

# Arkansas Nuclear 1

## 4Q/2012 Plant Inspection Findings

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### Initiating Events

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### Mitigating Systems

**Significance:**  Dec 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Failure to Implement Adequate Design Change Controls for Permanent Removal of Service Water Check Valves SW-604A & SW-604B**

The inspectors identified a non-cited 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. Specifically, from October 4, 2012, to November 8, 2012, the licensee failed to ensure that the design change, which directed the permanent removal of check valves SW-604A and SW-604B from the service water return lines of safety-related auxiliary building electrical rooms emergency chillers VCH-4A and VCH-4B, included the requisite evaluation of the initial design basis and mitigating safety system functions of these components. The licensee entered this issue into the corrective action program as Condition Report CR-ANO-1-2012-1681..

The failure to ensure that safety-related system modifications were subject to design control measures commensurate with those applied to the original design for the removal of check valves SW-604A and SW-604B and replacement of these components with spool pieces was a performance deficiency. The finding is more than minor because it is associated with the design control attribute of the Mitigating Systems Cornerstone, and adversely affected the cornerstone objective to ensure the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Using Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," and Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," the finding was determined to have very low safety significance (Green) because the finding was a deficiency affecting the design or qualification of a mitigating component that did not affect the operability or functionality of the system. The inspectors determined that the finding had a cross-cutting aspect in the area of human performance associated with the component of decision making because the licensee failed to use conservative assumptions and adopt a requirement to demonstrate that the proposed action was safe in order to proceed rather than a requirement to demonstrate that it is unsafe in order to disapprove the action. Specifically, the licensee assumed that the checkvalves had no safety function without determining the actual design basis and mitigating safety system functions of these components [H.1 (b)]

Inspection Report# : [2012005](#) (*pdf*)

**Significance:**  Sep 30, 2012

Identified By: NRC

Item Type: FIN Finding

#### **Failure to Implement Planning Procedure Results in Short across Hand Switch in Control Room Control Panel**

The inspectors identified a finding associated with a failure to implement a station procedure which resulted in not providing sufficient work instructions. Specifically, contrary to station procedure EN-WM-105, "Planning," Revision 10, the work instructions generated to replace the Unit 1 makeup tank level recorder did not provide sufficient detailed work instructions to prevent damage to adjacent equipment. This resulted in a technician causing a short across the makeup hand switch, blowing fuses, and losing power to several relays with the associated loss of relay functions. The licensee has placed the issue into their corrective action program as Condition Report CR-ANO-1-2012-0716.

The failure of station personnel to implement the requirements of station procedure EN-WM-105, "Planning," Revision 10, to generate a compliance work package with sufficient detail work instructions and/or documents was a performance deficiency. The performance deficiency was more than minor because it was associated with the procedure quality attribute of the Mitigating Systems Cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences and is therefore a finding. Using Manual Chapter 0609, Attachment 4 "Initial Characterization of Findings," and Appendix A "The Significance Determination Process for Findings at Power" the finding was screened against the mitigating systems cornerstone and determined to be of very low safety significance (Green) because the finding; 1) was not a deficiency affecting the design or qualification of a mitigating system that did maintain its operability or functionality, 2) did not represent a loss of system and/or function, 3) did not represent an actual loss of function of a single train for greater than its technical specification allowed outage time, 4) did not represent an actual loss of function of one or more non-technical specification trains of equipment designated as high safety-significant for greater than 24 hours, and 5) did not involve the loss or degradation of equipment or function specifically designed to mitigate a seismic, flooding, or severe weather event. The finding was determined to have a cross-cutting aspect in the area of human performance, associated with work control component, in that the licensee failed to plan and coordinate work activities consistent with nuclear safety. Specifically, the licensee failed to identify the hand switch during walk downs and adequately consider the job site conditions such that adjacent equipment would be protected from damage [H.3(a)].

Inspection Report# : [2012004](#) (pdf)

**Significance:** G Sep 30, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**Failure to Correct a Condition Adverse to Quality Associated with the Unit 1 Emergency Feedwater Initiation and Control System**

The inspectors documented a self-revealing non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the licensee's failure to correct a condition adverse to quality associated with the Unit 1 emergency feedwater initiation and control system control cabinet C186. Specifically, the licensee failed to perform corrective actions related to a previously identified design deficiency resulting in a loss of power to the cabinet which caused a loss of redundancy in the main steam line isolation logic from the emergency feedwater initiation and control system. The licensee has taken immediate corrective by replacing the lamp and socket base and plans permanent corrective action to replace the lamp and socket with a more robust design in refueling outage 1R24. The licensee has entered this issue into the corrective action program as Condition Report CR-ANO-1-2012-1075.

