

Arkansas Nuclear 2

1Q/2008 Plant Inspection Findings

Initiating Events

Significance:  Nov 09, 2007

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

INADEQUATE MAINTENANCE PROCEDURE FOR MOTOR CONTROL CENTER BREAKERS

A self-revealing noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," was identified associated with the licensee's failure to implement adequate corrective actions to prevent recurrence of a significant condition adverse to quality. Specifically, during the Root Cause Evaluation performed for the fire in Motor Control Center 2B-22 in October 2000, the licensee failed to recognize and evaluate previously documented instances where other breakers exhibited degraded connections that were similar, and as such precursors to the failure of the breaker in Motor Control Center 2B-22. Also, the licensee failed to recognize and evaluate these same degraded breaker connection conditions that were discovered during extent of condition inspections and subsequent motor control center maintenance inspections. The licensee's failure to identify and evaluate all instances of degraded breaker connections contributed to their failure to adequately identify the cause and implement corrective actions to prevent recurrence of this significant condition adverse to quality. This resulted in a fire in Motor Control Center 2B-52 on October 23, 2007. This issue was entered into the licensee's corrective action program as Condition Report ANO-2-2008-0060.

The finding was determined to be more than minor because it affected the protection against external factors attribute of both the Initiating Events and Mitigating Systems cornerstone. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheets, the inspectors concluded that a phase 2 evaluation was required.

The inspectors performed a Phase 2 analysis using Appendix A, "Technical Basis For At Power Significance Determination Process," of Manual Chapter 0609, "Significance Determination Process," and the Phase 2 worksheets for Arkansas Nuclear One. The inspectors determined that the Phase 2 presolved table and worksheets did not contain appropriate target sets to estimate accurately the risk impact of the finding there fore a phase 3 analysis was performed. The senior reactor analyst performed a Phase 3 analysis. The estimated change in core damage frequency was 8.463E-7/yr. The estimated change in large early release frequency was 4.842E-8/yr. Therefore, the significance of the finding was determined to be Green. The cause of this finding was determined to have a crosscutting aspect in the area of problem identification and resolution associated with the corrective action program [P.1(c)] in that the licensee failed to thoroughly evaluate the fire in Motor Control Center 2B-22 such that the resolution addressed the cause and extent of condition. This also includes conducting effectiveness reviews of corrective actions to ensure that the issue was resolved after more indications were discovered

Inspection Report# : [2007009 \(pdf\)](#)

Significance:  Nov 09, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO IDENTIFY, CORRECT AND PREVENT RECURRENCE OF A SIGNIFICANT CONDITION ADVERSE TO QUALITY

A self-revealing noncited violation was identified associated with the licensees' failure to comply with Unit 2 Technical Specifications, Section 6.4.1, "Procedures," for the failure to ensure adequate procedures were available for maintenance that was conducted on the Unit 2 AC motor control centers. Specifically, the maintenance procedure used by the licensee did not require visual inspections, nor cleaning, and lubrication of the bus to stab contact surface which facilitated degradation of the motor control center bus bars and also allowed this degradation to continue unrecognized. This issue was entered into the licensee's corrective action program as Condition Report ANO-2-2007-1512.

The finding was determined to be more than minor because it affected the protection against external factors attribute of both the Initiating Events and Mitigating Systems cornerstone. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 worksheets, the inspectors concluded that a phase 2 evaluation was required.

The inspectors performed a Phase 2 analysis using Appendix A, "Technical Basis For At Power Significance Determination Process," of Manual Chapter 0609, "Significance Determination Process," and the Phase 2 worksheets for Arkansas Nuclear One. The inspectors determined that the Phase 2 presolved table and worksheets did not contain appropriate target sets to estimate accurately the risk impact of the finding therefore a phase 3 analysis was performed. The senior reactor analyst performed a Phase 3 analysis. The estimated change in core damage frequency was 8.463E-7/yr. The estimated change in large early release frequency was 4.842E-8/yr. Therefore, the significance of the finding was determined to be Green.

Inspection Report# : [2007009](#) (pdf)

Significance:  Nov 09, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

INADEQUATE IMPLEMENTATION OF CORRECTIVE ACTIONS FAIL TO CORRECT A CONDITION ADVERSE TO QUALITY

The inspectors identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the licensee's failure to take adequate corrective actions in response to a Motor Control Center fire that occurred on October 24, 2000. Specifically, the licensee had identified dust and dirt in the MCC as a condition adverse to quality, assigned a corrective action for the condition and subsequently closed their corrective action without actions being taken to correct the condition. This issue was entered into the licensee's corrective action program as Condition Reports ANO-2-2007-1566, ANO-2-2008-0050 and ANO-2-2008-0071.

