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

November 2, 2016

EA-16-143

Rich Anderson, Site Vice President
Arkansas Nuclear One
Entergy Operations, Inc.
1448 SR 333
Russellville, AR 72802-0967

SUBJECT: ARKANSAS NUCLEAR ONE – NRC INSPECTION REPORT 05000313/2016003 AND 05000368/2016003 AND EXERCISE OF ENFORCEMENT DISCRETION

Dear Mr. Anderson:

On September 30, 2016, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Arkansas Nuclear One facility, Units 1 and 2. On October 6, 2016, 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. No NRC-identified or self-revealing findings were identified during this inspection.

However, inspectors documented licensee-identified violations which were determined to be of very low safety significance. 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.

Also, a violation of the licensee's current site-specific licensing basis for tornado-generated missile protection was identified. Because this violation was identified during the discretion period discussed in Enforcement Guidance Memorandum 15–002, "Enforcement Discretion for Tornado Missile Protection Noncompliance," and because the licensee implemented compensatory measures, the NRC is exercising enforcement discretion by not issuing an enforcement action for the violation and allowing continued reactor operation. (EA-16-143)

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 Document Room or from the Publicly Available Records (PARS) component of the NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

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

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

Enclosure:
Inspection Report 05000313/2016003 and
05000368/2016003
w/ Attachments:
1. Supplemental Information
2. DRS Request for Information
3. Additional Information Regarding Tornado-Generated Missile Protection Noncompliances

cc w/ encl: Electronic Distribution

U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket: 05000313; 05000368

License: DPR-51; NPF-6

Report: 05000313/2016003; 05000368/2016003

Licensee: Entergy Operations, Inc.

Facility: Arkansas Nuclear One, Units 1 and 2

Location: Junction of Highway 64 West and Highway 333 South
Russellville, Arkansas

Dates: July 1 through September 30, 2016

Inspectors: B. Tindell, Senior Resident Inspector
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Approved By: Neil O'Keefe
Chief, Project Branch E
Division of Reactor Projects

SUMMARY

IR 05000313/2016003; 05000368/2016003; 07/01/2016 – 09/30/2016; Arkansas Nuclear One, Units 1 and 2, Integrated Inspection Report.

The inspection activities described in this report were performed between July 1 and September 30, 2016, by the resident inspectors at Arkansas Nuclear One and inspectors from the NRC's Region IV office and other NRC offices. NRC inspectors documented three licensee-identified violations of very low safety significance in this report. 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."

No findings were identified.

Licensee-Identified Violations

Violations of very low safety significance that were identified by the licensee have been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. These violations and associated corrective action tracking numbers are listed in Section 4OA7 of this report.

PLANT STATUS

Unit 1 began the period at 100 percent power. On September 5, 2016, the unit began coast-down operations, with operators slowly lowering reactor power due to expected fuel burnup at end of core life. On September 23, 2016, the licensee shut down the unit for a planned refueling outage a week later than originally planned, which allowed the plant staff to focus on repairing emergency diesel generator A in Unit 2. The unit remained shut down through the end of the inspection period.

Unit 2 began the period at 100 percent power. On August 19, 2016, the station experienced increased debris buildup at the plant intake structure. Maintenance personnel manually cleaned the prescreens, which resulted in debris entering one service water strainer. Unit 2 operators aligned the emergency cooling pond to the service water pump suction and maintenance personnel manually cleaned the straner. On September 16, 2016, the emergency diesel generator A inboard bearing failed due to overheating caused by lack of lubrication during a 24 hour surveillance. On September 28, 2016, the licensee shut down the unit prior to the expiration of the inoperable diesel's technical specification action statement. 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)

.1 Summer Readiness for Offsite and Alternate AC Power Systems

a. Inspection Scope

On July 21, 2016, the inspectors completed an inspection of the station's off-site and alternate-ac power systems. The inspectors inspected the material condition of these systems, including transformers and other switchyard equipment to verify that plant features and procedures were appropriate for operation and continued availability of off-site and alternate-ac power systems. The inspectors reviewed outstanding work orders and open condition reports for these systems. The inspectors performed a walk down of the transformer yard to observe the material condition of equipment providing off-site power sources. The inspectors verified that the licensee's procedures included appropriate measures to monitor and maintain availability and reliability of the off-site and alternate-ac power systems.

