Arkansas Nuclear 2
2Q/2012 Plant Inspection Findings

Initiating Events

Significance: G Sep 30, 2011
Identified By: Self-Revealing
Item Type: FIN Finding
Failure to Provide Adequate Work Instruction Results in a Main Feedwater Recirculation Valve Failing Open
The inspectors documented a self-revealing finding for inadequate work instructions that resulted in the failure of a Unit 2 main feedwater pump A recirculation valve. Specifically, the licensee failed to provide adequate work instructions for reassembling and testing of the Unit 2 main feedwater recirculation valve, 2CV-0731. This valve failed full open during full power operations resulting in exceeding licensed reactor power. The licensee has implemented corrective action to communicate the importance of the positioning of the feedback arm support bracket and has changed the work orders to verify angle and tension of the feedback arm following reassembly of the positioner. The licensee entered this issue into the corrective action program as Condition Report ANO-CR-2-2011-1782.

The failure to provide adequate work instruction for the assembly and testing of the Unit 2 main feedwater pump A recirculation valve positioner was determined to be a performance deficiency, because it was within the licensee's ability to foresee and correct and was a failure to meet station requirements to provide adequate maintenance work instruction to maintenance personnel. The performance deficiency was determined to be more than minor because it was associated with the procedure quality attribute of the Initiating Events cornerstone and affected the objective to limit the likelihood of those events that upset plant stability and challenge critical safety function during power operations. Specifically, the failure of the recirculation valve caused reactor power to exceed licensed reactor power. Using MC 0609, Exhibit 1, "Phase 1 Initial Screening and Characterization of Findings," the finding was determined to be of very low safety significance because it did not contribute to both the likelihood of a reactor trip and that mitigation equipment or functions would not be available. The inspectors determined that the finding did not have a crosscutting aspect because the performance deficiency is not indicative of current plant performance.
Inspection Report# : 2011004 *(pdf)*

Significance: G Sep 30, 2011
Identified By: Self-Revealing
Item Type: FIN Finding
Failure to Provide Adequate Work Instruction Results in Failed Bearing on Motor Generator Set
The inspectors documented a self-revealing finding for an inadequate work instruction for the 2-02 control element motor generator set flywheel bearing replacement that resulted in a failure of that bearing. Specifically, the licensee failed to provide instructions to obtain flywheel shaft dimensions to ensure adequate interference fit between the bearing and the shaft during corrective maintenance. This bearing subsequently failed on April 6, 2011. The licensee placed the issue into the corrective action program as Condition Report ANO-CR-2-2011-1817. The licensee replaced the failed bearing and shaft assembly and the system was returned to service.

The failure to provide adequate maintenance work instruction to verify dimensional fit up between the flywheel shaft and bearing for the Unit 2, 2-02 motor generator set prior to reassembly was determined to be a performance deficiency. Specifically, it was within the licensee's ability to foresee and correct and was a failure to meet station requirements to provide adequate maintenance work instruction to maintenance personnel. The performance deficiency was determined to be more than minor because it was associated with the procedure quality attribute of the Initiating Event Cornerstone and affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during power operations. Specifically, due to both control element motor generator sets being in the same room, the failure of the motor generator flywheel bearing caused the failure of that motor generator shaft and could have affected the only operating motor generator set and resulted in a

reactor trip. Using Manual Chapter 0609, Exhibit 1, “Phase 1 Initial Screening and Characterization of Finding,” the finding was determined to be of very low safety significance because it did not contribute to both the likelihood of a reactor trip and that mitigation equipment or function would not be available. The inspectors determined that the finding did not have a crosscutting aspect because the performance deficiency is not indicative of current plant performance as the cause of not developing adequate work instructions stems from the late 1990s.
Inspection Report# : 2011004 *(pdf)*

Mitigating Systems

Significance: G Jun 30, 2012
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Correct a Known Condition Adverse to Quality Associated with Inadequately Secured Splined Adaptors for Service Water Discharge Cross-Connect Valves
The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI for failure to take timely corrective action to correct a condition adverse to quality. Specifically, the licensee implemented a compensatory measure for four service water valves in early 2009 to ensure operability, but has not taken permanent corrective actions to correct the condition adverse to quality for two service water cross-connect valves. The licensee has currently scheduled corrective maintenance for the service water valves in September 2012 and the valves are currently operable. The licensee has placed the issue into their corrective action program as Condition Report CR-ANO-2-2012-1126.