The finding was determined to be more than minor because it affected the protection against external factors attribute of the initiating events cornerstone, and it directly affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Using the Manual Chapter 0609, Appendix F, "Fire Protection Significance Determination Process," Phase 1 Worksheet, the finding was determined to have very low safety significance because the condition represented a low degradation of a fire prevention and administrative controls feature. The finding had crosscutting aspects in the area of problem identification and resolution associated with the corrective action program (P.1(d)) because the licensee failed to take appropriate corrective actions to address safety issues in a timely matter.

Inspection Report# : [2007009](#) (pdf)

Significance:  Jun 23, 2007

Identified By: Self-Revealing

Item Type: FIN Finding

Complete Loss of Component Cooling Water Flow During maintenance Operations

A self-revealing finding was identified when Unit 2 experienced a complete loss of component cooling water flow due to the loss of the Train B component cooling water Pump 2P-33B on February 21, 2007. Specifically, the loss of component cooling water occurred when an operator was attempting to pressurize an out-of-service heat exchanger to support maintenance activities. This issue was entered into the licensee's corrective action program as Condition Report ANO-2-2007-0313.

The finding was determined to be more than minor because it affected the equipment performance attribute of the initiating events and mitigating systems cornerstones. Using the Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the inspectors concluded that a Phase 2 evaluation was required.

The inspectors performed a Phase 2 analysis using Appendix A, "Technical Basis For At Power Significance Determination Process," of Manual Chapter 0609, "Significance Determination Process," and the Phase 2 Worksheets for Arkansas Nuclear One. The inspectors assumed that the duration of the component cooling water system unavailability was very short, approximately 4 hours. Additionally, the inspectors assumed that only the power conversion system was affected and all other mitigating systems were available. Based on the results of the Phase 2 analysis, the finding was determined to have very low safety significance. The finding had crosscutting aspects in the

area of human performance associated with resources (H.2(b)) because the training of personnel and procedural guidance available was inadequate.

Inspection Report# : [2007003](#) (pdf)

Significance:  Jun 23, 2007

Identified By: Self-Revealing

Item Type: FIN Finding

Inadequate Evaluation of Non-Routine Hot Work Activities Resulted in a Failure to Maintain Fire Watch for Required Amount of Time

A self-revealing noncited violation of Unit 2 Technical Specification 6.4.1.c, "Fire Protection Program Implementation," was identified for the licensee's failure to provide training and qualification for fire protection designees which resulted in non-routine hot work activities not being adequately evaluated by appropriately trained individuals. Specifically, the roofing contractor working on the auxiliary building roof required that a 2-hour fire watch was to be stationed following roofing activities involving the use of open flames, but the licensee only required the fire watch be stationed for 30 minutes. As a result, on June 7, 2007, following roofing activities on the auxiliary building roof above the spent fuel floor that involved the use of open flames, two fires occurred after approximately one hour from the completion of hot work activities, and there was not an appropriately trained fire watch in the area. This issue was entered into the licensee's corrective action program as Condition Reports ANO-2-2007-0816 and ANO-2-2007-0839.

The finding was determined to be more than minor because it affected the protection against external factors attribute of the initiating events cornerstone, and it directly affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Additionally, if left uncorrected, the practice of not adequately evaluating nonroutine hot work activities by appropriately trained individuals would become a more significant safety concern in that it could result in a fire in or near other risk important equipment. Using the Manual Chapter 0609, Appendix F, "Fire Protection Significance Determination Process," Phase 1 Worksheet, the finding was determined to have very low safety significance because the condition did not constitute a high degradation of a fire prevention and administrative controls feature. The finding had crosscutting aspects in the area of human performance associated with decision making (H.1(b)) because the licensee did not use conservative assumptions and failed to verify the validity of the underlying assumptions.

Inspection Report# : [2007003](#) (pdf)

Significance:  Jun 23, 2007

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Ineffective Corrective Actions Fail to Identify and Correct a Condition Adverse to Quality

A self-revealing noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," was identified associated with the exhaust manifold lagging fire that occurred on Unit 2 Emergency Diesel Generator 2K-4A on May 11, 2007. Specifically, the licensee failed to adequately implement corrective actions from a previous diesel exhaust manifold fire in 2003 and as such, the licensee failed to identify and correct an oil leak from the front cover of the diesel which resulted in a fire during a monthly surveillance run. This issue was entered into the licensee's corrective action program as Condition Report ANO-2-2007-0718.