These activities constituted one sample of summer readiness of off-site and alternate-ac power systems, as defined in Inspection Procedure 71111.01.

b. Findings

No findings were identified.

.2 Readiness to Cope with External Flooding

a. Inspection Scope

On August 9, 2016, the inspectors completed an inspection of the station's readiness to cope with external flooding. After reviewing the licensee's flooding analysis, the inspectors chose two plant areas that were susceptible to flooding:

- Unit 1, turbine building drain piping in auxiliary building basement
- Unit 2, turbine building drain piping in auxiliary building basement

The inspectors reviewed plant design features and licensee procedures for coping with flooding. The inspectors performed a walk down of the selected areas to inspect the design features, including the material condition of seals, drains, and flood barriers. The inspectors evaluated whether credited operator actions could be successfully accomplished.

These activities constituted one sample of readiness to cope with external flooding, as defined in Inspection Procedure 71111.01.

b. Findings

No findings were identified.

1R04 Equipment Alignment (71111.04)

.1 Partial Walk-Down

a. Inspection Scope

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

- July 19, 2016, Units 1 and 2, electric firewater pump and temporary firewater pump while diesel firewater pump was out of service for maintenance
- August 31, 2016, Unit 2, service water pump B and loop 1 while service water pump A was out of service for maintenance
- September 19, 2016, Unit 2, emergency diesel generator B while diesel A was out of service for emergent maintenance
- September 22, 2016, Unit 1, charging pump lineup after charging pump B was realigned after being out of service for maintenance
- September 29, 2016, Unit 1, decay heat removal system train A while decay heat in service but inoperable due to cracked weld

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 or trains were correctly aligned for the existing plant configuration.

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

b. Findings

No findings were identified.

.2 Complete Walk-Down

a. Inspection Scope

On September 22, 2016, the inspectors performed a complete system walk-down inspection of the Unit 1 125 VDC distribution system. The inspectors reviewed the licensee's procedures and system design information to determine the correct breaker and switch lineup for the existing plant configuration. The inspectors also reviewed outstanding work orders and condition reports for the system. The inspectors then visually verified that the system was correctly aligned for the existing plant configuration.

These activities constituted one complete system walk-down sample, as defined in Inspection Procedure 71111.04.

b. Findings

No findings were identified.

1R05 Fire Protection (71111.05)

.1 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 six plant areas important to safety:

- August 5, 2015, Unit 1, Fire Area N, diesel driven fire pump room
- August 19, 2016, Unit 1, Fire Zone 144-D, upper south electrical penetration room
- August 22, 2016, Unit 1, Fire Zone 38-Y, emergency feedwater pump room area
- September 2, 2016, Unit 1, Fire Zone 129-F, control room
- September 2, 2016, Unit 2, Fire Zone 2199-G, control room
- September 2, 2016, Unit 2, Fire Zone 2098-L, cable spreading room

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 six quarterly inspection samples, as defined in Inspection Procedure 71111.05.

b. Findings

No findings were identified.

.2 Annual Inspection

a. Inspection Scope

The inspectors completed their annual evaluation of the licensee's fire brigade performance. This evaluation included observation of an unannounced fire brigade drill.

- August 25, 2016, Unit 2, unannounced fire drill at hydrogen seal oil skid

During this drill, the inspectors evaluated the capability of the fire brigade members, the leadership ability of the brigade leader, the brigade's use of turnout gear and fire-fighting equipment, and the effectiveness of the fire brigade's team operation. The inspectors also reviewed whether the licensee's fire brigade met NRC requirements for training, dedicated size and membership, and equipment.

These activities constituted one annual inspection sample, as defined in Inspection Procedure 71111.05.

