Arkansas Nuclear 2
1Q/2009 Plant Inspection Findings

Initiating Events

Significance: G Mar 24, 2009
Identified By: NRC
Item Type: FIN Finding
Failure to Follow Procedure for Flow Accelerated Corrosion Program
The inspectors documented a self-revealing finding for the failure to properly implement the flow accelerated corrosion control program. Consequently, a nonsafety related extraction steam drain line failed because of flow accelerated corrosion. Engineers had identified the line as being vulnerable to flow accelerated corrosion but did not monitor it. Engineers also failed to integrate relevant industry operating experience into the program. Operators had to reduce Unit 2 power and take the turbine off line in response to the event. The licensee entered this issue into their corrective action program as Condition Report ANO 2-2009-0319.

The performance deficiency was more than minor because it affected the equipment 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. 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 had a crosscutting aspect in the area of Problem Identification and Resolution associated with Operating Experience [P.2(b)], in that licensee personnel failed to implement and institutionalize operating experience through changes to station processes and procedures.

Inspection Report# : 2009002 *(pdf)*

Significance: G Jun 23, 2008
Identified By: NRC
Item Type: FIN Finding
Loss of 500 kV power line due to switchyard maintenance
The inspectors documented a self-revealing finding for emergent work performed outside of the original work scope that led to the loss of the Pleasant Hills 500 kV power line. Entergy switchyard technicians, while working on a switchyard breaker, stepped outside the bounds of the Arkansas Nuclear One work order and caused another breaker to trip. Consequently, the load dispatcher requested that the plant reduce the output power level and the licensee down-powered both units. The licensee entered the issue into the corrective action program as CR ANO-C-2008-1053, immediately stopped work in the switchyard, performed a stand down to reemphasize work procedures and expectations, and instituted supervisory tours of the work in the switchyard until the work was complete.

The finding was more than minor because it was associated with the human error attribute and affected the Initiating Event Cornerstone objective to limit the likelihood of those events that upset plant stability during power operations. The significance of the finding was assessed using Manual Chapter 0609, “Significance Determination Process,” Phase 1 Worksheet. The finding was of very low safety significance (Green) because it did not contribute to the likelihood that mitigation equipment or functions would not be available. The finding had a cross-cutting aspect in the area of Human Performance associated with work practices because the licensee did not ensure supervisory and management oversight of work activities, including Entergy transmission network technicians, in the switchyard such that nuclear safety was supported [H.4.(c)].
Inspection Report# : 2008003 *(pdf)*

Mitigating Systems

Significance: G Dec 31, 2008
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to Perform an Adequate Risk Assessment when Disabling a Station High Energy Line Break Barrier
The inspectors identified a noncited violation of 10 CFR 50.65(a)(4), "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," associated with the licensee's failure to perform an adequate risk assessment for planned maintenance. Specifically, the licensee inappropriately assumed that disassembly of Door 340, a high-energy line break barrier, constituted normal plant ingress and egress. As such, this assumption resulted in an inadequate risk assessment, which failed to adequately evaluate the proposed condition of Door 340 and provide appropriate risk management actions for this condition. This issue was entered into the licensee's corrective action program as Condition Report ANO-2-2008-2231.

The finding was more than minor because it was similar to the nonminor considerations of Maintenance Rule Example 7.e in NRC Manual Chapter 0612, Appendix E, "Examples of Minor Issues," in that the licensee's risk assessment contained incorrect assumptions that changed the outcome of the assessment and required additional risk management activities. The inspectors evaluated this finding using NRC Manual Chapter 0609, Appendix K, "Maintenance Risk Assessment and Risk Management Significance Determination Process" because the finding is a maintenance risk assessment issue. Flowchart 1, "Assessment of Risk Deficit," requires the inspectors to determine the risk deficit associated with this issue. This finding was determined to be of very low safety significance because the incremental core damage probability deficit was less than 1 x 10-6. This finding had a crosscutting aspect in the area of Human Performance associated with Decision Making [H.1(b)], in that the licensee's engineering staff failed to use conservative assumptions and failed to verify the validity of the underlying assumptions used when evaluating the potential effects of disabling a high energy line break barrier for maintenance in accordance with 10 CFR 50.65(a)(4).

