Arkansas Nuclear 2
2Q/2010 Plant Inspection Findings

Initiating Events

Significance: G Jun 30, 2010
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Follow Natural Emergencies Procedure to Control Site Missile Hazards During Severe Weather Warnings and Watches
The inspectors identified a noncited violation of Technical Specification of 5.4.1.a for failure to follow Procedure OP-1203.025, “Natural Emergencies,” Revision 30. Specifically, on April 23, 2010, the licensee entered the before mentioned procedure due to a tornado watch/warning and failed to identify and control potential missile hazards in and around the Unit 1 transformer yard. The licensee entered this issue into the corrective action program as Condition Report CR-ANO-C-2010-1003.

Failure of the licensee to assess and control potential missile hazards on site, in and around transformer yards was a performance deficiency. Specifically, the licensee failed to follow Procedure OP 1203.025, “Natural Emergencies,” Revision 30 and adequately secure missile hazards on site. The performance deficiency was determined to be more than minor because it was associated with the external hazards attribute and directly affected the Initiating Events Cornerstone objective to limit the likelihood of those events that upset plant stability while in shutdown or at power conditions, and is therefore a finding. Specifically, the failure of the licensee to secure missile hazards on site, especially around the safety related transformers increased the likelihood of a loss of power event that could result in upsetting plant stability. The inspectors evaluated the significance of the finding using Manual Chapter 0609, “Significance Determination Process,” Appendix G, Checklist 3, and determined the finding to be of a very low safety significance, Green, because the finding did not cause the loss of mitigating capability of core heat removal, inventory control, power availability, containment control, or reactivity control. 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(d), in that the licensee failed to take appropriate corrective actions to address safety issues and adverse trends in a timely manner, commensurate with their safety significance and complexity. Specifically, the licensee failed to take effective corrective action from a previous NRC-identified issue, in that the corrective actions did not ensure that the control room operators had adequate guidance to asses and control potential missile hazards on site prior to the onset of severe weather.
Inspection Report# : 2010003 *(pdf)*

Significance: G Jun 30, 2010
Identified By: Self-Revealing
Item Type: FIN Finding
Troubleshooting in Switchyard Causes Loss of Power to Unit 1 and Unit 2 Startup Transformers
The inspectors documented a self-revealing finding for failure to implement Procedure OP-1015.033, “ANO Switchyard Controls,” Revision 12. Specifically, On March 26, 2010, while performing 161 kV Breaker B1205 post-installation testing, several issues developed and testing activities morphed into troubleshooting activities. Per the above mentioned procedure, a new component and plant impact statement should have been performed. The impact statement should have described the new work activities, objectives and potential for plant impacts so that a proper assessment could be made by operations as to allow the work or not. These troubleshooting activities ultimately resulted in a lockout of the auto-transformer, which resulted in the lockout of startup Transformers 1 and 3 (offsite power source) for Units 1 and 2, respectively. The licensee entered the issue into the corrective action program as Condition Report CR-ANO-C-2010-0726.

The failure to properly implement Procedure OP-1015.033, ANO Switchyard Controls,” Revision 12, was a performance deficiency. Specifically, the licensee did not stop and obtain a component and plant impact statement when test activities transitioned into troubleshooting activities in the Arkansas Nuclear One switchyard. The

troubleshooting activities led an auto lockout of the auto transformer and resulted in the loss of offsite power to startup transformers 1 and 3. The performance deficiency was determined to be more than minor because it is associated with the human performance attribute and directly affected the initiating events cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown conditions, and is therefore a finding. The significance of the finding was determined using Manual Chapter 0609, "Significance Determination Process," Appendix G, Checklist 4, and determined to be of very low safety significance, because it did not cause the loss of mitigating capability of core heat removal, inventory control, power availability, containment control, or reactivity control. The finding was determined to have a crosscutting aspect in the area of human performance associated with work practices, H.4(c), in that the licensee failed to ensure supervisory and management oversight of work activities in the switchyard such that nuclear safety is support. Specifically, the licensee became too involved helping solve the issue discovered in the switchyard and failed to recognize that Procedure OP-1015.033 need to be implemented.