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06)

a. Inspection Scope

On August 8, 2016, the inspectors completed an inspection of the station's ability to mitigate flooding due to internal causes. After reviewing the licensee's flooding analysis, the inspectors chose the Unit 1 intake structure, which contains risk-significant structures, systems, and components (SSCs) that were susceptible to flooding.

The inspectors reviewed plant design features and licensee procedures for coping with internal flooding. The inspectors walked down the selected areas to inspect the design features, including the material condition of seals, drains, and flood barriers. The inspectors evaluated whether operator actions credited for flood mitigation could be successfully accomplished.

These activities constituted completion of one flood protection measures sample, as defined in Inspection Procedure 71111.06.

b. Findings

No findings were identified.

1R07 Heat Sink Performance (71111.07)

a. Inspection Scope

On September 21, 2016, the inspectors completed an inspection of the readiness and availability of risk-significant heat exchangers. The inspectors reviewed the data from a performance test for the Unit 1 decay heat cooler A and verified the licensee used the industry standard periodic maintenance method outlined in EPRI NP-7552 for the decay heat cooler. Additionally, the inspectors walked down the heat exchanger to observe its material condition.

These activities constituted completion of one heat sink performance annual 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

The inspectors observed simulator training for licensed operators. The inspectors assessed the performance of the operators and the evaluators' critique of their performance. The inspectors also assessed the modeling and performance of the simulator during the requalification activities.

- August 10, 2016, Unit 2, simulator training for operating crew
- September 1, 2016, Unit 1, simulator training for operating crew

These activities constituted 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 main control room. At the time of the observations, the plant was in a period of heightened activity and risk. The inspectors observed the operators' performance of the following activities:

- August 4, 2016, Unit 2, alternate ac diesel generator quarterly surveillance
- August 8, 2016, Unit 1, post maintenance alignment and testing of the swing high pressure injection pump

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

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

b. Findings

No findings were identified.

.3 Biennial Inspection

The licensed operator requalification program involves two training cycles that are conducted over a 2-year period. In the first cycle, the annual cycle, the operators administered an operating test consisting of job performance measures and simulator scenarios. In the second cycle, the biennial cycle, operators administered an operating test and a comprehensive written examination. During this inspection, Unit 1 was in the first part of the training cycle and Unit 2 was in the second part of the training cycle.

a. Inspection Scope

For Unit 1, inspectors observed portions of their 2016 operating test and 2015 comprehensive written examination. For Unit 2, inspectors observed portions of their 2016 operating test and comprehensive written examination. To assess the performance effectiveness of the licensed operator requalification program, the inspectors conducted personnel interviews; reviewed medical records of licensed operators for conformance to license conditions; reviewed the minutes of training review group meetings to assess the responsiveness of the licensed operator requalification program to incorporate the lessons learned from both plant and industry events; reviewed examination security measures, simulator fidelity, and existing logs of simulator deficiencies; and observed job performance measures and scenarios that were administered during the week of July 11, 2016. These observations allowed the inspectors to assess the licensee's effectiveness in conducting the operating test to ensure operator mastery of the training program content.

The results of these examinations were reviewed to determine the effectiveness of the licensee's appraisal of operator performance and to determine if feedback of performance analyses into the requalification training program was being accomplished. The inspectors interviewed members of the training department and reviewed minutes of training review group meetings to assess the responsiveness of the licensed operator requalification program to incorporate the lessons learned from both plant and industry events. Examination results were also assessed to determine if they were consistent with the guidance contained in NUREG 1021, Operator Licensing Examination Standards for Power Reactors", Revision 10, and NRC Manual Chapter 0609, Appendix I, "Licensed Operator Requalification Significance Determination Process."

Inspectors reviewed the operating test results of both units and the results of the Unit 2 comprehensive written examinations. On August 5 and 11, 2016, the licensee informed the lead inspectors of the following results respectively:

Unit 1:

- 55 total licensed operators
- 8 of 10 crews passed the simulator portion of the operating test
- 48 of 51 licensed operators passed the simulator portion of the operating test
- 51 of 51 licensed operators passed the job performance measure of the operating test

Four licensed operators were not given a requalification examination since they are participating in the facility's senior reactor upgrade training program and, therefore, are not required to be tested. All four individuals are restricted from any watch standing duties. The three individuals and two crews that failed their simulator scenarios were remediated, retested, and passed retake tests prior to returning to shift.