The failure to perform previously identified corrective actions to address a condition adverse to quality associated with the emergency feedwater initiation and control system is a performance deficiency. Specifically, the licensee failed to complete corrective actions to correct the design deficiency associated with lamp and lamp socket design for emergency feedwater initiation and control system cabinet C186. The performance deficiency is determined to be more than minor because it is associated with the equipment performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences, and therefore is a finding. Using Manual Chapter 0609, Attachment 4, "Initial Characterization of Findings," and Appendix A, "The Significance Determination Process for Findings at Power," the finding was determined to have very low safety significance, Green, because: (1) the finding was a deficiency affecting the design of a mitigating SSC and SSC operability was not maintained, (2) it did not represent a loss of system and/or function, (3) it did not represent an actual loss of function of a single train for greater than its technical specification allowed outage time, (4) it did not represent an actual loss of function of one or more non-technical specification trains of equipment designated as high safety-significant in accordance with the licensee's maintenance rule program for greater than 24 hours, and (5) it did not involve the loss or degradation of equipment or function specifically designed to mitigate a seismic, flooding, or severe weather event. The finding was determined not to have a cross-cutting aspect because the performance deficiency occurred in 2007 and is not indicative of current plant performance.

Inspection Report# : [2012004](#) (pdf)

**Significance:** G Jun 30, 2012

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

**Failure to Install Correct Coupling on Service Water Pump Results in Pump Failure**

The inspectors documented a self-revealing, non-cited violation of 10 CFR Part 50, Appendix B, Criterion VII, Control of Purchased Material, Equipment and Services for the licensee's failure to assure that purchased material conformed to the procurement documents. Specifically, the licensee received, accepted and installed the wrong couplings on the Unit 1 service water pump C resulting in a coupling failure that left the pump inoperable. The licensee rebuilt service water pump C with the correct coupling material. This was documented in Condition Report CR ANO-1-2012-0864.

The inspectors determined that the failure to assure that purchased material conformed to the purchase order is a performance deficiency because the licensee failed to perform an adequate receipt inspection then accepted and installed the wrong couplings that subsequently failed. The performance deficiency had the potential to affect the Initiating Events or Mitigating Systems Cornerstones so a regional senior reactor analyst was contacted for assistance. The senior reactor analyst performed a phase 3 analysis and determined the dominant risk affected the Mitigating Systems cornerstone. The performance deficiency is more than minor because it is associated with the equipment performance attribute of the Mitigating Systems Cornerstone and adversely affects the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences and is therefore a finding. The phase 3 analysis determined the majority of the risk resulted from a loss of AC Bus A3 combined with a loss of the turbine-driven emergency feedwater pump. The finding was determined to be of very low safety significance (Green). The finding was determined not to have a crosscutting aspect because the performance deficiency occurred in 2009 and is not indicative of current plant performance.

Inspection Report# : [2012003](#) (*pdf*)

**Significance:** G Mar 16, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Calibrate Unit 1 and Unit 2 480 Vac Transformer Instrumentation**

The team identified a Green, non-cited violation of 10 CFR Part 50, Appendix B, Criterion XII, "Control of Measuring and Test Equipment," which states, in part, "measures shall be established to assure that tools, gages, instruments, and other measuring and testing devices used in activities affecting quality are properly controlled, calibrated, and adjusted at specified periods to maintain accuracy within necessary limits." Specifically, prior to March 16, 2012, the licensee failed to establish measures to assure that pressure and temperature instruments used in monitoring and preventive maintenance for the Unit 1 and Unit 2 safety-related 480 Vac load center transformers were calibrated and adjusted at specified periods to maintain accuracy within necessary limits. The finding was entered into the licensee's corrective action program as CR ANO C 2012-00657.

The team determined that the failure to calibrate pressure and temperature instruments for the Unit 1 and Unit 2 safety-related load center transformers X5, X6, 2X25, and 2X26 was a performance deficiency. This finding was more than minor because it was associated with the equipment performance 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. Specifically, the licensee's programmatic failure to calibrate pressure and temperature instruments for the Unit 1 and Unit 2 safety-related 480 Vac load center transformers would challenge the operability of the transformers. In accordance with Manual Chapter 0609, Attachment 4, "Phase 1 – Initial Screening and Characterization of Findings," the finding was determined to have very low safety significance (Green) because it was a design or qualification deficiency confirmed not to result in a loss of operability or functionality, loss of a system safety function, loss of a single train for greater than technical specification allowed outage time, loss of one or more non-technical specification trains of risk significant equipment for greater than 24 hours, and did not screen as potentially risk significant due to seismic, flooding, or severe weather. This finding did not have a crosscutting aspect because the most significant contributor did not reflect current licensee performance.