Inspection Report# : 2010003 *(pdf)*

Significance: G Mar 31, 2010
Identified By: NRC
Item Type: FIN Finding
INADEQUATE ROOT CAUSE EVALUATION FAILED TO PREVENT MAIN FEEDWATER PUMP THRUST BEARING FAILURE
Green. The inspectors identified a Green finding for the licensee's failure to develop an adequate root cause evaluation and subsequent corrective actions to prevent reoccurrence of main feedwater pump 2P-1A thrust bearing failure. Specifically, the licensee's root cause evaluation for a thrust bearing failure on March 13, 2009, failed to identify that the main feedwater pump performance had been degrading and did not implement corrective actions to repair the pump during the Unit 2 refueling outage in September 2009. The pump thrust bearing failed again on December 8, 2009, which led to an unplanned manual reactor trip. The licensee entered the issue into their corrective action program as Condition Report CR ANO 2 2009 3744.

The failure to perform an adequate root cause evaluation to prevent the reoccurrence of the main feedwater pump 2P-1A thrust bearing failure was a performance deficiency. The performance deficiency was determined to be more than minor because if left uncorrected could become a more significant safety concern and is therefore a finding. Specifically, the failure to perform thorough and adequate root cause evaluations could lead to a more significant safety concern. Using Manual Chapter 0609, Attachment 4, Phase I worksheet, the finding was determined to be of very low safety significance, Green, because the finding 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 corrective action program P.1 (c), in that the licensee failed to adequately evaluate the problem with main feedwater pump 2P 1A thrust bearing failure and did not prevent reoccurrence following implementation of corrective action.
Inspection Report# : 2010002 *(pdf)*

Significance: G Sep 23, 2009
Identified By: Self-Revealing
Item Type: FIN Finding
FAILURE TO IMPLEMENT TROUBLESHOOTING PROCEDURE DURING TROUBLESHOOTING ACTIVITIES
Green. The inspectors documented a self-revealing finding for failure to follow Procedure EN MA 125, "Troubleshooting," Revision 3. Specifically, the procedure was not implemented, as work conditions dictated, and failed to prevent maintenance from blowing a fuse while performing troubleshooting activities in the steam generator blow down tank level switch circuitry. This resulted in the energizing of pressurizer backup heaters, loss of automatic operations of the main feedwater pump lube oil temperature and loss of the first stage pressure input, requiring operator action to regain control of systems.

The performance deficiency was determined to be more than minor because it was associated with the configuration control 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 functions during power operations, and is therefore a finding.

Using Inspection Manual Chapter 0609, Phase 1 Worksheets, the finding was determined to be of very low safety significance because the finding did not contribute to both, the likelihood of a reactor trip and the likelihood that mitigation equipment or functions would not have been available. It was determined that the finding had 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.

Inspection Report# : 2009004 *(pdf)*

Significance: G Aug 14, 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)*

Mitigating Systems

Significance: G Sep 23, 2009
Identified By: NRC
Item Type: NCV NonCited Violation
FAILURE TO MAINTAIN SEISMIC DESIGN BASES CONTROL
Green. The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” for the failure to assure that applicable design basis for applicable structures, systems, and components were correctly translated into specifications, procedures, and instructions. Specifically, the licensee approved a nonconservative engineering calculation which led to operating procedure changes that allowed the removal of safety related, motor operated valve actuator rigid seismic restraints in the support of maintenance without verifying conformance to meet seismic design basis requirements. The issue was entered into the licensee's corrective action program as Condition Report ANO C 2009 0710.