Unit 2:

- 52 total licensed operators
- 10 of 10 crews passed the simulator portion of the operating test
- 52 of 52 licensed operators passed the simulator portion of the operating test
- 52 of 52 licensed operators passed the job performance measure portion of the operating test
- 52 of 52 licensed operators passed the written examination

The inspectors compared these results to NRC Inspection Manual Chapter 0609, Appendix I, "Licensed Operator Requalification Significance Determination Process," values and determined that there were no findings based on these results.

The inspectors observed examination security measures in place during administration of the exams (including controls and content overlap) and reviewed any remedial training and re-examinations, if necessary. The inspectors also reviewed medical records of 12 licensed operators for conformance to license conditions and the licensee's system for tracking qualifications and records of license reactivation for seven operators. In addition, the inspectors reviewed simulator performance for fidelity with the actual plant and the overall simulator program of maintenance, testing, and discrepancy correction.

The inspectors completed one inspection sample of the biennial licensed operator requalification program for Unit 1 and one inspection sample of the biennial licensed operator requalification program for Unit 2.

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 SSCs:

- August 18, 2016, Units 1 and 2, control room emergency chiller system review
- September 6, 2016, Unit 2, high pressure safety injection, reviewed effectiveness of pressurization system corrective actions

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:

- August 29, 2016, Unit 2, service water prescreen A and B cleaning
- September 21, 2016, Unit 2, emergency diesel generator A out of service due to a bearing failure on September 16, 2016
- September 23, 2016, Unit 1, refueling outage plan
- September 26, 2016, Unit 1, equipment hatch emergency closure plan
- September 28, 2016, Unit 2, unscheduled outage plan

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 assessments and verified that the licensee implemented appropriate risk management actions based on the result of the assessments.

The inspectors also observed portions of three emergent work activities that had the potential to cause an initiating event and to affect the functional capability of mitigating systems.

- July 26, 2016, Unit 2, control element drive mechanism control system undervoltage relay failure
- September 22, 2016, Unit 2, emergency diesel generator A shaft rigging plan
- September 30, 2016, Unit 1, decay heat system leak from train B instrument pipe

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, and appropriately implemented compensatory measures.

These activities constituted completion of eight maintenance risk assessments and emergent work control inspection samples, as defined in Inspection Procedure 71111.13.

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15)

.1 Operability Determinations

a. Inspection Scope

The inspectors reviewed five operability determinations that the licensee performed for degraded or nonconforming SSCs:

- July 8, 2016, operability determination of Unit 2 emergency diesel generator fuel oil transfer pumps following pump start switch failure
- August 8, 2016, operability determination of Unit 2 pressurizer level upper procedural operational limits
- August 26, 2016, operability determination of Unit 1 emergency diesel generators for crankcase pressure trip susceptibility to tornado pressure effects
- September 22, 2016, operability determination of Unit 1 tornado missile vulnerabilities in the upper south electrical penetration room, cable spreading room, controlled access area, and vital switchgear.

- September 30, 2016, operability determination of Unit 1 decay heat system leak

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

The inspectors reviewed operator actions taken or planned to compensate for degraded or nonconforming conditions. The inspectors verified that the licensee effectively managed these operator workarounds to prevent adverse effects on the function of mitigating systems and to minimize their impact on the operators' ability to implement abnormal and emergency operating procedures.

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

b. Findings

No findings were identified.

.2 EA-16-143, Enforcement Discretion for Tornado-Generated Missile Protection Noncompliances

Description

Appendix A to 10 CFR 50, "General Design Criteria for Nuclear Power Plants," Criterion 2, "Design Bases for Protection Against Natural Phenomena," states, in part, that SSCs important to safety shall be designed to withstand the effects of natural phenomena, such as tornadoes. Criterion 4, "Environmental and Dynamic Effects Design Basis," states, in part, that SSCs important to safety shall be appropriately protected against dynamic effects including missiles which may result from events and conditions outside the nuclear power unit.

