UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 E. LAMAR BLVD.
ARLINGTON, TX 76011-4511

November 9, 2015

Mr. Jeremy Browning, Site Vice President
Arkansas Nuclear One
Entergy Operations, Inc.
1448 SR 333
Russellville, AR 72802-0967

SUBJECT: ARKANSAS NUCLEAR ONE – NRC INSPECTION REPORT 05000313/2015003 and 05000368/2015003

Dear Mr. Browning:

On September 30, 2015, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Arkansas Nuclear One facility, Units 1 and 2. On October 6, 2015, the NRC inspectors discussed the results of this inspection with you and other members of your staff. Inspectors documented the results of this inspection in the enclosed inspection report.

NRC inspectors documented two findings of very low safety significance (Green) in this report. Both of these findings involved violations of NRC requirements. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2.a of the NRC Enforcement Policy.

If you contest the violations or significance of these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region IV; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC resident inspector at Arkansas Nuclear One.

If you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region IV; and the NRC resident inspector at Arkansas Nuclear One.

On September 30, 2015, the NRC completed a quarterly performance review of Arkansas Nuclear One. The NRC determined that continued plant operation was acceptable and oversight in the Multiple/Repetitive Degraded Cornerstone of the Reactor Oversight Process Action Matrix remained appropriate.

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 2.390, “Public Inspections, Exemptions, Requests for Withholding,” a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC’s Public

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Sincerely,

/RA/

Neil O'Keefe, Chief
Project Branch E
Division of Reactor Projects

Docket Nos. 50-313 and 50-368
License Nos. DRP-51 and NPF-6

Enclosure:
Inspection Report 05000313/2015003 and
05000368/2015003
w/ Attachment: Supplemental Information

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Letter to Jeremy Browning from Neil O'Keefe dated November 9, 2015

SUBJECT: ARKANSAS NUCLEAR ONE – NRC INTEGRATED INSPECTION REPORT 05000313/2015003 and 05000368/2015003

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U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket:	05000313; 05000368
License:	DPR-51; NPF-6
Report:	05000313/2015003; 05000368/2015003
Licensee:	Entergy Operations Inc.
Facility:	Arkansas Nuclear One, Units 1 and 2
Location:	Junction of Hwy. 64 West and Hwy. 333 South Russellville, Arkansas
Dates:	July 1 through September 30, 2015
Inspectors:	B. Tindell, Senior Resident Inspector A. Barrett, Resident Inspector M. Tobin, Resident Inspector B. Correll, Project Engineer J. Dixon, Senior Project Engineer R. Egli, Chief, Reactor Technology Instructor T. Farina, Project Engineer Z. Hollcraft, Reactor Operations Engineer M. Williams, Reactor Inspector
Approved By:	Neil O'Keefe Chief, Project Branch E Division of Reactor Projects

SUMMARY

IR 05000313/2015003; 05000368/2015003; 07/01/2015 – 09/30/2015; Arkansas Nuclear One, Units 1 and 2, Integrated Inspection Report; Operability Determinations and Functionality Assessments and Problem Identification and Resolution.

The inspection activities described in this report were performed between July 1 and September 30, 2015, by the resident inspectors at Arkansas Nuclear One and inspectors from the NRC's Region IV office and other NRC offices. Two findings of very low safety significance (Green) are documented in this report. Both of these findings involved violations of NRC requirements. The significance of inspection findings is indicated by their color (Green, White, Yellow, or Red), which is determined using Inspection Manual Chapter 0609, "Significance Determination Process." Their cross-cutting aspects are determined using Inspection Manual Chapter 0310, "Aspects within the Cross-Cutting Areas." Violations of NRC requirements are dispositioned in accordance with the NRC Enforcement Policy. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process."

Cornerstone: Mitigating Systems

- Green. The inspectors reviewed a self-revealing violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the failure to correct conditions adverse to quality. Specifically, the licensee failed to promptly replace short bus stabs with longer bus stabs in six 480V safety-related motor control centers as planned following a 2007 motor control center fault. Subsequently, safety-related motor control centers remained susceptible to a fault because corrective actions had not been implemented. This issue was entered into the licensee's corrective action program as Condition Report 2015-2661. The licensee has completed the modifications to all breakers except those requiring an outage.

  The failure to promptly correct conditions adverse to quality associated with 480V breaker connections to bus bars was a performance deficiency. The performance deficiency is more than minor because it is associated with the equipment performance attribute of Mitigating Systems Cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events. Specifically, untimely corrective actions allowed an increased likelihood of a fault to continue to exist that would result in the loss of the associated safety-related motor control centers if the fault occurred. Using NRC Inspection Manual Chapter 0609 Appendix A, "Significance Determination Process (SDP) for Findings At-Power," the inspectors determined that the finding was of very low safety significance (Green) because the finding was not a deficiency affecting design or qualification, did not represent a loss of system and/or function, and did not represent an actual loss of function. This finding was not assigned a cross-cutting aspect because it was not indicative of current plant performance; the licensee decided to remove the corrective actions from the corrective action program more than 3 years ago. (Section 4OA2.3)

Cornerstone: Occupational Radiation Safety

- Green. The inspectors reviewed a self-revealing non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for failure to follow the instructions in the chemical volume control system charging pump pulsation dampener bladder charging procedure. Specifically, maintenance personnel used a gas cylinder

containing argon, carbon dioxide, and oxygen rather than a pure nitrogen cylinder to charge the dampener as required by procedure 2411.066, “Charging Pump Dampener Bladder 115A, B, C and 2M-116A, B, C Checking and Depressurization,” Revision 05. Because the dampener had an existing bladder leak, the gas leaked into the reactor coolant system and the argon subsequently activated when it passed through the reactor. Reactor coolant system activity significantly increased, which elevated dose rates in the auxiliary building. The licensee entered this issue into their corrective action program as Condition Report CR-ANO-2-2015-02576. The licensee revised the procedure to require an independent verification of the gas before charging the pulsation dampeners.

The failure to follow the dampener charging procedure, which resulted in increased reactor coolant system activity and elevated dose rates in the auxiliary building, was a performance deficiency. The performance deficiency is more than minor because it is associated with the human performance attribute of the Occupational Radiation Safety Cornerstone and adversely affected the cornerstone objective to ensure the adequate protection of the worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. Specifically, charging argon into a pulsation dampener with a known bladder leak caused elevated dose rates in several plant areas. Using NRC Inspection Manual Chapter 0609 Appendix, C, “Occupational Radiation Safety Significance Determination Process,” issued August 19, 2008, the inspectors determined that the finding was of very low safety significance (Green) because it did not involve ALARA planning or work controls, did not involve an overexposure, did not have a substantial potential to be an overexposure, and the ability to assess dose was not compromised. The inspectors determined this finding had a cross-cutting aspect in the area of Avoid Complacency, because the plant maintenance mechanics failed to implement appropriate error reduction tools such as self-checking and peer-checking [H.12]. (Section 1R15)

PLANT STATUS

Unit 1 operated at 100 percent power for the entire inspection period.