The inspectors determined that the failure to take timely corrective action to correct a condition adverse to quality is a performance deficiency. Specifically, the licensee failed to resolve the degraded condition associated with the splined adaptor for two service water cross-connect valves in the Unit 2 service water intake structure. The performance deficiency is determined to be more than minor because it is associated with the Mitigating System Cornerstone attribute of design control 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. Using Manual Chapter 0609.04, “Phase 1 – Initial Screening and Characterization of Findings,” the finding was determined to be of very low safety significance (Green) because the finding: 1) is not a design or qualification deficiency confirmed not to result in an actual loss of operability or functionality, and did not: 2) represent a loss of system safety function, 3) represent an actual loss of safety function of a single train for greater than its technical specification allowed outage time, 4) represent an actual loss of safety function of one or more non-technical specification trains of equipment designated as risk-significant for greater than 24 hours, and 5) screen as potentially risk significant due to an external 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 adequately coordinate work activities to support long-term equipment reliability by limiting temporary modifications in that these temporary modifications have been installed for longer than three years (over two outages) [H.3(b)].

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)*

Significance: G Mar 16, 2012
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Translate Extreme Maximum Outside Air Temperatures into Calculations for Unit 2 Diesel Combustion Air
The team identified a Green, non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," which states, in part, that "measures shall be established to assure that applicable regulatory requirements and the design basis, as defined in §50.2 and as specified in the license application, for those structures, systems, and components to which this appendix applies are correctly translated into specifications, drawings, procedures, and instructions." Specifically, prior to March 16, 2012, the licensee failed to translate the site extreme maximum outside air temperatures, as stated in the updated safety analysis report, into calculations that determined the combustion air temperature available for the Unit 2 emergency diesel generators. The finding was entered into the licensee's corrective action program as Condition Reports CR-ANO-2-2012-00436 and CR-ANO-2-2012-00486.

The team determined that the failure to translate the updated safety analysis report design basis for site extreme maximum temperature into combustion air temperature calculations was a performance deficiency. This finding was more than minor because it was associated with the design control 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 failed to evaluate the effects of increased combustion air temperature on the load capacity of the Unit 2 emergency diesel generators, when outside air temperature reaches the design basis extreme maximum temperature. 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 risk significant trains of 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)*

Significance: G Mar 16, 2012

Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Translate EFW Pump Runout Flow Condition into NPSH and Diesel Load Calculation
The team identified a Green, non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” which states, in part, that “measures shall be established to assure that applicable regulatory requirements and the design basis, as defined in §50.2 and as specified in the license application, for those structures, systems, and components to which this appendix applies are correctly translated into specifications, drawings, procedures, and instructions.” Specifically, prior to March 16, 2012, the licensee failed to ensure that design basis information associated with emergency feedwater pump runout conditions were correctly translated into design basis calculations for required net positive suction head, pump motor requirements, and emergency diesel generator loading. The finding was entered into the licensee’s corrective action program as Condition Report CR-ANO-2-2012-00501.