As part of their response to external flood boundary degradation, the licensee performed a review of external hazard protection at the site, which included protection against tornado-generated missiles required by the current licensing basis for each unit. During the review, on four separate occasions, the licensee identified plant areas containing safety-related SSCs that could be susceptible to tornado missiles:

- Unit 1 Upper South Electrical Penetration Room
- Unit 1 Cable Spreading Room
- Unit 1 Controlled Access Area
- Unit 1 Vital Switchgear

In each case, the licensee identified low-probability scenarios where one or more tornado-generated missiles could penetrate doors, walls, and other building features that were not fully qualified, and subsequently damage equipment that was important to safety inside the affected rooms. Details about the date of discovery, affected SSCs,

condition report numbers, compensatory actions taken by the licensee, notifications made to the NRC, and affected technical specification actions for each susceptible area are listed in Attachment 3 of this report.

Relevant Enforcement Discretion Policy

On June 10, 2015, the NRC issued Enforcement Guidance Memorandum (EGM) 15-002, "Enforcement Discretion for Tornado-Generated Missile Protection Noncompliance." (ML15111A269) The EGM referenced a bounding generic risk analysis performed by the NRC staff that concluded that tornado missile vulnerabilities pose a low risk significance to operating nuclear plants. Because of this, the EGM described the conditions under which the NRC staff may exercise enforcement discretion for noncompliances with the current licensing basis for tornado-generated missile protection. Specifically, if the licensee could not meet the technical specification required actions within the required completion time, the EGM allows the staff to exercise enforcement discretion provided the licensee implements initial compensatory measures prior to the expiration of the time allowed by the limiting condition for operation. The compensatory actions should provide additional protection such that the likelihood of tornado missile effects are lessened. The EGM then requires the licensee to implement more comprehensive compensatory measures within approximately 60 days of issue discovery. The compensatory measures must remain in place until permanent repairs are completed, or until the NRC dispositions the non-compliance in accordance with a method acceptable to the NRC such that discretion is no longer needed. In addition, the issue must be entered into the licensee's corrective action program. Because EGM 15-002 listed Arkansas Nuclear One as a Group A plant, enforcement discretion will expire on June 10, 2018. However, the EGM did not provide for enforcement discretion for any related underlying technical violations; the EGM specifically requires that any associated underlying technical violations be assessed through the enforcement process.

Licensee Actions

For each of the examples listed above, the licensee declared the affected systems inoperable and complied with the applicable technical specification action statement(s), initiated a condition report, invoked the enforcement discretion guidance, implemented prompt compensatory measures, and returned the SSCs to an operable status. The licensee instituted compensatory measures intended to reduce the likelihood of tornado missile effects that included developing actions to be taken if a tornado watch is predicted or issued for the area to ensure the operability or restore redundant equipment during severe weather, and actions to be taken if a tornado warning is issued, including pre-staging operators in safe, strategic locations to promptly implement mitigative actions, and verifying the readiness of equipment and procedures dedicated to the Diverse and Flexible Coping Strategy (FLEX). Other specific compensatory actions for the individual areas are listed in Attachment 3.

NRC Actions

The inspectors' review addressed the material issues in the plant, and whether the measures were implemented in accordance with the guidance in EGM 15-002. The inspectors also evaluated whether the measures would function as intended and were properly controlled. The inspectors verified through inspection that the EGM 15-002

criteria were met in each case. Therefore, the staff determined that it was appropriate to exercise enforcement discretion and not take enforcement action for the technical specification requirements listed in Attachment 3 of this report, provided the non-compliances are resolved by June 10, 2018 (EA-16-143).