Unit 2 began the period at 100 percent power. On July 23, 2015, operators reduced unit power to 96 percent due to oscillations in hotwell level, condenser pressure, and main feedwater pump turbine exhaust pressures. The power reduction stabilized the conditions in the condenser, and the unit remained at the lower power level until September 20, 2015, when Unit 2 was shut down for the planned refueling outage. The unit remained shut down through the end of the inspection period.

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01)

Readiness for Seasonal Extreme Weather Conditions

a. Inspection Scope

On July 2, 2015, the inspectors completed an inspection of the station's readiness for seasonal extreme weather conditions. The inspectors reviewed the licensee's adverse weather procedures for seasonal high temperatures and evaluated the licensee's implementation of these procedures. The inspectors verified that prior to the onset of hot weather, the licensee had corrected weather-related equipment deficiencies identified during the previous weather season.

The inspectors selected two risk-significant systems that were required to be protected from hot temperatures:

- Emergency cooling pond
- Startup transformers

The inspectors reviewed the licensee's procedures and design information to ensure the systems and components would remain functional when challenged by hot weather. The inspectors verified that operator actions described in the licensee's procedures were adequate to maintain readiness of these systems. The inspectors walked down portions of these systems to verify the physical condition of the hot weather protection features.

These activities constituted one sample of readiness for seasonal adverse weather, as defined in Inspection Procedure 71111.01.

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

Partial Walkdown

a. Inspection Scope

The inspectors performed partial system walk-downs of the following risk-significant systems:

- August 4, 2015, Unit 2, low pressure safety injection system, while relief valve 2PSV-5082 was being replaced for maintenance
- September 29, 2015, Unit 2, shutdown cooling system, while reactor coolant system was in lowered inventory
- September 30, 2015, Unit 2, refueling level indication, while reactor coolant system was in lowered inventory

The inspectors reviewed the licensee's procedures and system design information to determine the correct lineup for the systems. They visually verified that critical portions of the systems and trains were correctly aligned for the existing plant configuration.

These activities constituted three partial system walk-down samples as defined in Inspection Procedure 71111.04.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

Quarterly Inspection

a. Inspection Scope

The inspectors evaluated the licensee's fire protection program for operational status and material condition. The inspectors focused their inspection on four plant areas important to safety:

- July 15, 2015, Unit 1, Fire Zone 97-R, cable spreading room
- July 29, 2015, Unit 1, Fire Zone 98-J, access corridor
- September 3, 2015, Unit 1, Fire Zone 197-X, turbine building
- September 30, 2015, Unit 2, Fire Zones 2032-K and 2033-K, containment building

For each area, the inspectors evaluated the fire plan against defined hazards and defense-in-depth features in the licensee's fire protection program. The inspectors evaluated control of transient combustibles and ignition sources, fire detection and

suppression systems, manual firefighting equipment and capability, passive fire protection features, and compensatory measures for degraded conditions.

These activities constituted four quarterly inspection samples, as defined in Inspection Procedure 71111.05.

b. Findings

No findings were identified.

1R07 Heat Sink Performance (71111.07)

Triennial Inspection

a. Inspection Scope

On July 16, 2015, the inspectors completed inspections of the readiness and availability of three risk-significant heat exchangers. The inspectors observed and reviewed visual inspections of the Unit 2 alternate ac diesel generator aftercooler 2E-132 and lube oil cooler 2E-130. Additionally, the inspectors walked down reactor coolant pump seal return cooler E-26A/B and the auxiliary feedwater pump forced air lube oil cooler 2C-72. The inspectors observed the material condition of these component heat exchangers and verified that they were correctly categorized under the Maintenance Rule and were receiving the required maintenance.

These activities constitute completion of one heat sink performance triennial review sample, as defined in Inspection Procedure 71111.07.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program and Licensed Operator Performance (71111.11)

.1 Review of Licensed Operator Requalification

a. Inspection Scope

On August 20, 2015, the inspectors observed Unit 2 simulator training for an operating crew. On September 2, 2015, the inspectors observed a Unit 1 simulator training for an operating crew. The inspectors assessed the performance of the operators and the evaluators' critique of their performance.

These activities constitute completion of two quarterly licensed operator requalification program samples, as defined in Inspection Procedure 71111.11.

b. Findings

No findings were identified.

.2 Review of Licensed Operator Performance

a. Inspection Scope

The inspectors observed the performance of on-shift licensed operators in the plant's Unit 1 and Unit 2 main control rooms. The inspectors observed the operators' performance of the following activities:

- August 27, 2015, Unit 1, decay heat removal pump A surveillance
- September 29, 215, Unit 2, reactor coolant system drain to lowered inventory for reactor head removal

In addition, the inspectors assessed the operators' adherence to plant procedures, including conduct of operations procedure and other operations department policies.

These activities constitute completion of two quarterly licensed operator performance samples, as defined in Inspection Procedure 71111.11.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12)

a. Inspection Scope

The inspectors reviewed two instances of degraded performance or condition of safety-related structures, systems, and components (SSCs):

- June 26, 2015, Unit 1, electrical equipment room essential chiller failure
- August 18, 2015, Unit 2, service water system

The inspectors reviewed the extent of condition of possible common cause SSC failures and evaluated the adequacy of the licensee's corrective actions. The inspectors reviewed the licensee's work practices to evaluate whether these may have played a role in the degradation of the SSCs. The inspectors assessed the licensee's characterization of the degradation in accordance with 10 CFR 50.65 (the Maintenance Rule), and verified that the licensee was appropriately tracking degraded performance and conditions in accordance with the Maintenance Rule.

These activities constituted completion of two maintenance effectiveness samples, as defined in Inspection Procedure 71111.12.

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13)

a. Inspection Scope

The inspectors reviewed five risk assessments performed by the licensee prior to changes in plant configuration and the risk management actions taken by the licensee in response to elevated risk:

- July 9, 2015, Unit 2, service water train B traveling screen out of service
- August 27, 2015, Unit 2, refueling water tank to emergency core cooling system A valve closure
- September 3, 2015, Unit 1, heavy lift near borated water storage tank
- September 23, 2015, Unit 2, shutdown cooling loop B inoperable in Mode 5
- September 26, 2015, Unit 2, refueling outage risk assessment

The inspectors verified that these risk assessments were performed timely and in accordance with the requirements of 10 CFR 50.65 (the Maintenance Rule) and plant procedures. The inspectors reviewed the accuracy and completeness of the licensee's risk assessment and verified that the licensee implemented appropriate risk management actions based on the result of the assessment.

The inspectors also observed portions of one emergent work activity that had the potential to cause an initiating event:

- August 18, 2015, voltage regulator gas cylinder replacement in switchyard

The inspectors verified that the licensee appropriately developed and followed a work plan for these activities. The inspectors verified that the licensee took precautions to minimize the impact of the work activities on unaffected SSCs.