Inspection Report# : 2008005 *(pdf)*

Significance: G Sep 23, 2008
Identified By: NRC
Item Type: NCV NonCited Violation
FAILURE TO ENTER CONDITIONS ADVERSE TO QUALITY INTO THE CORRECTIVE ACTION PROGRAM
The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the failure to implement required measures to ensure that conditions adverse to quality were promptly identified and corrected. Specifically, Procedure EN LI 102, "Corrective Action Process," Revision 8, required that plant personnel write condition reports for conditions adverse to quality. The inspectors identified nine instances where station personnel were aware of conditions adverse to quality, but failed to enter them into the corrective action program without being prompted by the inspectors. Licensee personnel entered this issue into the corrective action program as Condition Report ANO C 2008 1536.

The finding was more than minor because it was similar to nonminor Example 3.j in NRC Manual Chapter 0612, Appendix E, "Examples of Minor Issues," in that significant programmatic deficiencies were identified associated with this issue that could lead to worse errors if left uncorrected. Specifically, station personnel's failure to enter conditions adverse to quality into the station corrective action program could result in the 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. Using NRC Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the finding was determined to have very low safety significance (Green) because the finding: (1) was not 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 10CFR50.65, 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# : 2008004 *(pdf)*

Significance: G Jun 23, 2008
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to adequately monitor the performance of the alternate AC diesel generator
The inspectors identified a noncited violation of 10 CFR 50.65 (a)(2) for the licensee's failure to demonstrate that alternate AC diesel generator performance was being effectively controlled through preventative maintenance. The licensee maintained the diesel generator in a Maintenance Rule a(2) status but the diesel had suffered ten functional failures (for Maintenance Rule scoped functions) between April 2006 through March 2008. Functional failures included 8 failures of the starting air compressor and 2 failures of building ventilation. The licensee maintained separate performance criteria for these components but had failed to properly characterize the malfunctions as Maintenance Rule functional failures. The licensee entered this issue in their corrective action program as CR ANO-2-2008-1265.

The finding was more than minor because it was similar to non-minor Maintenance Rule Example 7.b in NRC Manual Chapter 0612, Appendix E, "Examples of Minor Issues," in that the problem involved degraded equipment performance. This finding had very low safety significance because the finding did not lead to an actual loss of safety function or cause the diesel to be inoperable, nor did it screen as potentially risk significant due to a seismic, flooding, or severe weather initiating event. This finding had a cross-cutting aspect in the area of Human Performance associated with decision making [H.1(b)], in that engineers failed to verify the validity of the underlying assumptions for compressor and building ventilation functional failures when evaluating preventative maintenance effectiveness.

Inspection Report# : 2008003 *(pdf)*

Significance: G Jun 23, 2008
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to adequtely monitor the performance of the Unit 2 service water intake structure roof drains
The inspectors identified a noncited violation of 10 CFR 50.65 (a)(2) for the licensee's failure to demonstrate that Unit 2 service water intake structure roof drains performance was being effectively controlled through preventive maintenance. Specifically, the licensee has never tested or checked the drains for blockages. The failure (or blockage) of the drains could result in channeling water to the service water pump motors during design basis rain events. The licensee entered this issue in their corrective action program as Condition Report ANO-2 2008 1302.

The finding was more than minor because it was similar to nonminor Maintenance Rule Example 7.b in NRC Manual Chapter 0612, Appendix E, "Examples of Minor Issues," in that the problem could involve degraded equipment performance. This finding had very low safety significance because the failure to properly categorize failures in accordance with the Maintenance Rule Program did not create, in itself, additional operability or functionality concerns. The inspectors determined that the finding did not have a crosscutting aspect because the opportunity to identify that performance monitoring was inadequate had not occurred recently and therefore was not indicative of current licensee performance.