The finding was determined to be more than minor because it affected the protection against external factors attribute of the initiating events cornerstone, and it directly affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Using the Manual Chapter 0609, Appendix F, "Fire Protection Significance Determination Process," Phase 1 Worksheet, the finding was determined to have very low safety significance because the condition did not constitute a high degradation of a fire prevention and administrative controls feature.

Inspection Report# : [2007003](#) (pdf)

Significance:  Jun 23, 2007

Identified By: Self-Revealing

Item Type: NCV NonCited Violation

Improperly Rated Material Results in Small Flash Fires

A self-revealing noncited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified

associated with small flash fires that occurred on the Unit 2 Emergency Diesel Generator 2K-4A on April 15, 2007. Specifically, the licensee failed to verify that the outer protective cover for insulation used on the exhaust manifold was rated for expected temperatures. This issue was entered into the licensee's corrective action program as Condition Report ANO-2-2007-0630.

The finding was determined to be more than minor because it affected the protection against external factors attribute of the initiating events cornerstone, and it directly affected the cornerstone objective to limit the likelihood of those events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Using the Manual Chapter 0609, Appendix F, "Fire Protection Significance Determination Process," Phase 1 Worksheet, the finding was determined to have very low safety significance because the condition did not constitute a high degradation of a fire prevention and administrative controls feature. The finding had crosscutting aspects in the area of human performance associated with work practices (H.4(a)) because the licensee personnel proceeded with work in the face of uncertainty.

Inspection Report# : [2007003](#) (pdf)

Mitigating Systems

Significance:  Dec 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Failure to Maintain Fire Barrier for Emergency Feedwater Pump A

Green. The inspectors identified a Green noncited violation of Technical Specification 6.4.1.c, "Procedures," associated with the licensee's failure to adequately implement the fire protection program. Specifically, station personnel breached the fire barrier door for emergency feedwater (EFW) Pump 2P-7A and failed to implement compensatory measures as required by the station Fire Protection Program. This issue was entered into the licensee's corrective action program as Condition Report ANO-2-2007-1729.

The finding was determined to be more than minor because it affected the protection against external factors attribute of the mitigating systems cornerstone, and it directly affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Using the Manual Chapter 0609, Appendix F, "Fire Protection Significance Determination Process," Phase 1 Worksheet, the finding was determined to have very low safety significance because: (1) the duration factor was assumed to be $6E-5$; and (2) the fire frequency was assumed to be $4E-4$, which resulted in a change in CDF of less than $1E-6$. The finding had crosscutting aspects in the area of problem identification and resolution associated with the corrective action program [P.1(c)] in that the licensee failed to thoroughly evaluate a previous occurrence of leaving fire doors open such that the resolution appropriately addressed the cause.

Inspection Report# : [2007005](#) (pdf)

Significance:  Oct 19, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

FAILURE TO MAINTAIN ADEQUATE FIRE BRIGADE STAFFING DURING ALTERNATE SHUTDOWN

The team identified a noncited violation of License Conditions 2.C.(8) for Unit 1 and 2.C.(3)(b) for Unit 2 for failure to implement and maintain in effect all provisions of the approved fire protection program. Specifically, the licensee failed to maintain adequate fire brigade staffing during fire scenarios requiring an alternative shutdown of Unit 2 coincident with a remote shutdown of Unit 1. The licensee entered the failure to maintain adequate fire brigade staffing under all circumstances into their corrective action process for resolution.

The failure to implement and maintain in effect all provisions of the approved fire protection program by failing to maintain adequate fire brigade staffing was a performance deficiency. The finding was more than minor since it was associated with the Mitigating Systems Cornerstone attribute of protection from external factors and affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. The significance of the finding was assessed using Appendix M of Manual Chapter 0609, "Significance Determination Process Using Qualitative Criteria." This finding was determined to be of

very low safety significance (Green) by management review due to the short duration of the violation. The finding has a cross-cutting aspect in the area of human performance associated with resources because the licensee did not adequately ensure the procedures governing the procedure change process were complete and accurate (H.2.(c)).
Inspection Report# : [2007006](#) (*pdf*)

Significance:  Sep 21, 2007
Identified By: NRC

Item Type: NCV NonCited Violation

NONCONSERVATIVE ERRORS IN UNIT 2 FUEL OIL CONSUMPTION CALCULATION

The team identified a non-cited violation of 10 CFR 50 Appendix B, Criterion III, Design Control for the failure to recognize multiple non-conservative errors in a Unit 2 emergency diesel generator fuel oil consumption calculation. The errors were a result of illegible reference data, inconsistently applied methodology, and inadequate calculation reviews, some of which reduced the calculated margin to meeting design bases requirements. The inspectors determined that the failure to recognize multiple errors in a design bases emergency diesel generator fuel oil consumption calculation constituted a performance deficiency and a violation. The licensee entered this into the corrective action program as CR-ANO-2-2007-01325.