These activities constitute completion of five maintenance risk assessments and one emergent work control inspection sample, as defined in Inspection Procedure 71111.13.

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15)

a. Inspection Scope

The inspectors reviewed operability determinations and functionality assessments that the licensee performed for degraded or nonconforming SSCs:

- July 10, 2015, Unit 1, operability determination for decay heat removal pump A degrading differential pressure trend

- August 17, 2015, operability determination for emergency diesel generator fuel oil storage tank following deluge system activation

- August 18, 2015, Unit 1, functionality assessment for degraded intermediate cooling water pump discharge check valve

- August 26, 2015, Unit 2, operability determination for increasing trend in reactor coolant system argon activity

- September 15, 2015, Unit 2, operability determination for time delay relay capacitor failures

- September 24, 2015, Unit 2, operability determination for shutdown cooling heat exchanger B shell corrosion

The inspectors reviewed the timeliness and technical adequacy of the licensee's evaluation. Where the licensee determined the degraded SSC to be operable or functional, the inspectors verified that the licensee's compensatory measures were appropriate to provide reasonable assurance of operability or functionality. The inspectors verified that the licensee had considered the effect of other degraded conditions on the operability or functionality of the degraded SSC.

These activities constitute completion of six operability and functionality review samples, as defined in Inspection Procedure 71111.15.

b. Findings

Introduction. The inspectors reviewed a Green self-revealing non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, & Drawings," for failure to follow the instructions in the chemical volume control system charging pump pulsation dampener bladder charging procedure. Specifically, the licensee used a gas cylinder containing argon, carbon dioxide, and oxygen rather than a pure nitrogen cylinder to charge the dampener. The gas leaked into the reactor coolant system and was subsequently activated by neutrons. Reactor coolant system activity significantly increased, which elevated dose rates in the auxiliary building.

Description. The Unit 2 chemical volume control system charging pumps have suction and discharge dampeners to reduce pressure pulsations caused by these positive displacement pumps. These dampeners are an accumulator tank with a nitrogen filled bladder. Nitrogen leakage through the bladder can result in the nitrogen entrainment in the water, which is pumped into the reactor coolant system. The licensee had been aware of leakage from the dampeners and had implemented quarterly preventative maintenance tasks to check the pressure and fill the dampeners with nitrogen, if necessary.

On July 31, 2015, a reactor coolant sample indicated a rising trend in argon-41. argon-41 is a radioactive isotope of argon that is created when argon-40 in reactor coolant passes through the reactor and becomes irradiated. It undergoes decay, giving off a high-energy beta particle, increasing dose rates in the plant. A failure mode analysis team investigated the possible causes and identified the most likely cause to be a leaking charging pump dampener bladder filled with the incorrect gas.

On September 3, 2015, the licensee performed gas chromatograph sampling on the 2P-36C charging pump suction and discharge dampeners. Although the test equipment cannot test for percent argon content, the test determined that the suction dampener only had a 14.4 percent nitrogen content. The discharge dampener only had a 15.4 percent nitrogen content. If the dampeners were charged with nitrogen as expected, the content would be expected to be over 90 percent nitrogen. The licensee recharged the pulsation dampener with pure nitrogen, and dose rates in the plant returned to normal.

The addition and subsequent activation of argon caused the reactor coolant activity to increase by a factor of three over a period of two months. This increased the dose rates in the vicinity of piping associated with the chemical and volume control system, increasing dose to operators and radwaste personnel.

The licensee performed a cause analysis and determined that a human performance error caused the wrong gas to be used. Plant maintenance mechanics had performed pulsation dampener preventative maintenance on July 28, 2015. The mechanics retrieved a pressure gauge from the hot machine shop and went to the compressed gas cylinder storage rack. The mechanics measured pressure in the cylinders and chose the first cylinder that contained sufficient gas. The mechanics then proceeded to 2P-36C charging pump dampener fill connection, connected the cylinder to the charging header, and recharged the pulsation dampeners.

All of the gas cylinders in this storage location were the same color, and the labelling appeared similar unless read carefully. The mechanics failed to check the label on the gas cylinder to ensure that they chose a nitrogen bottle, and they incorrectly chose the single cylinder that contained a mixture of carbon dioxide, oxygen, and argon.

The licensee revised the procedure to require independent verification of the gas prior to charging pulsation dampeners.

Chemistry samples confirmed there was no change in oxygen content in the reactor coolant.

Analysis. The failure to follow the pulsation dampener charging procedure, which resulted in increased reactor coolant system activity and elevated dose rates in the auxiliary building, was a performance deficiency. The performance deficiency is more than minor because it was associated with the plant facilities/equipment attribute of the Occupational Radiation Safety Cornerstone and adversely affected the cornerstone objective to ensure the adequate protection of the worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. Specifically, charging argon into a pulsation dampener with a known bladder leak resulted in an increase in reactor coolant activity, causing elevated dose rates in several plant areas. Using NRC Inspection Manual Chapter 0609 Appendix, C, "Occupational Radiation Safety Significance Determination Process," issued August 19, 2008, the inspectors determined that the finding was of very low safety significance (Green) because it did not involve ALARA planning or work controls, did not involve an overexposure, did not have a substantial potential to be an overexposure, and the ability to assess dose was not compromised. The inspectors determined this finding had a cross-cutting aspect in the human performance area, Avoid Complacency, because the plant maintenance mechanics failed to implement appropriate error reduction tools such as self-checking and peer-checking. [H.12]

Enforcement. Title 10 CFR Part 50, Appendix B, Criterion V, "Instruction, Procedures, & Drawings," states that "Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished." Contrary to the above, on July 28, 2015, the licensee failed to accomplish an activity affecting quality in accordance with the procedure. Specifically, the licensee failed to charge a charging pump pulsation dampener, an activity affecting quality, with nitrogen as required by quality Procedure OP-2411.066, "Charging Pump Dampener Bladder 2M-115A, B, C and 2M-116A, B, C Charging, Checking and Depressurization," Revision 5, Attachment 3, Supplement 1. Step 1.3 of this procedure required that nitrogen be connected to the charging pump pulsation dampener supply valve during the charging process, but a bottle with a mix of gases including argon was used instead. The error resulted in a significant increase in reactor coolant activity, with a resulting increase in dose rates in various areas of the plant. As corrective action, the licensee recharged the dampener with pure nitrogen and degassed the reactor coolant system to reduce dose rates in the plant. This violation is being treated as a non-cited violation (NCV), consistent with Section 2.3.2.a of the Enforcement Policy because it was of very low safety significance (Green) and it was entered into the licensee's corrective action program as Condition Report ANO-2-CR-2015-02576: NCV 05000368/2015003-01, "Failure to Follow Procedure Results in Increased Reactor Coolant Activity."