The performance deficiency was determined to be more than minor because it was associated with the protection against external events attribute of the Mitigating Systems Cornerstone, and affected the associated cornerstone objective to ensure availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences, and is therefore a finding. Specifically, the engineering calculation used to support removal of rigid seismic restraints and maintain operability only analyzed the deadweight of the motor operated valve actuator, not any dynamic seismic loading. Using NRC Manual Chapter 0609, “Significance Determination Process,” Phase 1 Worksheets, Mitigating Systems Cornerstone, the finding was determined to have very low safety significance

because it did not represent an actual loss of safety function and did not screen as potentially risk significant due to a seismic initiating event. This finding did not have a crosscutting aspect because the engineering calculation used to determine the acceptability of removal of motor operated valve actuator seismic restraints to support maintenance and maintain system operability was made in 1994 and was not indicative of current plant performance.

Inspection Report# : 2009004 *(pdf)*

Significance: G 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)*

Barrier Integrity

Significance: G Jun 30, 2010
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Adequately Implement Foreign Material Exclusion Controls
The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” associated with the licensee’s failure to adequately implement Procedure EN-MA-118, “Foreign Material Exclusion,” Revision 5. Specifically, between March 21, 2010, and April 22, 2010, multiple occasions were identified where licensee personnel failed to implement appropriate foreign material exclusion controls in areas designated as Zone 1 foreign material exclusion areas. This issue was entered into the licensee's corrective action program as Condition Reports ANO-2-2010-0262, ANO-2-2010-269, ANO-1-2010-0469, ANO-1-2010-0564, ANO-1-2010-0874, ANO-1-2010-0903, ANO-1-2010-0750, ANO-1-2010-1338, ANO-1-2010-1526, ANO-1-2010-1958, and ANO-C-2010-688.

The performance deficiency was more than minor because it affected the human performance attribute of the barrier

integrity cornerstone and directly affected the cornerstone objective of providing reasonable assurance that physical barriers protect the public from radionuclide releases caused by accidents or events, and is therefore a finding. Specifically, station personnel's continued failure to implement appropriate foreign material exclusion controls would result in the introduction of foreign material into critical areas, such as the spent fuel pool or the reactor cavity, which in turn would result in degradation and adverse impacts on materials and systems associated with these areas. Using the Manual Chapter 0609, Appendix G, "Shutdown Operations Significance Determination Process," Phase 1 guidance, the finding is determined to have very low safety significance because the finding did not result in an increase in the likelihood of a loss of reactor coolant system inventory, degrade the ability to add reactor coolant system inventory, or degrade the ability to recover decay heat removal. This finding had a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program, P.1(d), in that the licensee takes appropriate corrective actions to address safety issues and adverse trends in a timely manner, commensurate with their safety significance and complexity.

Inspection Report# : 2010003 *(pdf)*

Significance: G Sep 23, 2009
Identified By: NRC
Item Type: NCV NonCited Violation
FAILURE TO ADEQUATELY IMPLEMENT FOREIGN MATERIAL EXCLUSION CONTROLS
Green. The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," associated with the licensee's failure to adequately implement Procedure EN MA 118, "Foreign Material Exclusion," Revision 5. Specifically, on multiple occasions during Refueling Outage 2R20, licensee personnel failed to implement appropriate foreign material exclusion controls in areas designated as Zone 1 foreign material exclusion areas in accordance with Procedure EN MA 118. This issue was entered into the licensee's corrective action program as Condition Report ANO 2-2009-2843.

The performance deficiency was more than minor because it affected the human performance attribute of the Barrier Integrity Cornerstone and directly affected the cornerstone objective of providing reasonable assurance that physical barriers protect the public from radionuclide releases caused by accidents or events, and is therefore a finding. Furthermore, the significant programmatic deficiencies that were identified associated with this issue could lead to more significant errors if left uncorrected. Specifically, station personnel's continued failure to implement appropriate foreign material exclusion controls would result in the introduction of foreign material into critical areas, such as the spent fuel pool or the reactor cavity, which in turn would result in degradation and adverse impacts on materials and systems associated with these areas. 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 was only associated with the fuel barrier. This finding had 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 which resulted in a failure to follow procedure by workers.