The inspectors determined that the violation was more than minor because it is similar to Inspection Manual Chapter 0612 Appendix E minor example 3j, specifically because operability was called into question by the non-conservative errors identified by the NRC. Furthermore, the calculation will need to be re-performed and scrutinized to correct and identify all errors and to ensure all reference data is valid and supportable. In accordance with Inspection Manual Chapter 0609, Significance Determination Process, Appendix A, Significance Determination of Reactor Inspection Findings for At Power Situations, the inspectors conducted a Phase 1 screening and determined the finding was of very low safety significance (Green) because it was a design deficiency confirmed not to result in loss-of-operability in accordance with Part 9900, Technical Guidance, Operability Determination Process for Operability and Functional Assessment. This issue is being treated as a non-cited violation consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000368/2007008-001, Non-conservative Errors in Unit 2 Fuel Oil Consumption Calculation.

Inspection Report# : [2007008](#) (*pdf*)

Barrier Integrity

Emergency Preparedness

Occupational Radiation Safety

Public Radiation Safety

Physical Protection

Although the NRC is actively overseeing the Security cornerstone, the Commission has decided that certain findings pertaining to security cornerstone will not be publicly available to ensure that potentially useful information is not provided to a possible adversary. Therefore, the [cover letters](#) to security inspection reports may be viewed.

Miscellaneous

Significance: SL-IV Dec 31, 2007

Identified By: NRC

Item Type: NCV NonCited Violation

Communication of an NRC Inspector's Presence by Security Personnel

SL IV. The inspectors identified a Severity Level IV NCV of 10 CFR 50.70, "Inspections," for the licensee's failure to ensure that the arrival and presence of an NRC inspector is not communicated to persons at the facility. A security officer informed other security officers at the facility of the presence and expected arrival of an NRC resident inspector at their duty location. This issue was entered into the licensee's corrective action program as Condition Report ANO-2007-1508.

The finding was determined to be applicable to traditional enforcement because the NRC's ability to perform its regulatory function was potentially impacted by the licensee's notification of personnel whose activities are subject to unannounced inspection by NRC inspectors. The finding was not suitable for evaluation using the significance determination process, and was therefore evaluated in accordance with the Enforcement Policy. The finding was reviewed by NRC management and was determined to be of very low safety significance.

Inspection Report# : [2007005](#) (*pdf*)

Significance: N/A Apr 03, 2007

Identified By: NRC

Item Type: FIN Finding

Identification and Resolution of Problems

The team reviewed 299 condition reports, several work orders, engineering evaluations, associated root and apparent cause evaluations, and other supporting documentation to assess problem identification and resolution activities. The team concluded that the licensee effectively identified, evaluated and prioritized corrective actions for conditions adverse to quality. The licensee improved in their ability to use the condition report process to track adverse conditions documenting abnormal configurations or potential challenges to the normal station processes. Also the licensee improved in their coordination among plant processes when closing condition reports to other corrective action or work control documents. However, the team concluded that the licensee, generally, implemented timely, effective corrective actions, although some examples, including one violation, indicate continuing weakness in this area.

With minor exceptions, the licensee appropriately evaluated industry operating experience for relevance to the facility and had entered applicable items in the corrective action program. The licensee appropriately used industry operating experience when performing root cause and apparent cause evaluations. The licensee performed effective quality assurance audits and self-assessments, as demonstrated by self-identification of poor corrective action program performance and identification of ineffective corrective actions. The team concluded that the licensee established an acceptable and improving safety conscious work environment. Management took action to address the write-in comments from the 2006 safety culture survey. The team concluded from interviews that, although no safety conscious work environment concerns existed, the complaints related to general culture factors, if not addressed, might result in safety conscious work environment concerns.

Inspection Report# : [2007007](#) (*pdf*)

Last modified : June 05, 2008