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors reviewed three post-maintenance testing activities that affected risk-significant SSCs:

- July 22, 2015, Unit 1, service water pump B breaker, following auxiliary switch maintenance
- July 28, 2015, Unit 2, motor driven emergency feedwater pump suction and discharge motor operated valves, following operator inspections
- September 2, 2015, startup transformer 2 voltage regulator, following leak checks and bypass switch repairs

The inspectors reviewed licensing- and design-basis documents for the SSCs and the maintenance and post-maintenance test procedures. The inspectors observed the performance of the post-maintenance tests to verify that the licensee performed the tests in accordance with approved procedures, satisfied the established acceptance criteria, and restored the operability of the affected SSCs.

These activities constitute completion of three post-maintenance testing inspection samples, as defined in Inspection Procedure 71111.19

b. Findings

No findings were identified.

1R20 Refueling and Other Outage Activities (71111.20)

a. Inspection Scope

For the portion of the Unit 2 refueling outage that occurred during this inspection period, the inspectors evaluated the licensee's outage activities. The inspectors verified that the licensee considered risk in developing and implementing the outage plan, appropriately managed personnel fatigue, and developed mitigation strategies for losses of key safety functions. This verification included the following:

- Review of the licensee's outage plan prior to the outage
- Review and verification of the licensee's fatigue management activities
- Monitoring of shut-down and cool-down activities
- Verification that the licensee maintained defense-in-depth during outage activities
- Observation and review of reduced-inventory activities

These activities constitute completion of one refueling outage sample outage activities sample, as defined in Inspection Procedure 71111.20.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors observed three risk-significant surveillance tests and reviewed test results to verify that these tests adequately demonstrated that the SSCs were capable of performing their safety functions:

In-service tests:

- August 27, 2015, Unit 1, decay heat removal pump A

Containment isolation valve surveillance tests:

- September 25, 2015, Unit 2, containment integrated leak rate test

Other surveillance tests:

- September 1, 2015, Units 1 and 2, transformer deluge tests

The inspectors verified that these tests met technical specification requirements, that the licensee performed the tests in accordance with their procedures, and that the results of the test satisfied appropriate acceptance criteria. The inspectors verified that the licensee restored the operability of the affected SSCs following testing.

These activities constitute completion of three surveillance testing inspection samples, as defined in Inspection Procedure 71111.22.

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06)

Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors observed an emergency preparedness drill on July 22, 2015, to verify the adequacy and capability of the licensee's assessment of drill performance. The inspectors reviewed the drill scenario, observed the drill from the simulator, technical support center, and operations support center, and attended the post-drill critique. The inspectors verified that the licensee's emergency classifications, off-site notifications, and protective action recommendations were appropriate and timely. The inspectors verified that any emergency preparedness weaknesses were appropriately identified by the licensee in the post-drill critique and entered into the corrective action program for resolution.

These activities constitute completion of one emergency preparedness drill observation sample, as defined in Inspection Procedure 71114.06.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, Emergency Preparedness, Public Radiation Safety, Occupational Radiation Safety, and Security

4OA1 Performance Indicator Verification (71151)

.1 Mitigating Systems Performance Index: Emergency AC Power Systems (MS06)

a. Inspection Scope

The inspectors reviewed the licensee's mitigating system performance index data for the period of September 1, 2014, through August 31, 2015, to verify the accuracy and completeness of the reported data. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data.

These activities constituted verification of the mitigating system performance index for emergency ac power systems for Units 1 and 2, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.2 Mitigating Systems Performance Index: High Pressure Injection Systems (MS07)

a. Inspection Scope

The inspectors reviewed the licensee's mitigating system performance index data for the period of October 1, 2014, through September 30, 2015, to verify the accuracy and completeness of the reported data. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data.

These activities constituted verification of the mitigating system performance index for high pressure injection systems for Units 1 and 2, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.3 Mitigating Systems Performance Index: Heat Removal Systems (MS08)

a. Inspection Scope

The inspectors reviewed the licensee's mitigating system performance index data for the period of October 1, 2014, through September 30, 2015, to verify the accuracy and completeness of the reported data. The inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data.

These activities constituted verification of the mitigating system performance index for heat removal systems for Units 1 and 2, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152)

.1 Routine Review

a. Inspection Scope

Throughout the inspection period, the inspectors performed daily reviews of items entered into the licensee's corrective action program and periodically attended the licensee's condition report screening meetings. The inspectors verified that licensee personnel were identifying problems at an appropriate threshold and entering these

problems into the corrective action program for resolution. The inspectors verified that the licensee developed and implemented corrective actions commensurate with the significance of the problems identified. The inspectors also reviewed the licensee's problem identification and resolution activities during the performance of the other inspection activities documented in this report.

b. Findings

No findings were identified.

.2 Semiannual Trend Review

a. Inspection Scope

The inspectors reviewed the licensee's corrective action program, performance indicators, system health reports, work orders, and other documentation to identify trends that might indicate the existence of a more significant safety issue. The inspectors verified that the licensee was taking corrective actions to address identified adverse trends.

These activities constitute completion of one semiannual trend review sample, as defined in Inspection Procedure 71152.

b. Observations and Assessments

Door Deficiencies

On August 18, 2015, the licensee identified an adverse trend in unsecured doors, as documented in Condition Report CR-ANO-C-2015-03229. Specifically, the condition report documented that 15 condition reports had been written since May 1, 2015, for fire or high energy line break doors found open and unattended. The licensee addressed this trend by conducting a personal interface campaign at the plant entry area. As persons entered the station, managers stopped them, discussed the importance of barriers, and handed them a one page document with further information on why barriers are important to safety. In addition, departmental managers were given an action to develop a plan to verify or improve employee behaviors. Following these actions, two more condition reports identified doors that had been left open. Station management held a stand down on September 28, 2015, with all station employees to ensure that they understood the importance of door design and configuration.

The inspectors found that the station had appropriately identified the adverse trend in regards to station behaviors, but had failed to document an adverse trend in the number of documented door deficiencies. In the past year, 31 condition reports documented deficient conditions on doors required for security, fire, high energy line break or flooding. Although the licensee failed to identify the trend, the inspectors determined that the licensee was addressing the conditions appropriately in the work management system. The licensee documented the observation in Condition Reports CR-ANO-C-2015-03972 and CR-ANO-C-2015-03973.

c. Findings

No findings were identified.

.3 Annual Follow-up of Selected Issues

a. Inspection Scope

The inspectors selected three issues for an in-depth follow-up:

- On July 9, 2015, inspectors reviewed a cause evaluation for a Unit 1 service water cross connect valve failure to open.
- On July 30, 2015, inspectors reviewed a cause evaluation for a Unit 1 service water isolation valve failure to close.
- On September 17, 2015, inspectors reviewed a cause evaluation for a Unit 2 motor control center fault.

The inspectors assessed the licensee's problem identification threshold, cause analyses, extent of condition reviews and compensatory actions. The inspectors verified that the licensee appropriately prioritized the planned corrective actions and that these actions were adequate to correct the condition.