The inspectors did not fully review the underlying circumstances that resulted in the technical specification violations. As stated in EGM 15-002, violations of other requirements which may have contributed to the technical specification violations will be evaluated independently of EGM implementation. The inspectors will verify restoration of compliance and assess the underlying circumstances in a follow-up inspection tracked under Licensee Event Reports 05000313/2016-002-00 and 05000313/2016-003-00, and any updates or additional licensee event reports that the licensee issues.

1R18 Plant Modifications (71111.18)

a. Inspection Scope

The inspectors reviewed four permanent plant modifications that affected risk-significant SSCs:

- August 8, 2016, Unit 1, coupling replacement for high pressure injection pump B
- August 26, 2016, Unit 1 and Unit 2, common feedwater system installation
- September 6, 2016, Unit 1, reactor coolant system letdown heat exchanger replacement
- September 20, 2016, Unit 2, install emergency diesel generator A shaft sleeve at inboard bearing following bearing damage

The inspectors reviewed the design and implementation of the modifications. The inspectors verified that work activities involved in implementing the modifications did not adversely impact operator actions that may be required in response to an emergency or other unplanned event. The inspectors verified that post-modification testing was adequate to establish the operability or functionality of the SSCs as modified.

These activities constituted completion of four samples of permanent modifications, as defined in Inspection Procedure 71111.18.

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

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

- July 20, 2016, Unit 1, cable spreading room fire protection deluge valve clapper manual manipulation and reset following internals replacement

- July 27, 2016, Units 1 and 2, diesel fire pump full flow test following engine overhaul

- August 2, 2016, Unit 1, high pressure injection pump B test following coupling replacement

- August 26, 2016, Unit 1, auxiliary building hatch seal smoke test following hatch removal and seal replacement

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 constituted completion of four 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

During the Unit 1 refueling outage and the Unit 2 unplanned outage, 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 constituted completion of two outage samples (one refueling and one other), as defined in Inspection Procedure 71111.20.

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors observed two 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:

- September 15, 2016, Unit 2, service water pump A rebaseline following pump shaft, bearing, and impeller replacement

Containment isolation valve surveillance tests:

- August 3, 2016, Unit 1, quench tank gas sample/vent isolation valve

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 constituted completion of two surveillance testing inspection samples, as defined in Inspection Procedure 71111.22.

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP1 Exercise Evaluation (71114.01)

a. Inspection Scope

The inspectors observed the August 17, 2016, biennial emergency preparedness exercise to verify the exercise acceptably tested the major elements of the emergency plan and provided opportunities for the emergency response organization to demonstrate key skills and functions. The exercise demonstrated the licensee's capability to implement its emergency plan by simulating:

- A tornado touching down outside the protected area on the west side of the plant
- Damage to a reactor coolant pump resulting in a manual reactor trip
- Failure of the reactor to shut down on the manual reactor trip
- A large break in reactor coolant system piping in containment
- Failures in both trains of containment sprays

- A containment penetration failure that created a filtered and monitored radiological release to the environment via the auxiliary building ventilation system

During the exercise, the inspectors observed activities in the control room simulator and the following dedicated emergency response facilities:

- Technical Support Center
- Operations Support Center
- Emergency Operations Facility

The inspectors focused their evaluation of the licensee's performance on the risk-significant activities of event classification, offsite notification, recognition of offsite dose consequences, and development of protective action recommendations.

The inspectors also assessed recognition of, and response to, abnormal and emergency plant conditions, the transfer of decision-making authority and emergency function responsibilities between facilities, onsite and offsite communications, protection of emergency workers, emergency repair evaluation and capability, and the overall implementation of the emergency plan to protect public health and safety and the environment. The inspectors reviewed the current revision of the facility emergency plan, emergency plan implementation procedures associated with operation of the licensee's emergency response facilities, procedures for the performance of associated emergency functions, and other documents as listed in the attachment to this report.

The inspectors attended the post-exercise critiques in each emergency response facility to evaluate the initial licensee self-assessment of exercise performance. The inspectors also attended a subsequent formal presentation of critique items to plant management.