Inspection Report# : 2008003 *(pdf)*

Significance: G Jun 23, 2008
Identified By: NRC
Item Type: NCV NonCited Violation

Low pressure safety injection check valve failure due to inadequate maintenance procedures
The inspectors documented a self-revealing noncited violation of Technical Specification 6.4.1.a, “Procedures,” for an inadequate Unit 2 low pressure safety injection discharge check valve assembly procedure. Specifically, during Refueling Outage 2R18 (Fall 2006) the Train A pump discharge check valve was incorrectly assembled such that it would not fully close. Subsequently, during Refueling Outage 2R19 (Spring 2008), operations swapped decay heat removal from Train A to Train B and noticed reverse flow through the Train A pump, indicating that the discharge check valve was not fully closed. The licensee determined that the safety function of the valve was maintained because the valve still limited sufficient reverse flow through the Train A pump such that Train B pump remained operable. Operability of the Train A pump was not affected. A contributor to the violation included inadequate postmaintenance testing following refueling outage 2R18 work. The licensee entered the issue into the corrective action program as CR ANO-2-2008-0422 and implemented compensatory measures as appropriate. The licensee performed corrective maintenance, successfully completed post maintenance testing, and returned the system to service.

The finding was more than minor because it was similar to nonminor Example 5.b in NRC Manual Chapter 0612, Appendix E, "Examples of Minor Issues," in that the valve was installed incorrectly during Unit 2 Refueling Outage 2R18 and then the system was subsequently returned to service with the faulty component. The finding was of very low safety significance because the Train B LPSI pump remained operable. The inspectors determined that this particular finding did not have a cross-cutting aspect because the inadequate procedure was in place for eight years, which is not indicative of current plant performance.
Inspection Report# : 2008003 *(pdf)*

Significance: G Jun 23, 2008
Identified By: NRC
Item Type: NCV NonCited Violation
Inadequate preventive maintenance activities result in emergency light failures
The inspectors identified a noncited violation of 10 CFR Part 50, Appendix R, Section III.J, with two examples for inadequate preventive maintenance activities that resulted in 90 emergency light failures between January 2005 and December 2007. The first example related to inadequate preventive maintenance activities that resulted in the failure of 15 emergency light batteries. The second example related to inadequate preventive maintenance activities that resulted in the failure of 75 emergency light lamps. The licensee has entered these conditions in their corrective action program as CR ANO-C-2007-1646.

The finding was more than minor since it was associated with the Mitigating Systems Cornerstone attribute of protection from external factors and affected the associated cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, this finding adversely affected the ability of operators to access and align equipment necessary for safe shutdown in the event of a fire requiring evacuation of the control room. The significance of this finding was assessed using Manual Chapter 0609, Appendix F, "Fire Protection Significance Determination Process." The finding was determined to be of very low safety significance (Green) because it was determined to be a low degradation of the post-fire safe shutdown category. In addition, operators were procedurally required to carry flashlights. This finding was determined to have a crosscutting aspect of Human Performance in that the licensee failed to appropriately plan work activities to support long-term equipment reliability. Specifically, the maintenance scheduling was more reactive than preventive [H.3(b)].

Inspection Report# : 2008003 *(pdf)*

Barrier Integrity

Significance: G Sep 11, 2008
Identified By: NRC
Item Type: NCV NonCited Violation

B.5.b. Phase 2 and 3 Mitigating Strategy
This finding, affecting the Barrier Integrity Cornerstone, is related to mitigative measures developed to cope with losses of large areas of the plant; in response to Section B.5.b. of the February 25, 2002, Interim Compensatory Measures (ICM) Order (EA-02-026) and related NRC guidance. This finding has been designated as "Official Use Only - Security-Related Information;" therefore, the details of this finding are being withheld from public disclosure. This finding has no cross-cutting aspect. See inspection report 2008-006 for more details.
Inspection Report# : 2008006 *(pdf)*

Significance: G Jun 23, 2008
Identified By: NRC
Item Type: NCV NonCited Violation
Failure to maintain containment closure capability
The inspectors identified a Green noncited violation of Unit-2 Technical Specification 6.4.1.a, “Procedures,” associated with the licensee’s failure to maintain containment closure capability as required by Station Procedure OP 1015.008, “Unit 2 SDC Control,” Revision 23. The licensee was installing a "Hawke seal" at Containment Penetration 2P-53 to support outage work. However, seal installation would take approximately 1 hour and none of the workers had been designated as the responsible individual nor had the required materials been staged to ensure that they could accomplish containment closure in no more than 30 minutes. At the time, the estimated time to reactor coolant system boiling (assuming a loss of mitigating equipment) was 18 minutes. The licensee entered this issue in their corrective action program as Condition Report CR ANO-2-2008-0461.