These activities constitute completion of three annual follow-up samples, as defined in Inspection Procedure 71152.

b. Findings

Introduction. The inspectors reviewed a self-revealing violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the failure to promptly identify and correct conditions adverse to quality. Specifically, the licensee failed to promptly replace short bus stabs with longer bus stabs in six safety-related motor control centers (MCCs) following a 2007 motor control center fault.

Description.

On April 21, 2015, non-safety MCC 2B-35 experienced a fault which melted bus bars and caused the feeder breaker to the MCC to open to isolate the fault, de-energizing multiple non-vital loads in the turbine building. Subsequent inspection and analysis determined that the fault was caused by a high resistance connection between the breaker for turbine building recirculation fan and the associated bus bars. Contributing to this condition, the licensee observed indications that water had dripped onto the bus bars from above from turbine building roof leaks. This event led the licensee to review a previous similar event and to assess the corrective actions for that event.

In October 2007, a fault had occurred in a Unit 2 motor control center when starting a charging pump, which tripped the motor control center feeder breaker and secured power to all the loads supplied by that motor control center. The licensee documented in Condition Report CR-ANO-2-2007-01512 that the cause of the fault was "limited physical stab engagement on bus". The limited contact area between the breaker stabs and the bus bars was determined to be marginal for the current needed to run the charging

pump. This condition was determined to exist in many other loads to varying degrees in both units, affecting both safety and non-safety loads. To address this root cause, the licensee initiated corrective actions to replace the marginal breaker stabs with longer stabs to increase the current-carrying surface area between bus bars and breaker stabs.

The licensee grouped the cubicles into phases of repairs, based on the perceived risk that higher current loading corresponded to a higher probability of failure. Phase 0 cubicles were corrected by October 26, 2007, Phase 1 breakers were completed on November 14, 2007, and Phase 2 breakers were completed on March 25, 2008. The inspectors concluded that these corrective actions were timely.

The licensee changed the corrective action plan for the Phase 3 cubicles following completion of Phase 2 cubicle repairs, judging that the last group of ten safety-related and twenty non-safety MCCs were low-risk. The remaining corrective actions were removed from the corrective action program (i.e., the actions were closed) and placed in the preventive maintenance program. Specifically, the licensee modified a preventative maintenance procedure to require a modification to install longer breaker stabs if the stabs were not observed to have the longer style, so that the Phase 3 modifications would be done during the regularly scheduled preventative maintenance for the breakers. Once this was placed in the preventive maintenance process, the licensee no longer tracked the actions to ensure effective and timely corrective actions were completed.

Subsequently, the licensee extended that breaker preventative maintenance frequency from 6 years to 9 years, and later to 12 years, without recognizing that this delayed the original corrective action to replace MCC breaker stabs. Multiple susceptible cubicles remained unmodified and untracked for timeliness. Following the MCC 2B35 fault in April 2015, the root cause evaluation in Condition Report CR-ANO-2-2015-00902 identified the root cause to be “inadequate program to program interface.” Specifically, “corrective actions to perform corrective maintenance for the low risk bus repairs were inappropriately placed in the preventive maintenance process vs. creating corrective maintenance work orders in the 2007 root cause evaluation.”

The inspectors reviewed the decision-making process used to divide the original large population of breakers into groups in order to prioritize the corrective actions. The licensee assigned groupings on the perceived risk that higher current draw was equal to a higher failure probability. This approach failed to assess the potential plant impact from the resulting failure in the risk assessment and prioritization process. The plant impact from the two faults described in this section involved loss of power to the entire MCC that was affected, but the licensee did not assess the risk consequences associated with the combined impact of losing all the loads on each affected MCC. The loads in the low-priority Phase 3 group that remained to be corrected included safety-related MCCs, while many of the breakers that had higher priority involved non-safety loads. Therefore, the inspectors observed that the licensee had not used a consistent process that used a systematic approach to decisions that appropriately incorporated risk insights when the original population of breakers was grouped and corrective actions were prioritized.

The inspectors noted that since April 21, 2015, some safety-related loads designated as Phase 3 actions in CR-ANO-2-2007-01512 remained susceptible to faults. While there remained breakers in six safety-related and eleven non-safety MCCs with an increased

susceptibility to faults, the inspectors determined that the motor control centers retained a high reliability, as indicated by having had only one fault since the October 2007 event. The licensee had corrected those breakers with the highest susceptibilities following the 2007 event such that the remaining breakers were less susceptible. In addition, the inspectors determined that the increased fault probability did not lead to a higher fire probability for equipment in the same room because the actual faults had been contained inside of the motor control centers and were stopped when the upstream supply breakers tripped. The licensee has modified most of the affected breakers and has scheduled all motor control center stab replacement actions to complete by April 2016.

Analysis. The failure to promptly correct conditions adverse to quality associated with safety-related 480V breaker connections to bus bars following a 2007 motor control center fault was a performance deficiency. The performance deficiency is more than minor because it is associated with the equipment performance attribute of Mitigating Systems Cornerstone, and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events. Specifically, untimely corrective actions allowed an increased likelihood of a fault to continue to exist with the potential for the loss of power to all the loads on the associated safety-related motor control centers. Using NRC Inspection Manual Chapter 0609 Appendix A, "Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012, the inspectors determined that the finding was of very low safety significance (Green) because the finding was not a deficiency affecting design or qualification, did not represent a loss of system and/or function, and did not represent an actual loss of function. This finding was not assigned a cross-cutting aspect because it was not indicative of current plant performance; the licensee decided to remove the corrective actions from the corrective action program more than three years ago.

Enforcement. Title 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," states, in part, that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, and deficiencies are promptly identified and corrected. Contrary to the above, since October 2007, the licensee did not promptly correct a condition adverse to quality for equipment deficiencies. Specifically, as of April 2015, the licensee failed to promptly complete planned corrective actions to replace safety-related motor control center breakers stabs with longer stab connections, leaving the six safety-related motor control centers susceptible to an increased probability of a fault and power loss. This finding was entered into the licensee's corrective action program as Condition Report CR-ANO-2-2015-02661. The licensee has modified most of the affected breakers and has scheduled all motor control center stab replacement actions for Unit 2 to complete by April 2016, and by the end of the refueling outage in fall of 2016 for Unit 1. Because the finding is of very low safety significance and has been entered into the licensee's corrective action program, this violation is being treated as a non-cited violation consistent with Section 2.3.2.a of the NRC Enforcement Policy: NCV 05000313; 05000368/2015003-002 "Failure to Promptly Correct a Condition Adverse to Quality Involving Motor Control Center Bus Stabs."

4OA5 Other Activities

Quarterly Performance Assessment

In the NRC's annual assessment letter (ML15063A499), dated March 4, 2015, the NRC documented that the performance of Arkansas Nuclear One, Units 1 and 2, was within the Multiple/Repetitive Degraded Cornerstone Column (Column 4) of the NRC's Reactor Oversight Process Action Matrix.

In accordance with NRC Inspection Manual Chapter 0305, "Operating Reactor Assessment Program," Issued April 9, 2015, a quarterly review of performance is required for a plant whose performance is in Column 4 of the Action Matrix.

