

Arkansas Nuclear 1

4Q/2009 Plant Inspection Findings

Initiating Events

Significance:  Jun 30, 2009

Identified By: NRC

Item Type: FIN Finding

Failure to Follow Procedure to Obtain OSRC Review Prior to Restart

A Green NRC identified finding was identified for failure of operations personnel to follow procedures to obtain an Operational Safety Review Committee review and approval prior to restart of the unit where the cause of the trip had not been positively identified. Specifically, on December 13, 2008, and again on December 23, 2008, Unit 1 was restarted without an Operational Safety Review Committee review and approval as required by the Post Transient Review procedure (OP-1015.037), Attachment B. In both cases, the cause of the trip was identified as probable. The issue was not a violation of NRC requirements because the affected activities were not safety related. The licensee entered this issue into their corrective action program as condition report CR-ANO-C-2009-01217.

The performance deficiency was greater than minor because it could be reasonably viewed as a precursor to a significant event, as evidenced by the December 20, 2008 manual reactor trip. Using Manual Chapter 0609.04, "Phase 1 – Initial Screening and Characterization of Findings," this finding affects the initiating events cornerstone and is determined to have very low safety significance by NRC management review because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. The finding was determined to have a crosscutting aspect in the area of Human Performance associated with Decision-Making [H.1(b)], in that the licensee made non-conservative assumptions in the decisions to restart the unit after each trip. The licensee failed to conduct sufficient effectiveness reviews to verify the validity of the underlying assumptions.

Inspection Report# : [2009008](#) (*pdf*)

Significance:  Jun 23, 2009

Identified By: NRC

Item Type: FIN Finding

Failure to Follow Station Planning Procedure Results in an Inadequate Work Instruction

The inspectors identified a finding associated with a station planner's failure to follow procedure which resulted in inadequate work instructions. This is not a violation because the isophase blower is not safety related equipment. Specifically, contrary to station procedure EN-WM-105, "Planning" Revision 5, the work instructions generated to replace worn parts for isophase blower C-8A, did not provide sufficient details, nor provide references to appropriate instructions which provided sufficient detail, concerning reassembly of the damper positioner. This resulted in the positioner being incorrectly reassembled during the maintenance which caused the damper to not open or shut reliably. The licensee entered this issue into their corrective action program as Condition Report CR ANO 1-2009 865.

The performance deficiency was more than minor because it affected the procedure quality attribute of the Initiating Events Cornerstone, and it directly affected the cornerstone objective to limit the likelihood of those events that upset plant stability during power operations. Using Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, this finding was determined to have very low safety significance because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. The finding was determined to have a crosscutting aspect in the area of Human Performance associated with Work Practices [H.4(b)], in that the licensee failed to define and effectively communicate expectations regarding procedural compliance and personnel follow procedures. Specifically, station planners failed to follow EN-WM-105 when developing work instructions for a reference level work package which resulted in an inadequate work package for the planned activities for the isophase blower.

Inspection Report# : [2009003](#) (pdf)

Significance:  Jun 23, 2009

Identified By: Self-Revealing

Item Type: FIN Finding

Trip of a Main Feed Pump Due to Electromagnetic Interference

The inspectors documented a self-revealing finding associated with the trip of main feed pump P 1B on April 9, 2009. Specifically, the main feed pump tripped due to an intermittent electromagnetic interference signal. This interference caused the digital speed monitor to sense an over speed condition and generate a trip signal for the main feed pump turbine, when no such condition actually existed. This issue was the result of the licensee not properly implementing a modification whose purpose it was to noise harden the main feed pumps control cabinets. The licensee entered this issue into their corrective action program as Condition Report CR ANO 1 2009 0760.

The performance deficiency was more than minor because it affected the design control attribute of the Initiating Events Cornerstone, and it directly affected the cornerstone objective to limit the likelihood of those events that upset plant stability during power operations. Using Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, this finding was determined to have very low safety significance because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. The finding was determined to have a crosscutting aspect in the area of Problem Identification and Resolution associated with the Corrective Action Program [P.1(c)], in that the licensee failed to thoroughly evaluate problems such that the resolutions address causes and extent of conditions, as necessary. This is indicative of current plant performance because the licensee continues to inadequately evaluate issues and develop appropriate resolutions. Inspection Report# : [2009003](#) (pdf)

Significance:  Mar 24, 2009

Identified By: Self-Revealing

Item Type: FIN Finding

Inadequate Service Air Compressor Torque Value Led to Loss of Control Rod Drive Cooling and Manual Reactor Trip

The inspectors documented a self-revealing finding associated with the Unit 1 February 5, 2009, manual reactor trip. The unit was manually tripped because control rod drive mechanism cooling was lost when the head gasket on Service Air Compressor C 3A failed. The failure of the head gasket was caused by a reduction in torque applied on the head gasket bolts during maintenance. The applied torque values were lower than the torque values recommended by the vendor. The licensee entered this issue into their corrective action program as Condition Report ANO 1 2009 0225.