The team determined that the failure to translate the correct brake horsepower during runout conditions for the emergency feedwater pump 2P-7B pump impeller into design basis calculations for required net positive suction head and emergency diesel generator loads was a performance deficiency. This finding was more than minor because it was associated with the design control 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 failure to correctly translate the actual brake horsepower resulted in the reduction of available emergency diesel generator capacity margin from 3 percent to 1.6 percent. This represented a 47 percent decrease in margin on a low margin component. 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 risk significant trains of 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)*

Significance:  Aug 27, 2010
Identified By: NRC
Item Type: FIN Finding
Fire Protection Compensatory Measures Did Not Cover All Fire Protection Features
The team identified a finding because the licensee did not include fire protection features in Procedure 1000.120, “ANO Fire Impairment Program,” Revision 20. The approved fire protection program required implementing compensatory measures for degraded fire protection systems and features, but the fire impairment implementing procedure addressed only action to identify, document and apply compensatory measures for specific fire protection systems. The team identified that the licensee did not implement compensatory measures for periods when the Appendix R emergency lighting units were placed out of service for maintenance and testing. This finding has been entered into the corrective action program as CR-ANO-C-2010-02205.

Failure to ensure that all of the applicable elements of the approved fire protection program were included in the fire impairment implementing procedure is a performance deficiency. The finding is more than minor because it is associated with the Protection Against External Events attribute of the Mitigating Systems cornerstone since it affected the availability, reliability, and capability of systems that respond to fire events to prevent undesirable consequences. Because this issue relates to fire protection, the team used the guidance of Manual Chapter 0609, Appendix F, Attachment 2, to determine that this fire prevention and administrative control deficiency had a low degradation rating in that it minimally impacted the fire protection program. Based on this, the finding screened as having very low safety significance (Green) during a Phase 1 significance determination. This finding is identified as FIN 05000313; 05000368/2010006¬-01, Inadequate Compensatory Measures for Out-Of-Service Appendix R Emergency Lights. No cross cutting aspect was associated with this finding because the team determined that this deficiency is not indicative of current performance because this practice existed for longer than three years.

Inspection Report# : 2010006 *(pdf)*

Barrier Integrity

Significance: G Sep 30, 2011
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Take Timely Corrective Actions for Invalid Local Leak Rate Test
The inspectors identified a noncited violation of 10 CFR 50, Appendix B, Criterion XVI, “Corrective Actions” for the licensee’s failure to take corrective action for an invalid local leak rate test performed on the Unit 2 escape hatch, 2C-2. Specifically, the licensee failed to take appropriate and timely corrective action to develop an appropriate testing method for the inner and outer escape hatch door seals. The issue was entered into the licensee’s corrective action program as Condition Report CR-ANO-2-2011-3198.

The inspectors determined that the licensee’s failure to develop an adequate testing method that did not use the strong backs to precondition the escape hatch door seals prior to the 2R20 fall 2009 outage was a performance deficiency. Specifically, the licensee failed to provide timely corrective actions to a condition adverse to quality that had been identified in a previous NRC identified noncited violation and was within the licensee’s ability to foresee and correct. The performance deficiency was determined to be more than minor because it was associated with the procedure quality attribute of the Barrier Integrity cornerstone and adversely affected the cornerstone objective to provide reasonable assurance that physical design barriers (containment) protect the public from radionuclide releases caused by accidents or events and is therefore a finding. Using Manual Chapter 0609.04, “Phase 1 - Initial Screening and Characterization of Findings,” the finding was determined to have very low safety significance, Green, because the finding does not represent a degradation of the radiological barrier, or the smoke and toxic gas barrier functions provided for the control room, or does not represent an actual open pathway in the physical integrity of the reactor containment or a heat removal component. The finding was determined to have a crosscutting aspect in the area of problem identification and resolution, associated with the corrective action program in that the licensee did not thoroughly evaluate the problem in a manner to make certain that the resolution addressed the causes and the extent of condition to ensure a new test method, that did not use preconditioning, would be completed in a timely manner to resolve the problem [P.1(c)].
Inspection Report# : 2011004 *(pdf)*

Emergency Preparedness

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)*

Public Radiation Safety

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.

Miscellaneous

Last modified : September 12, 2012