Inspection Report# : [2012007](#) (pdf)

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## Barrier Integrity

**Significance:** G Dec 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Perform Required Examinations of Reactor Vessel Flange Seal Leak-Off Lines**

The inspectors identified a non-cited violation, with two examples, of Title 10 CFR 50.55a(g)(4), which requires that components classified as ASME Code Class 1, Class 2, and Class 3 meet the requirements set forth in Section XI of the applicable editions of the ASME Boiler and Pressure Vessel Code and Addenda. Title 10 CFR 50.55(a)(g)(4)(ii) requires that inservice examination of components be conducted during successive 120-month inspection intervals and comply with the requirements of the latest edition and addenda of the Code applicable to the specific interval. Section XI (of prior and current applicable editions of the Code), Articles IWC-5221 and IWD-5221 require that, for Class 2 and Class 3 components, a system leakage test be performed at the system pressure obtained while the system, or portion of the system, is in service performing its normal operating function. Contrary to the above, prior to September 17, 2012, for the Class 2 and Class 3 reactor vessel flange leak-off lines for both Units 1 and 2, the licensee failed to perform leakage tests at the system pressure obtained while the system was performing its normal operating function. The licensee has entered this issue into the corrective action program as Condition Report CR-ANO-C-2012-02672.

The inspectors determined that the failure to perform the examinations required by 10 CFR 50.55a(g)(4) on the Units 1 and 2 reactor vessel flange seal leak-off lines is a performance deficiency. The performance deficiency is more than minor because it is associated with the Barrier Integrity Cornerstone attribute of structures, systems, and components and barrier performance and adversely affects the cornerstone objective to provide a reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. Using Manual Chapter 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," the finding was determined to be of very low safety significance (Green) because the finding could not result in exceeding the reactor coolant system leak rate for a small loss-of-coolant accident, nor could the finding have likely affected other systems used to mitigate a loss-of-coolant accident resulting in a total loss of their function. This issue did not have a cross-cutting aspect associated with it because it is not indicative of current performance

Inspection Report# : [2012005](#) (pdf)

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## Emergency Preparedness

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## Occupational Radiation Safety

**Significance:** N/A Mar 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

**Failure to Update the Safety Analysis Report with Adequate Details Relative to its Solid Radwaste Equipment, Processes, and Facilities**

Inspectors identified a non-cited violation of 10 CFR 50.71(e), "Maintenance of Records," because the licensee failed to update their Safety Analysis Report with adequate details and submittals that include the effects of changes made to the facility. Specifically, the licensee built numerous low level radwaste storage facilities on the owner controlled area for interim radwaste storage of dry and solidified radioactive waste and failed to update the Safety Analysis Report to adequately include these changes to equipment, processes, and facilities. This issue was

entered in the licensee's corrective action program as Condition Report CR-ANO-C-2012-00749.

This issue was dispositioned using traditional enforcement because it had the potential for impacting the NRC's ability to perform its regulatory function. The performance deficiency is more than minor, thus characterized as a finding, because it has a material impact on licensed activities in that solid radwaste equipment and processes, as well as stored radwaste materials with a significant radioactive source term, have not been adequately described and maintained in all licensee records and reports. There was no cross-cutting aspect associated with this finding because it was dispositioned using traditional enforcement. This finding is characterized as a Severity Level IV non-cited violation in accordance with NRC Enforcement Policy, Section 6.1 and was treated as a non-cited violation consistent with Section 2.3.2.a of the NRC Enforcement Policy.

Inspection Report# : [2012002](#) (*pdf*)

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## Public Radiation Safety

**Significance:**  Mar 31, 2012

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to Calibrate Unit 1 Effluent and Process Monitors Properly**

The inspectors identified a non-cited violation of 10 CFR 20.1501(b) because the licensee failed to calibrate Unit 1 effluent and process monitors properly. The Unit 1 calibration procedures did not instruct the instruments and controls technician to correct the calibration source output for radioactive decay, nor did the procedures provide criteria for determining when the calibration was successful. As immediate corrective action, the licensee documented the violation in the corrective action program as Condition Report CR-ANO-1-2012-0524, and reviewed the count rates of Unit 1 effluent and process monitors to determine the extent of the condition.

The failure to calibrate the Unit 1 effluent and process monitors properly is a performance deficiency. The performance deficiency is more than minor because, if left uncorrected, the performance deficiency had the potential to lead to a more significant safety concern, in that, radiation monitor performance could deteriorate and go undetected by the current Unit 1 calibration process. The inspectors used IMC 0609, "Significance Determination Process," Attachment D, "Public Radiation Safety Significance Determination Process," February 12, 2008, and determined the finding to be of very low safety significance because it was associated with the effluent program; however it was not a substantial failure to implement the effluents program and it did not result in a public dose greater than an Appendix I criterion or 10 CFR 20.1301(e). The finding has a cross-cutting aspect in the Human Performance Area, associated with the resources component, because complete, accurate, and up-to-date calibration procedures were not available for use on Unit 1 effluent and process monitors. [H.2(c)]

Inspection Report# : [2012002](#) (*pdf*)

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## Security

Although the Security Cornerstone is included in the Reactor Oversight Process assessment program, the Commission has decided that specific information related to findings and performance indicators pertaining to the Security Cornerstone will not be publicly available to ensure that security information is not provided to a possible adversary. Other than the fact that a finding or performance indicator is Green or Greater-Than-Green, security related information will not be displayed on the public web page. Therefore, the [cover letters](#) to security inspection reports may be viewed.

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## Miscellaneous