The performance deficiency was more than minor because it was associated with the design control attribute of the Initiating Events Cornerstone and it directly affected the cornerstone objective to limit the likelihood of those events that upset plant stability during power operations. Using Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, this finding was determined to have very low safety significance because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. This finding was determined not to have a crosscutting aspect because the decision to lower the torque value was made in 2001 and was not indicative of current plant performance.

Inspection Report# : [2009002](#) (pdf)

Significance:  Mar 24, 2009

Identified By: Self-Revealing

Item Type: FIN Finding

Failure to Follow Procedure for Use of a Torque Amplifying Device on a Valve in the Generator Hydrogen System

The inspectors documented a self-revealing finding because an auxiliary operator failed to follow procedure instructions that prohibited the use of torque amplifying devices on plant valves. The operators used such a device on a main generator hydrogen skid valve and inadvertently disassembled the valve. The subsequent hydrogen leak started a fire. Control room operators manually tripped the reactor and entered Mode 3. The failure to follow the procedure in

this instance was not a violation of NRC requirements because the hydrogen system was not safety related. The licensee entered this issue into their corrective action program as Condition Report ANO 1-2009-0254.

The finding was more than minor because it was associated with the Human Performance attribute of the Initiating Events Cornerstone and it directly affected the cornerstone objective to limit the likelihood of those events that upset plant stability during power operations, and is therefore a finding. Using the Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, this finding had very low safety significance because it did not contribute to both the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not be available. This finding had a crosscutting aspect in the area of Human Performance associated with Work Practices [H.4(a)], in that licensee personnel failed to use human error prevention techniques, such as self and peer checks and STAR (stop, act, think, and review), and failed to stop in the face of uncertainty or unexpected circumstance to ensure that work activities were performed safely and without consequence. Specifically, the auxiliary operator did not use human error techniques, nor did the operator stop the hydrogen addition evolution when unexpected circumstance arose.

Inspection Report# : [2009002](#) (pdf)

Mitigating Systems

Significance:  Sep 23, 2009

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

FAILURE TO ADEQUATELY MONITOR THE PERFORMANCE OF STATION HIGH ENERGY LINE BREAK DOOR LATCHES

Green. The inspectors documented a self-revealing noncited violation of 10 CFR 50.65(a)(2) associated with the licensee's failure to appropriately monitor station high energy line break doors, which are scoped into their Maintenance Rule Program, in a manner that provided reasonable assurance that these doors were capable of fulfilling their safety function. Specifically, the licensee had no maintenance task or inspection activity to check for degradation of the latching mechanism of station high energy line break doors. The failure of these doors would result in the removal of a hazard barrier that could have an adverse impact on equipment necessary to mitigate the consequences of a high energy line break event. The licensee entered this issue into their corrective action program as Condition Report ANO 1 2009 0425.

The performance deficiency was more than minor because it affected the equipment performance attribute of the Mitigating Systems Cornerstone and directly affected the cornerstone objective of ensuring the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences, and is therefore a finding. Using Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets, this finding was determined to have a very low safety significance because the finding (1) is a design or qualification issue confirmed not to result in a loss of operability or functionality; (2) did not represent an actual loss of safety function of the system or train; (3) did not result in the loss of one or more trains of nontechnical specification equipment; and (4) did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding did not have a crosscutting aspect because the cause of the performance deficiency is not indicative of current plant performance as high energy line break doors were scoped into the Maintenance Rule Program in the 1990s.