Inspection Report# : 2009004 *(pdf)*

Significance: G Aug 27, 2009
Identified By: NRC
Item Type: NCV NonCited Violation
Inadequately Analyzed Emergency Operating Procedure Change
The NRC examiners identified a Green noncited violation of Technical Specification 5.4.1.b for failure to validate changes made to Emergency Operating Procedures. Specifically, the licensee failed to validate a change made to Emergency Operating Procedure E-0, Reactor Trip or Safety Injection. This unvalidated change to E-0 had the unintended consequence of changing the Emergency Operating Procedure mitigation strategy in the steam generator tube rupture procedure, E-3, in that it resulted in premature direction to close the main steam isolation valves which increases the likelihood and duration of a radioactive release during a tube rupture event. This was an undesirable effect that the licensee had not considered when it made the change to E-0. This was entered into the licensee's Corrective Action Program under AR22391, and the licensee removed the change that was made to E-0.

The finding was more than minor because it adversely affected the barrier integrity cornerstone attribute of

“Procedure Quality” in that the change to the emergency operating procedure increased the likelihood of an offsite release during a steam generator tube rupture casualty. Manual Chapter 0609, Attachment 4, “Initial Screening and Characterization of Findings,” was used to evaluate the finding. The finding is of very low safety significance because it did not represent a degradation of the radiological barrier function provided for the control room, auxiliary building, or spent fuel pool; it did not represent a degradation of the barrier function of the control room against smoke or a toxic atmosphere; it did not represent an actual open pathway in the physical integrity of reactor containment; and it did not involve an actual reduction in function of hydrogen ignitors in the reactor containment. The finding had a crosscutting aspect in the area of human performance associated with decision making because the licensee failed to conduct effectiveness reviews of safety-significant decisions to verify the validity of underlying assumptions and identify possible unintended consequences.

Inspection Report# : 2009302 *(pdf)*

Emergency Preparedness

Occupational Radiation Safety

Significance: G Sep 23, 2009
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
FAILURE TO CONTROL ACCESS TO A HIGH RADIATION AREA WITH DOSE RATES IN EXCESS OF 1.0 R/HR
Green. The inspector reviewed a self-revealing noncited violation of Technical Specification 6.7.2 for failure to control a high radiation area with dose rates in excess of 1.0 R/hr. On September 12, 2009, a radiological barrier was removed by a work crew exposing an area with dose rates in excess of 1.0 R/hr without radiation protection personnel authorization. Radiation protection personnel did not fully understand that the work crew was intending to remove the secondary handhole barrier on the Unit 2 steam generator A to clean the area in preparation for installing the strongback. The dose rate one foot within the handhole was 2.9 R/hr. Radiation protection was made aware of the situation when reviewing the cause for one member of the work crew receiving a dose rate alarm. The issue was documented as Condition Report ANO-2-2009-02609.

The failure to control a high radiation area with dose rates in excess of 1.0 R/hr is a performance deficiency. The finding was greater than minor because it was associated with the Occupational Radiation Safety cornerstone attribute (exposure control) of program and process and affected the cornerstone objective, in that, the failure to properly control a high radiation area with dose rates in excess of 1.0 R/hr had the potential to increase personnel dose. This finding was evaluated using the Occupational Radiation Safety Significance Determination Process and determined to be of very low safety significance because it did not involve: (1) ALARA planning or work control issue, (2) an overexposure, (3) a substantial potential for overexposure, or (4) an impaired ability to assess dose. Additionally, this finding had human performance crosscutting aspects associated with work control in that the work planning did not appropriately plan work activities by incorporating risk insights and radiological safety [H.3(a)].

Inspection Report# : 2009004 *(pdf)*

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)*

Last modified : September 02, 2010