On September 30, 2015, NRC management reviewed inspection and performance indicator results for Units 1 and 2. The NRC determined that continued plant operation was acceptable in the Multiple/Repetitive Degraded Cornerstone of the Reactor Oversight Process Action Matrix. In addition, no additional regulatory actions beyond those described in the annual assessment letter were identified.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On July 16, 2015, the inspectors presented the final inspection results of the triennial heat sink inspection to Mr. Jeremy Browning, Site Vice President, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspector asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On October 6, 2015, the resident inspectors presented the inspection results to Mr. Jeremy Browning, Site Vice President, and other members of the licensee staff. The licensee acknowledged the issues presented. The licensee confirmed that any proprietary information reviewed by the inspectors had been returned or destroyed.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

D. Barborek, Engineer
L. Blocker, Nuclear Oversight Manager
J. Browning, Site Vice President
P. Butler, Design and Program Engineering Manager
B. Daiber, Recovery Manager
B. Davis, Engineering Director
T. Evans, General Manager of Plant Operations
K. Gaston, Engineer
T. Hatfield, Systems and Components Engineer
D. Marvel, Radiation Protection Manager
N. Mosher, Licensing Specialist
D. Pehrson, Unit 1 Assistant Operations Manager
S. Pyle, Regulatory Assurance Manager
B. Short, Senior Licensing Specialist
J. Toben, Security Manager
D. Varvil, Engineer

NRC Personnel

D. Alley, Chief, Component Integrity Branch
S. Cumbridge, Component Integrity Branch
R. Deese, Senior Reactor Analyst
K. Hoffman, Component Integrity Branch
T. Lupold, Chief, Mechanical and Civil Engineering Branch
J. Tsao, Component Integrity Branch

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000368/2015003-01	NCV	Failure to Follow Procedure Results in Increased Reactor Coolant Activity (Section 1R15)
05000313/2015003-02 05000368/2015003-02	NCV	Failure to Promptly Correct a Condition Adverse to Quality Involving Motor Control Center Bus Stabs (Section 4OA2.3)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures

Number	Title	Revision Date
LO-ALO-2014-0054,CA59	2015 Summer Time Reliability – Transformers and Switchyard	2015
1015.044	Summer Reliability Operations	009
1306.019	Annual Emergency Cooling Pond Sounding	015
2203.008	Natural Emergencies	036
PL-158	Summer Reliability Plan	0
EN-FAP-EP-010	Severe Weather Response	1

Miscellaneous

Number	Title
SU1	Temperature Trend
1UAT	Temperature Trend
ECP	Average Temperature Trend
ECP	Level Trend
WO-ANO-52562283	Eradicate Fish from Emergency Cooling Pond
WO-ANO-52530677	Perform Annual ECP Sounding and Visual Insp IAW Procedure 1306

Condition Reports (CRs)

CR-ANO-C-2014-02840 CR-ANO-1-2014-01197

Section 1R04: Equipment Alignment

Procedures

Number	Title	Revision
OP-2103.011	Draining the Reactor Coolant System	53
OP-2104.004	Shutdown Cooling System	57

Drawings

Number	Title	Revision
M-2232, Sh. 1	Piping and Instrument Diagram, Safety Injection System	120
M-2236, Sh. 1	Piping and Instrument Diagram, Containment Spray System	95

Condition Reports (CRs)

CR-ANO-2-2014-03113	CR-ANO-2-2015-02183	CR-ANO-C-2015-01978

Section 1R05: Fire Protection

Procedures

Number	Title	Revision
1a-372-98-J.doc	Access Corridor 98	4
OP-1003.014	ANO Fire Protection Program	56
OP-1000.120	ANO Fire Protection Impairment Program	25

Drawing

Number	Title	Revision
FZ-1032	Fire Zone Detail No. & So. Diesel Gener. Room Elec. Pene. Room & Uncount. Access	3

Miscellaneous

Number	Title	Revision Date
1a-372-97-r.doc	Prefire Plan for Cable Spreading Room and Relay Room	3
	Fire Hazards Analysis (FHA) Subsection 26.1, Fire Zone 98-J	16
	Fire Protection Impairments # 337, 349, 350, 351, & 352 for FZ 98-J	
Standing Order	Compensatory Measures for Changing License Basis for Fires	February 17, 2014

Condition Reports (CRs)

CR-ANO-1-2009-01561	CR-ANO-C-2015-01316	CR-HQN-E-2015-0822

Work Orders (WOs)

172818	204526

Section 1R07: Heat Sink Performance

Procedure

Number	Title	Revision
OP-2104.029	Service Water System Operations	101
OP-1104.029	Service Water and Auxiliary Cooling System	110
OP-1309.016	Decay Heat Cooler Thermal Test	7

Calculations

Number	Title	Revision
EC 55127	1R25 E-35B Decay Heat Thermal Performance Evaluation	0
EC 55677	Verification of Six Abandoned Footing Excavations	0
EC 55667	Reactor Building Cooler Curve Changes from 1R25 Service Water Flow Tests	0
EC 50888	Incorporate As-Found and As-Left Service Water Flow Data from 2R23	0
EC 44043	ANO-1 FLEX Modifications	0

Miscellaneous

Number	Title	Revision
STM 1-43	Intermediate Cooling water	13
STM 2-19-2	Emergency Feedwater & Auxiliary Feedwater Systems	38
STM 2-33	Unit 2 Alternate AC Diesel Generator	24
	System Health Reports Q1-2015, Q4-2014, Q3-2014, Q2-2014	

Condition Reports (CRs)

CR-ANO-2-2012-02271	CR-ANO-1-2013-00629	CR-ANO-C-2013-02921
CR-ANO-C-2013-03034	CR-ANO-C-2013-01223	CR-ANO-C-2014-01248
CR-ANO-C-2014-00091	CR-ANO-C-2014-02305	CR-ANO-C-2014-03199
CR-ANO-C-2014-02847	CR-ANO-C-2014-02840	CR-ANO-2-2012-02271
CR-ANO-C-2014-02840	CR-ANO-C-2014-02847	CR-ANO-C-2013-01248
CR-ANO-C-2013-03034	CR-ANO-C-2013-02921	CR-ANO-C-2014-00091

CR-ANO-C-2014-02305	CR-ANO-2-2015-01930	CR-ANO-2-2015-01942
CR-ANO-C-2013-02524	CR-ANO-2-2015-00184	CR-ANO-C-2015-02668

Work Orders (WOs)

52437092	52554440	52490024	52507417	52525255
52532360	52497861	52517392	52438123	366938-01
52453198	349137-01	52501125	379044-07	51695716
52021448	51702043	51660885	51695716	52530677

Section 1R11: Licensed Operator Requalification Program and Licensed Operator Performance

Procedures

Number	Title	Revision
OP-2103.011	Draining the Reactor Coolant System	53
AOP-2203.029	Loss of Shutdown Cooling	56