Inspection Report# : [2009004](#) (pdf)

Significance:  Sep 23, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE MAINTENANCE PROCEDURE GOVERNING REPAIRS TO UNIT 1 HIGH ENERGY LINE BREAK DOOR

Green. The inspectors identified a noncited violation of Technical Specification 5.4.1.a, "Procedures," for an inadequate maintenance procedure governing repairs to a Unit 1 high energy line break door. This resulted in a

condition where the door was not able to perform its function of isolating the emergency feedwater pumps from a harsh environment that would result from a main feedwater critical crack high energy line break event. The pumps would have experienced a harsh environment during this event and been rendered inoperable. This issue was entered into the licensee's corrective action program as Condition Report ANO 1 2009 1421.

The performance deficiency was more than minor because it affected the protection against external events attribute of the Mitigating Systems Cornerstone and directly affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences, and is therefore a finding. Using Inspection Manual Chapter 0609, "Significance Determination Process," and with the assistance of three regional senior reactor analysts, a Phase 3 evaluation was completed. The calculated change in core damage frequency was $8.8E 8$, which is less than $1E-6$, therefore, the finding was determined to be of very low safety significance. This finding did not have a crosscutting aspect because the performance deficiency was not associated with any of the crosscutting aspects listed in Manual Chapter 0305, "Operating Reactor Assessment Program," dated August 11, 2009.

Inspection Report# : [2009004](#) (pdf)

Significance:  Sep 23, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO ENSURE THAT CONDITIONS ADVERSE TO QUALITY ARE APPROPRIATELY ENTERED INTO THE CORRECTION ACTION PROGRAM

Green. The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the licensee's failure to have adequate measures established to assure that, when a condition adverse to quality was identified, it was appropriately entered into the stations corrective action program. Specifically, the licensee's staff has repeatedly failed to enter conditions adverse to quality, identified during investigation of issues, into the corrective action program. The licensee entered this issue into their corrective action program as Condition Reports ANO C 2009 1544.

The performance deficiency was determined to be more than minor because, if left uncorrected, station personnel's failure to enter conditions adverse to quality into the station corrective action program would result in the licensee's failure to recognize that risk-significant equipment is in a degraded condition and, as such, may not be able to perform its specified safety function, and is therefore a finding. Using Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheets, this finding was determined to have a very low safety significance because the finding (1) was a qualification deficiency confirmed not to result in loss of operability; (2) did not lead to an actual loss of system safety function; (3) did not result in the 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 nontechnical specification trains of equipment designated as risk-significant per 10 CFR 50.65, for greater than 24 hours; and (5) it did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding had a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program [P.1(a)], in that licensee personnel failed to implement a corrective action program with a low threshold for identifying issues. This also includes identifying such issues completely, accurately, and in a timely manner commensurate with their safety significance.

Inspection Report# : [2009004](#) (pdf)

Significance:  Jul 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Design Control for Class 1E Batteries and Battery Racks

Green. The team identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," which states, in part, that design changes, including field changes, shall be subject to design control measures commensurate with those applied to the original design. Contrary to the above, the licensee failed to adequately perform a seismic evaluation for a modification to the Unit 2 safety related 125 Vdc battery racks. Specifically, on

June 17, 1986, a design change was made to the battery racks to add hand hold and step on rails for ease of maintenance and inspection of the battery cells. The seismic evaluation for these rails addressed the impact to the battery rack seismic rating, and determined that the bolts for the rails must not be tightened to a specified torque value, but installed “hand tight only.” However, the seismic evaluation failed to address the potential for the rails to fall because the bolts were only hand tight. The licensee has entered this into their corrective action program as Condition Report CR ANO 2009 01573.

The failure to perform a seismic evaluation for a modification to the Class 1E battery racks was a performance deficiency. The finding is more than minor because it is similar to Example 3.a of Inspection Manual Chapter 0612, “Power Reactor Inspection Reports,” Appendix B, Section 1-3, “Screen for More than Minor – ROP,” and it also affected the Mitigating Systems cornerstone attribute of design control to ensure the availability, reliability, and capability of safety systems that respond to initiating events to prevent undesirable consequences, and adversely affected the cornerstone objective because actions were required to be taken to ensure the hand tight bolts and rail met seismic qualifications. Using the Inspection Manual Chapter 0609, “Significance Determination Process,” Phase 1 Worksheets, the finding was determined to have very low safety significance (Green) because it was a design issue that did not result in loss of operability or function. The inspectors reviewed the finding for cross cutting aspects and none were identified because the finding was not indicative of current performance.