The inspectors reviewed the scenarios of previous biennial exercises and licensee drills conducted between November 2014 and July 2016, to determine whether the August 17, 2016, exercise was independent and avoided participant preconditioning, in accordance with the requirements of 10 CFR 50, Appendix E, IV.F(2)(g). The inspectors also compared observed exercise performance with corrective action program entries and After-Action reports for drills and exercises conducted between date/year and date/year to determine whether identified weaknesses had been corrected in accordance with the requirements of 10 CFR 50.47(b)(14), and 10 CFR 50, Appendix E, IV.F.

The inspectors discussed the integrated exercise with staff at the Federal Emergency Management Agency (FEMA), Region VI, to determine whether the exercise scenario supported the FEMA exercise evaluation objectives and the results continued to support that participants could adequately protect the health and safety of the public.

These activities constitute one exercise evaluation sample as defined in Inspection Procedure 71114.01.

b. Findings

No findings were identified.

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)

a. Inspection Scope

The inspectors performed an in office review of the following documents:

- Arkansas Nuclear One Emergency Plan, Revision 40
- Arkansas Nuclear One Emergency Plan, Revision 41

Revision 40 made numerous changes throughout the document. Most notably, it removed the “Control Room Emergency Action Level Reviewer” title; replaced the “Emergency Telephone Directory and call out lists” with "ERO [emergency response organization] Pagers and the Emergency Telephone Directory;" replaced "Emergency Notifications Dedicated Circuit (Voice/Data)" with "Dedicated Emergency Offsite Notifications System;" replaced six-year period with eight-year period throughout document sections; and added Letter of Agreement with The National Weather Service.

Revision 41 made numerous changes throughout the document. Most notably, it clarified the roles of “EOF [Emergency Operations Facility] Communicator” and “EOF Log Keeper,” aligning titles with actual functions; deleted reference to a non-assigned position of “Team Tracking Communicator,” clarifying that this is a function of the work control coordinator responsibilities; defined the Technical Support Center engineering support positions as mechanical/civil and electrical/instrumentation and control; and clarified that the company spokesperson is now an assigned emergency response organization position.

These revisions were compared to their previous revisions, to the criteria of NUREG-0654, “Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants,” Revision 1, and to the standards in 10 CFR 50.47(b) to determine if the revisions adequately implemented the requirements of 10 CFR 50.54(q)(3) and 50.54(q)(4). The inspectors verified that the revisions did not reduce the effectiveness of the emergency plan. These reviews were not documented in safety evaluation reports and did not constitute approval of licensee-generated changes; therefore, the revisions are subject to future inspection.

These activities constitute completion of two emergency action level and emergency plan change samples as defined in Inspection Procedure 71114.04.

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06)

Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors observed an emergency preparedness drill on July 27, 2016, 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 and emergency operations facility, and reviewed 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 constituted completion of one emergency preparedness drill observation sample, as defined in Inspection Procedure 71114.06.

b. Findings

No findings were identified.

1EP8 Exercise Evaluation – Scenario Review (71114.08)

a. Inspection Scope

The licensee submitted the preliminary exercise scenario for the August 17, 2016, biennial exercise to the NRC on June 13, 2016, in accordance with the requirements of 10 CFR 50, Appendix E, IV.F(2)(b). The inspectors performed an in-office review of the proposed scenario to determine whether it would acceptably test the major elements of the licensee's emergency plan, and provide opportunities for the emergency response organization to demonstrate key skills and functions. The inspectors discussed the preliminary scenario with staff at the FEMA, Region VI, to determine whether the preliminary scenario supported the FEMA exercise evaluation objectives.

These activities constituted completion of one exercise scenario evaluation sample as defined in Inspection Procedure 71114.08.