The finding was greater than minor because it affected the configuration control attribute of the barrier integrity cornerstone, and it directly affected the cornerstone objective to provide reasonable assurance that the physical design barriers protect the public from radionuclide releases caused by accidents or events. Using Manual Chapter 0609, Appendix H, “Containment Integrity Significance Determination Process," the inspectors determined that a Phase 2 evaluation was required. The inspectors performed a Phase 2 analysis using Appendix H, Table 6.4, “Phase 2 Risk Significance-Type B Findings at Shutdown,” and determined the finding was of very low safety significance (Green) because there was no mitigating equipment out of service and the finding existed for less than 8 hours. The finding had a crosscutting aspect in the area of Human Performance associated with the resources component [H.2(c)], because the licensee failed to provide complete, accurate and up-to-date procedures and work packages for the installation of the Hawke seal which ensured that the ability to maintain containment closure was directed.
Inspection Report# : 2008003 *(pdf)*

Significance: G Apr 04, 2008
Identified By: Self-Revealing
Item Type: NCV NonCited Violation
SCAFFOLDING RENDERED CONTAINMENT ISOLATION VALVE INOPERABLE
Green. The inspectors documented a self-revealing noncited violation of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” for the failure to follow a site scaffolding procedure, in that operators and the scaffolding certifying official failed to identify that scaffolding impeded the operation of the outboard chill water return containment isolation valve. The valve could not close to perform its safety function. This issue was entered into the licensee's corrective action program as Condition Report CR ANO 2 2008 0473.

The finding was more than minor because it was similar to nonminor Example 4.a in NRC Inspection Manual Chapter 0612, Appendix E, "Examples of Minor Issues." Specifically, the scaffolding had an adverse impact on a safety related containment isolation valve. In addition, this finding was associated with the configuration control attribute of the Barrier Integrity Cornerstone and affected the cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radio nuclide releases caused by accidents or events. Using the Manual Chapter 0609, “Significance Determination Process,” Phase 1 Worksheet, the finding had very low safety significance because the condition did not represent a degradation of the barrier functions of the control room or auxiliary building; did not represent an actual open pathway in the physical integrity of reactor containment; and did not involve an actual reduction in the function of hydrogen ignitors in the reactor containment. The finding had a crosscutting aspect in the human performance area, work practices component [H.4(c)], because the licensee failed to ensure supervisory and management oversight of work activities such that nuclear safety was supported.

Inspection Report# : 2008002 *(pdf)*

Significance: G Apr 04, 2008
Identified By: NRC
Item Type: NCV NonCited Violation
INADEQUATE CONTAINMENT AIR LOCK LEAKAGE TESTING
Green. The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XI, “Test Control,” involving unacceptable preconditioning during Unit 2 containment escape hatch outer door local leakage rate testing. Specifically, the test procedure as written failed to identify leakage through the air lock outer door seals in excess of that allowed by the Containment Leakage Rate Testing Program. The licensee entered this issue in their corrective action program as condition report CR ANO 2007 1687.

This finding was more than minor because it was associated with the procedure quality attribute of the Barrier Integrity Cornerstone and affected the cornerstone objective to provide reasonable assurance that physical design barriers protect the public from radionuclide releases caused by accidents or events. Using the Manual Chapter 0609, “Significance Determination Process,” Phase 1 Worksheet, the finding was of very low safety significance because it did not represent an actual open pathway in the physical integrity of reactor containment or involve an actual reduction in defense-in-depth for the atmospheric pressure control or hydrogen control functions of the containment. This finding has a crosscutting aspect in the area of human performance area associated with resources in that the licensee did not ensure that procedures were available and adequate to assure nuclear safety. Specifically, the licensee failed to provide complete and accurate procedures to allow detection of a degradation of the containment air lock door seals [H 2(c)].

Inspection Report# : 2008002 *(pdf)*

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

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