Inspection Report# : [2009007](#) (pdf)

Significance:  Jun 23, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Follow Procedure and Perform Postmaintenance Testing Prior to Declaring Equipment Operable

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” associated with licensee personnel’s failure to follow station procedures. Specifically, following work completed on high pressure safety injection pump P 36C, on April 24, 2009, the specified postmaintenance testing was not performed until April 27, 2009, but the pump was declared operable by the operations department following performance of a quarterly surveillance run. Subsequently, when the postmaintenance testing inspection was performed, maintenance personnel identified a damaged tee fitting which resulted in the pump being declared inoperable. The licensee entered this issue into their corrective action program as Condition Report CR ANO 1 2009 0872.

The performance deficiency was more than minor because, if left uncorrected, it could result in more significant concerns. Specifically, during future corrective maintenance work on safety related equipment, the failure to perform the specified postmaintenance testing, or have operations perform a proper evaluation of the equipment prior to declaring the equipment operable, could result in other more risk significant equipment being inoperable with the licensee unaware of the issue. Using the Inspection Manual Chapter 0609, “Significance Determination Process,” Phase 1 Worksheet, this finding was determined to have a very low safety significance because the finding: (1) is not a design or qualification issue confirmed not to result in a loss of operability of the pump; (2) did not lead to an actual loss of safety function of the system or train; (3) did not result in the loss of one or more trains of nontechnical specification equipment; and (4) did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. The finding was determined to have a crosscutting aspect in the area of Human Performance associated with Work Practices [H.3(b)], in that the licensee failed to appropriately coordinate work activities by incorporating actions to address the need to keep personnel apprised of work status and the operational impact of work activities

Inspection Report# : [2009003](#) (pdf)

Significance:  Mar 24, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Inadequate Procedure for Reactor Protection System Maintenance

The inspectors identified a noncited violation of Technical Specification 5.4.1.a, “Procedures,” for an inadequate maintenance procedure governing reactor protection system Channel A flux/delta flux/flow trip circuit. Specifically, the instructions did not provide sufficient details concerning the tightening of screws on a circuit card during a

surveillance. This resulted in improper maintenance which rendered the channel inoperable after it was returned to service. The licensee had previously identified problems with the adjustment of these screws. In addition, the inspectors identified a significant contributor to the event. The lead qualified technician on the job failed to follow a maintenance procedure and provide continuous supervision to a non-qualified technician that was performing the sensitive maintenance. The licensee entered this issue into their corrective action program as Condition Reports ANO 1 2009 0066 and ANO-1-2009-0464.

The performance deficiencies were more than minor because, if left uncorrected, they could result in more significant concerns. Specifically, during future surveillance and maintenance work, a reactor protection system circuit could again be rendered inoperable by inadequate maintenance and go undetected for a longer time period. In addition, unqualified individuals performing unsupervised maintenance could render various pieces of mitigating equipment inoperable or cause initiating events. Using the Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, this finding had very low safety significance because the finding: (1) resulted in a loss of operability of reactor protection system Channel A; (2) did not lead to an actual loss of safety function of the system or train; (3) did not result in the loss of one or more trains of nontechnical specification equipment; and (4) did not screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding had a crosscutting aspect in the area of Problem Identification and Resolution, Corrective Action Program component [P.1 (c)] because the licensee failed to thoroughly evaluate the problem such that the resolution addressed the causes – i.e., failure to properly supervise the trainee

Inspection Report# : [2009002](#) (*pdf*)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

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.

Miscellaneous

Significance: SL-IV Jul 31, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Provide Accurate Information in Response to Generic Letter 2007-01, "Inaccessible or Underground

Power Cable Failures that Disable Accident Mitigation Systems or Cause Plant Transients”

SL-IV. The team identified a noncited violation of 10 CFR 50.9, “Completeness and Accuracy of Information,” which states in part that information required by statute or by the Commission's regulations, orders, or license conditions to be maintained by the applicant or the licensee shall be complete and accurate in all material respects. Contrary to the above, the licensee's May 7, 2007, response to Generic Letter 2007-01, “Inaccessible or Underground Power Cable Failures that Disable Accident Mitigation Systems or Cause Plant Transients,” did not accurately describe the licensee's programs, procedures, or practices for inspection, testing, and monitoring programs to detect the degradation of inaccessible or underground power cables that support emergency diesel generators, offsite power, essential service water, service water, component cooling water, and other systems that are in the scope of 10 CFR 50.65, “The Maintenance Rule.” The licensee asserted in their response to Generic Letter 2007-01, Question 2, that “ANO inspection, testing, and monitoring practices presently include visual cable inspection during routine operations, periodic meggering of cables and connected equipment associated with maintenance activities, and periodic inspection of manholes for dewatering.” In fact, there was no evidence that these manholes or cables had ever been periodically or routinely inspected for Unit-1, and none of the cables for either of the units were being routinely inspected as the licensee had asserted.