Miscellaneous

Number	Title	Revision Date
	ANO-2 Open Simulator Differences	August 26, 2015
	List of Open DRs	August 26, 2015
A2SPGLOR160102	Operator Simulator Training: Shutdown Cooling Operations	0

Section 1R12: Maintenance Effectiveness

Procedures

Number	Title	Revision
OP-1203.012N	Annunciator K16 Corrective Action	46
EN-DC-203	Maintenance Rule Program	3
EN-DC-206	Maintenance Rule (a)(1) Process	3
FLP-TADM-MNTRULE	Maintenance Rule	2

Procedures

Number	Title	Revision
RG 1.160	Monitoring the Effectiveness of Maintenance at Nuclear Power Plants	3
EN-DC-205	Maintenance Rule Monitoring	5
OP-1104.027	Battery and Switchgear Emergency Cooling System	26, 36, 47
OP-1015.045	Att 2: Safety Function Determination Worksheet	00-02-0
COPD-024	Risk Assessment Guidelines	55

Miscellaneous

Number	Title	Date
	Unit 1 AC System FF Determination Report	
	Maintenance Rule Database, Unit 1 Chilled Water System	
	Maintenance Rule (A)(1) Plan, 1AC System	
	WO-00412294 01, TCV-6052, Adjust Hot Gas Bypass	July 15, 2015
	ANO Unit 1 Service Water	
	ANO Unit 1 Service Water	
	TIMX105-CODE VALUE PROMPT	August 24, 2015
	ANO Unit 1 & 2 (a)(1) Systems List	September 30, 2015
	Maintenance Rule Database: Unit 1, ANO, Service Water System	August 17, 2015
11210599	Unit 1, SW, System FF Determination Report	September 6, 2015
	System Health Report, ANO, Unit 1 Service Water	July 27, 2015
	Work Order History: ANO, Unit 1, Service Water	August 1, 2012 – August 17, 2015
	Maintenance Rule Database: Unit 2, ANO, Service Water System	August 17, 2015
11209052	Unit 2, SW, System FF Determination Report	September 2, 2015
	System Health Report, ANO, Unit 2 Service Water	August 13, 2015

Procedures

Number	Title	Revision
	Work Order History: ANO, Unit 2, Service Water	August 1, 2012 – August 17, 2015

Condition Reports (CRs)

CR-ANO-1-2015-02605	CR-ANO-1-2013-00515	CR-ANO-1-2015-02600
CR-ANO-1-2015-02611	CR-ANO-1-2007-0339	CR-ANO-1-2013-0495
CR-ANO-1-2015-02872	CR-ANO-1-2015-01541	CR-ANO-1-2015-01601
CR-ANO-1-2015-02931	CR-ANO-C-2015-03536	CR- ANO-1-2013-545
CR- ANO-1-2014-1628	CR- ANO-1-2014-1936	CR- ANO-2-2013-434
CR- ANO-C-2014-2812	CR-ANO-C-2015-1032	

Engineering Changes (ECs)

25759	41466	27602	28640

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures

Number	Title	Revision
COPD-024	Risk Assessment Guidelines	55
1015.048	Shutdown Operations Protection Plan	18
EN-OP-111	Operational Decision-Making Issue Process: R-1 Reactor Vessel Flange Inner O-ring Leakage	11
2104.040	LPSI System Operations	67
1015.033	ANO Switchyard and Transformer Yard Controls	26
EN-WM-107	Post Maintenance Testing	5

Calculation

Number	Title	Revision
CALC-89-E-0044-03	Unit 2 Service Water Pump Suction Requirements	3

Calculation

Number	Title	Revision

Miscellaneous

Number	Title	Revision Date
ER-ANO-2005-0148-001	ANO-2 SW Pump Strainers System Hardening NCP	0
	Agenda for On-Site Safety Review Committee	
2R24	Outage Risk Assessment Team Report	1
2R24	Outage Risk Assessment Team Report, Supplement 1	1
	Allowed Operator Action Exclusions Review for HPSI & LPSI Systems CR-C-2001-0099	
NEI 99-02	Regulatory Assessment Performance Indicator Guideline	7
	Operational Impact for Work Order MWO 50240686-01	January 31, 2015
	Component/Plant Impact for Work Order 50240686-01	August 27, 2013
	Operational Impact for Work Order MWO 50240686-01	January 31, 2015
	Operational Impact for Work Order 374772-32	March 10, 2015
	Component / Plant Impact for Work Order 00374772-32	June 23, 2014

Condition Reports (CRs)

CR-ANO-2-2015-03059 CR-ANO-C-2001-00099

Work Order (WO)

00311860

Section 1R15: Operability Determinations and Functionality Assessments

Procedures

Number	Title	Revision
OP-1104.004	Decay Heat Removal Operating Procedure	117
SEP-ANO-1-IST-1	ANO Unit 1 IST Basis Document	87

SEP-ANO-1-IST-2	ANO Unit 1 IST Plan	03
SEP-ANO-1-IST-3	IST Cross Reference Document ANO Unit 1	002

Procedures

Number	Title	Revision
EN-OP-104	Operability Determination Process	009
EN-IS-117	Welding and Cutting	005
OP-1412.054	Unit 1 AC Motor Control Centers	032
OP-2412.074	Unit 2 AC Motor Control Centers	019

Engineering Requests

Number	Title	Revision
ER-002413-E101	Determine Acceptance Criteria for P-34A/B at Temps Up to 200F	00
ER-992054-R101	P-34B Surveillance Requirements	0

Miscellaneous

Number	Title	Revision Date
CALC-92-E-0077-08	ANO-1 LPI System Pump Performance Requirements	000
CALC-86-E-0036-41	Shutdown Heat Exchanger Design	000
	Apparent Cause Evaluation Report: Adverse Failure Trend of ATC Model 365A300Q30PX Time Delay Relays	1
Section 5.8	EC 52680	0
STM 1-43	ANO Unit 1 System Training Manual, Intermediate Cooling Water	12
	ANO 2: RCS Isotopic Radio Gas Chart	January 1, 2010 – August 25, 2015
	ANO RCS Isotopic Radio Gas Chart	2011
	ANO RCS Crud_Co_CR_Mn Chart	January 1, 2010 – August 25, 2015
	ANO RCS Isotopic Radio Gases Chart	July 1, 2015 – September 27, 2015

ANO White Paper Selected Nuclear Power Plan
Radioisotopes
2E-35B Operability Evaluation

Calculations

Number	Title
2E-35	Wall Thickness Calculation
Calc-86-E-0036-41	SDHX Design Calculation

Condition Reports (CRs)

