for an inadequate maintenance procedure which did not include vendor recommended maintenance for the Unit 1 main turbine lube oil ejector discharge check valve. On December 26, 2005, Unit 1 experienced an automatic reactor trip caused by a main turbine trip due to low lube oil pressure. Welds on the main turbine lube oil ejector discharge check valve hinge failed from an overstress condition and allowed the valve disk to partially block oil flow resulting in low lube oil pressure. During the previous refueling outage, the welds of the size recommended by the vendor were not performed during valve maintenance and lead to the overstress condition. This finding had human performance cross cutting aspects in that the maintenance procedure did not contain a design detail drawing of the lube oil ejector valve to ensure vendor recommended maintenance was performed to original specifications.

The finding is more than minor because it affected the Initiating Events cornerstone objective of limiting the likelihood of those events that upset plant stability and challenge critical safety functions, and affected the cornerstone attribute of procedural quality. Using the Phase 1 worksheets of Manual Chapter 0609, "Significant Determination Process", the finding was determined to have very low safety significance because all other systems functioned normally during the turbine trip/reactor trip.

Inspection Report# : [2006003](#) (*pdf*)

Mitigating Systems

G**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*)

Barrier Integrity

Significance:  Jun 23, 2006

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

MOVEMENT OF IRRADIATED FUEL WITH LESS THAN REQUIRED SOURCE RANGE INSTRUMENTS

A noncited violation of Technical Specification 3.9.2 was identified for movement of irradiated fuel assemblies with less than the two required operable source range instruments. On December 1, 2005, the licensee loaded four fuel assemblies into the reactor vessel during core reload activities. Prior to loading the fourth fuel assembly in the reactor vessel, the power source to source range instrument NI-502 failed rendering the instrument inoperable. Core alterations with less than two operable source range instruments is contrary to requirements of Technical Specification 3.9.2. This issue has been entered into the licensee's corrective action program as CR-ANO-1-2005-2628. This issue involved problem identification and resolution crosscutting aspects associated with less than thorough corrective actions related to a similar occurrence in April, 2004.

The finding is more than minor because the configuration control attribute of the reactor safety/barrier integrity cornerstone objective to provide reasonable assurance that physical design barriers (fuel cladding) protect the public from radio nuclide releases caused by accidents or events was not met. Using Appendix G of Manual Chapter 0609 "Significant Determination Process," the finding was determined to be of very low safety significance because the finding did not increase the likelihood of a loss of reactor coolant system inventory, degrade the licensee's ability to terminate a leak path, or degrade the licensee's ability to recover decay heat removal once it had been lost.

Inspection Report# : [2006003](#) (*pdf*)

Emergency Preparedness

Significance:  Jun 23, 2006

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO MEET IMMEDIATE NOTIFICATION REQUIREMENTS DURING TRANSIENT EVENTS

A noncited violation of 10 CFR 50.54(q), 10 CFR 50.47(b)(5), and 10 CFR 50, Appendix E.IV.D.3. was identified for programmatic and procedure inadequacies that allow the licensee to not make immediate offsite notifications for certain situations after a valid emergency classification was made. Specifically, following certain transient events, the licensee developed a practice of not completing immediate notifications to local authorities if the emergency action level conditions cleared before the notifications were completed. The licensee entered the deficiency into their corrective action program as condition report CR-ANO-C-2006-00665 for resolution.

The finding was assessed through the Emergency Preparedness Significance Determination Process. The finding is a performance deficiency in that the current interpretation and implementation of Emergency Plan Implementing Procedure 1903.010, "Emergency Action Level Classification," could result in failure to conduct a 15 minute notification following declaration of an emergency condition, potentially delaying offsite emergency response. Because the finding affected the reactor safety emergency preparedness cornerstone objective, the finding is greater than minor. The finding was determined to have very low safety significance because it represented a degradation and not a loss of the notification emergency planning standard function.

Inspection Report# : [2006003](#) (*pdf*)

Occupational Radiation Safety

Significance:  Jun 23, 2006

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO FOLLOW WRITTEN CHEMISTRY PROCEDURES

The inspector reviewed a self-revealing, noncited violation of Technical Specification 5.4.1.a., resulting from a chemistry technician's failure to follow written procedures. On November 8, 2005, while performing an annual liquid alpha cross-check of Am-241, a chemistry technician inadvertently left the planchet containing the evaporated standard in the gas flow proportional counting system. This was contrary to Chemistry Procedure 1604.001, "Gross Alpha Measurement", Change No. 014-01. On November 30, 2005, a second chemistry technician placed a ventilation filter into the same planchet that contained the Am-241 residue. During the subsequent investigation, it was discovered that the gas flow proportional counter was contaminated with Am-241. Bioassays were performed on the individuals involved in the investigation and it was determined that four individuals had been internally contaminated with Am-241. Dose calculations based on bioassay results determined that the highest exposure received by any one individual was 68 milliRem Committed Effective Dose Equivalent. The licensee made procedure enhancements and conducted training to ensure that future sample planchets are properly disposed.

The finding was greater than minor because it was associated with one of the Occupational Radiation Safety cornerstone attributes of exposure control and the finding affected the cornerstone objective in that a failure to follow written procedures resulted in unplanned and unintended radiation dose. The inspector determined that the finding had very low safety significance because: (1) it did not involve an ALARA finding, (2) there was no personnel overexposure, (3) there was no substantial potential for personnel overexposure, and (4) the finding did not compromise the licensee's ability to assess dose. The finding also had cross-cutting aspects related to human performance, in that, the chemistry technician's failure to follow written procedures directly resulted in the finding.

Inspection Report# : [2006003](#) (*pdf*)

Public Radiation Safety

Physical Protection

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

Miscellaneous

Last modified : June 01, 2007