The finding was more than minor because the information was material to the NRC's decision making processes. In accordance with Inspection Manual Chapter 0612, “Power Reactor Inspection Reports,” the violation was subject to the traditional enforcement process because 10 CFR 50.9 violations impact the NRC's ability to perform its regulatory function. Using the Enforcement Policy, Supplement VII, “Miscellaneous Matters,” the inspectors characterized the violation as a Severity Level IV violation because it did not meet the Severity Level I, II or III criteria. NRC management reviewed the finding and determined that it was of very low safety significance. Because the violation was of very low safety significance and was entered into the licensee's corrective action program as Condition Report CR ANO C-2009-1415, this violation is being treated as a noncited violation, consistent with the NRC Enforcement Policy, Section VI.A. The inspectors determined that the finding has a crosscutting aspect in the area of problem identification and resolution in that the licensee failed to implement operating experience directly communicated with a generic letter through changes to station processes, procedures, and equipment [P.2(b)].

Inspection Report# : [2009007](#) (pdf)

Significance: SL-IV Mar 24, 2009

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Provide Complete and Accurate Information to the NRC Following a Plant Trip

The inspectors identified a noncited Severity Level IV violation of 10 CFR 50.9, “Complete and Accurate Information,” because the licensee provided inaccurate information to the NRC following a reactor trip. Specifically, while making a 10 CFR 50.72 report (for a site fire, which had prompted a manual reactor trip) the licensee informed the NRC headquarters operations officer (on a recorded line) that all control rods had fully inserted into the core. On the contrary, one control rod had failed to fully insert, although the reactor was in a shutdown condition. Operations personnel had failed to use 3-way communications when discussing the control rod positions during the event. After the licensee determined the actual control rod position, the information was not provided directly to the NRC. The information was considered material to the NRC's informational needs because the NRC may have initiated different short term response measures had the NRC known that one control rod was partially out. This issue was entered into the licensee's corrective action program as Condition Reports ANO 1 2009 0260 and ANO-1-2009-0281.

The finding was more than minor because the information was material to the NRC's decision making processes. In accordance with Inspection Manual Chapter 0612, “Power Reactor Inspection Reports,” the violation was subject to the traditional enforcement process because 10 CFR 50.9 violations impact the NRC's ability to perform its regulatory function. Using the Enforcement Policy, Supplement VII, “Miscellaneous Matters,” the inspectors characterized the violation as a Severity Level IV violation because it did not meet the Severity Level I, II or III criteria. NRC management reviewed the finding and determined that it was of very low safety significance (Green). Because the violation was of very low safety significance and was entered into the corrective action program, this violation is being treated as a noncited violation, consistent with the NRC Enforcement Policy, Section VI.A. The finding had a crosscutting aspect in the area of Human Performance (Work Practices component) because operations personnel failed to utilize human error prevention techniques (3-way communication) when gathering information to provide to the NRC [H.4(a)].

Inspection Report# : [2009002](#) (pdf)

Significance: N/A Feb 20, 2009

Identified By: NRC

Item Type: FIN Finding

Identification and Resolution of Problems

The inspectors reviewed approximately 300 condition reports, work orders, engineering evaluations, root and apparent cause evaluations, and other supporting documentation to determine if problems were being properly identified, characterized, and entered into the corrective action program for evaluation and resolution. The inspectors reviewed a sample of system health reports, self assessments, trending reports and metrics, and various other documents related to the corrective action program. The inspectors concluded that the licensee effectively identified, evaluated, and prioritized corrective actions for conditions adverse to quality. The inspectors concluded that the licensee implemented timely, effective corrective actions.

With minor exceptions, the licensee appropriately evaluated industry operating experience for relevance to the facility and had entered applicable items in the corrective action program. The licensee used industry operating experience when performing root cause and apparent cause evaluations. The licensee performed effective quality assurance audits and self assessments, as demonstrated by self identification of poor corrective action program performance and identification of ineffective corrective actions.

Inspection Report# : [2009006](#) (*pdf*)

Last modified : March 01, 2010