CR-ANO-1-1996-0083	CR-ANO-1-2015-02408	CR-ANO-1-2015-02738
CR-ANO-2-2015-02879	CR-ANO-2-2015-02337	CR-ANO-2-2015-02355
CR-ANO-2-2015-02356	CR-ANO-C-2014-01151	CR-ANO-1-2008-00953
CR-ANO-1-2010-03741	CR-ANO-1-2015-03103	CR-ANO-1-2011-1214
CR-ANO-2-2015-02449	CR-ANO-2-2015-02098	CR-ANO-2-2015-02576
CR-ANO-2-2015-02992	CR-ANO-2-2015-02992	CR-ANO-2-2007-01512
CR-ANO-2-2015-00902	CR-ANO-2-2015-02661	

Work Orders (WOs)

52506921	52563114	00419308	425718	00162225 01
52574439 01				

Section 1R19: Post-Maintenance Testing

Procedures

Number	Title	Revision
OP-1412.001	Preventative Maintenance Of Limitorque SB/SMB Motor Operators, Supplement 1	47
OP-2106.006	Emergency Feedwater Operations, Supplement 3A	90
COPD001	Operations Expectations and Standards	66

Work Orders (WOs)

396614	396616	52547722-02	52572966-01	52531881-03
52531882-03	52517940 01			

Section 1R20: Outage Activities

Miscellaneous

Number	Title	Date
	2R24 Outage Newsletter: Outage Manager Discusses Risk	September 11, 2015
	Outage Meeting and Communication Schedule	

Section 1R22: Surveillance Testing

Procedures

Number	Title	Revision
2305.036	Operations Control of Integrated Leak Rate Test	8
5120.401	Unit Two Integrated Leak Rate Test	6
5120.403	Unit 2 Primary Containment Leak Rate Running Total	10
5120.405	Unit Two – Integrated Leak Rate Test Instrumentation System Setup	4
EN-OM-126	Management and Oversight of Supplemental Personnel	0
SEP-APJ-002	Arkansas Nuclear One Primary Containment Leakage Rate Testing (Appendix J) Program Section	4
1107.001	Electrical System Operations	109
1305.033	Switchyard Auto-Transformer Deluge and Unit 1 Transformer Deluge Tests	10
2107.001	Electrical System Operations	113
EN-IS-109	Compressed Gas Cylinder Handling and Storage	7

Miscellaneous

Number	Title	Revision
ISP 2015-072	Industrial Safety Plan	
	Outage Oversight Plan, Arkansas Nuclear One 2R24	0, 1

Condition Reports (CRs)

CR-ANO-C-2015-3788 CR-ANO-C-2015-3754 CR-ANO-2-2015-2967

Work Order (WO)

205222

Section 1EP6: Drill Evaluation

Procedures

Number	Title	Revision
OP-1903.010	Emergency Action Level Classification	051
OP-1903.064	Emergency Response Facility – Control Room	014
OP-1903.067	Emergency Response Facility – Emergency Operations Facility (EOF)	035

Condition Reports (CRs)

CR-ANO-C-2015-02961	CR-ANO-C-2015-02957	CR-ANO-C-2015-02954
CR-ANO-C-2015-02809		

Section 4OA1: Performance Indicator Verification

Miscellaneous

Number	Title	Date
	NRC Performance Indicator Technique/Data Sheet, Unit 1 Emergency AC Power	July 7, 2014
	ANO-2 MSPI Basis Document Support Analysis	February 23, 2012
	ANO1 Mitigation System Performance Index Basis Document	February 21, 2012
	MSPI Derivation Report, Unit 1 High Pressure Injection System, Unavailability Index	September, 2014
	MSPI Indicator Margin Report, Unit 1 High Pressure Injection System	September, 2014
	MSPI Derivation Report, Unit 1 High Pressure Injection System, Unreliability Index	September, 2014
	NRC Performance Indicator Technique/Data Sheet, Unit 2, Emergency Feedwater System	April 7, 2015
	NRC Performance Indicator Technique/Data Sheet, Unit 1, Emergency Feedwater System	April 8, 2015
	NRC Performance Indicator Technique/Data Sheet, Unit 2, High Pressure Injection System	April 9, 2015
	NRC Performance Indicator Technique/Data Sheet, Unit 1, High Pressure Injection System	April 9, 2015
	NRC Performance Indicator Technique/Data Sheet, Unit 2 Emergency AC Power	April 9, 2015

Miscellaneous

Number	Title	Date
	NRC Performance Indicator Technique/Data Sheet, Unit 1 Emergency AC Power	April 9, 2015
	NRC Performance Indicator Technique/Data Sheet, Unit 2, Emergency Feedwater System	January 13, 2015
	NRC Performance Indicator Technique/Data Sheet, Unit 1, Emergency Feedwater System	January 13, 2015
	NRC Performance Indicator Technique/Data Sheet, Unit 2, High Pressure Injection System	January 13, 2015
	NRC Performance Indicator Technique/Data Sheet, Unit 1, High Pressure Injection System	January 13, 2015
	NRC Performance Indicator Technique/Data Sheet, Unit 2 Emergency AC Power	January 13, 2015
	NRC Performance Indicator Technique/Data Sheet, Unit 2, Emergency Feedwater System	October 15, 2014
	NRC Performance Indicator Technique/Data Sheet, Unit 1, Emergency Feedwater System	October 15, 2014
	NRC Performance Indicator Technique/Data Sheet, Unit 2, High Pressure Injection System	October 15, 2014
	NRC Performance Indicator Technique/Data Sheet, Unit 1, High Pressure Injection System	January 20, 2015
	NRC Performance Indicator Technique/Data Sheet, Unit 2 Emergency AC Power	October 14, 2014
	NRC Performance Indicator Technique/Data Sheet, Unit 1 Emergency AC Power	October 15, 2014
	NRC Performance Indicator Technique/Data Sheet, Unit 2, Emergency Feedwater System	October 15, 2014
	NRC Performance Indicator Technique/Data Sheet, Unit 1, Emergency Feedwater System	July 7, 2014
	NRC Performance Indicator Technique/Data Sheet, Unit 2, High Pressure Injection System	July 8, 2014
	NRC Performance Indicator Technique/Data Sheet, Unit 1, High Pressure Injection System	July 8, 2014
	NRC Performance Indicator Technique/Data Sheet, Unit 2 Emergency AC Power	July 7, 2014

Condition Reports (CRs)

CR-ANO-1-2014-01129 CR-ANO-1-2014-01279 CR-ANO-1-2014-01300

CR-ANO-1-2015-048 CR-ANO-2-2014-01403 CR-ANO-2-2014-02000
CR-ANO-2-2014-02818

Section 4OA2: Problem Identification and Resolution

Procedures

Number	Title	Revision
EN-LI-118	Cause Evaluation Process	21
1104.029	Service Water and Auxiliary Cooling System	110
1000.006	Procedure Control	67
EN-DC-127	Control of Hot Work and Ignition Sources	15

Miscellaneous

Number	Title	Revision
EC 44627	EVALUATION OF ENERTECH VALVES IN U1 SERVICE WATER SYSTEM	0
EC 44915	CV-3640 / 3644 VALVE ROTATION 180 DEGREES	0

Condition Reports (CRs)

CR-ANO-1-2013-545 CR-ANO-C-2015-03229