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstones: Public Radiation Safety and Occupational Radiation Safety

2RS5 Radiation Monitoring Instrumentation (71124.05)

a. Inspection Scope

The inspectors evaluated the accuracy and operability of the radiation monitoring equipment used by the licensee to monitor areas, materials, and workers to ensure a radiologically safe work environment. This evaluation included equipment used to monitor radiological conditions related to normal plant operations, anticipated operational occurrences, and conditions resulting from postulated accidents. The inspectors interviewed licensee personnel, walked down various portions of the plant, and reviewed licensee performance associated with radiation monitoring instrumentation, as described below:

- The inspectors performed walk downs and observations of selected plant radiation monitoring equipment and instrumentation, including portable survey instruments, area radiation monitors, continuous air monitors, personnel contamination monitors, portal monitors, and small article monitors. The inspectors assessed material condition and operability, evaluated positioning of instruments relative to the radiation sources or areas they were intended to monitor, and verified performance of source checks and calibrations.

- The inspectors evaluated the calibration and testing program, including laboratory instrumentation, whole body counters, post-accident monitoring instrumentation, portal monitors, personnel contamination monitors, small article monitors, portable survey instruments, area radiation monitors, electronic dosimetry, air samplers, and continuous air monitors.

- The inspectors assessed problem identification and resolution for radiation monitoring instrumentation. The inspectors reviewed audits, self-assessments, and corrective action program documents to verify problems were being identified and properly addressed for resolution.

These activities constituted completion of the three required samples of radiation monitoring instrumentation, as defined in Inspection Procedure 71124.05.

b. Findings

No findings were identified.

2RS6 Radioactive Gaseous and Liquid Effluent Treatment (71124.06)

a. Inspection Scope

The inspectors evaluated whether the licensee maintained gaseous and liquid effluent processing systems and properly mitigated, monitored, and evaluated radiological discharges with respect to public exposure. The inspectors verified that abnormal radioactive gaseous or liquid discharges and conditions, when effluent radiation monitors are out-of-service, were controlled in accordance with the applicable regulatory requirements and licensee procedures. The inspectors verified that the licensee's quality control program ensured radioactive effluent sampling and analysis adequately quantified and evaluated discharges of radioactive materials. The inspectors verified the adequacy of public dose projections resulting from radioactive effluent discharges. The inspectors interviewed licensee personnel and reviewed licensee performance in the following areas:

- During walk downs and observations of selected portions of the radioactive gaseous and liquid effluent equipment, the inspectors evaluated routine processing and discharge of effluents, including sample collection and analysis. The inspectors observed equipment configuration and flow paths of selected gaseous and liquid discharge system components, effluent monitoring systems, filtered ventilation system material condition, and significant changes to effluent release points.

- Calibration and testing program for process and effluent monitors, including National Institute of Standards and Technology (NIST) traceability of sources, primary and secondary calibration data, channel calibrations, set-point determination bases, and surveillance test results.

- Sampling and analysis controls used to ensure representative sampling and appropriate compensatory sampling. Reviews included results of the inter-laboratory comparison program.

- Instrumentation and equipment, including effluent flow measuring instruments, air cleaning systems, and post-accident effluent monitoring instruments.

- Dose calculations for effluent releases. The inspectors reviewed a selection of radioactive liquid and gaseous waste discharge permits and abnormal gaseous or liquid tank discharges, and verified the projected doses were accurate. The inspectors also reviewed 10 CFR Part 61 analyses and methods used to determine which isotopes were included in the source term. The inspectors reviewed land use census results, offsite dose calculation manual changes, and significant changes in reported dose values from previous years.

- Problem identification and resolution for radioactive gaseous and liquid effluent treatment. The inspectors reviewed audits, self-assessments, and corrective action program documents to verify problems were being identified and properly addressed for resolution.

These activities constituted completion of the six required samples of radioactive gaseous and liquid effluent treatment program, as defined in Inspection Procedure 71124.06.

b. Findings

No findings were identified.

2RS7 Radiological Environmental Monitoring Program (71124.07)

a. Inspection Scope

The inspectors evaluated whether the licensee's radiological environmental monitoring program quantified the impact of radioactive effluent releases to the environment and sufficiently validated the integrity of the radioactive gaseous and liquid effluent release program. The inspectors also verified that the licensee continued to implement the voluntary Nuclear Energy Institute (NEI)/Industry Ground Water Protection Initiative. The inspectors reviewed or observed the following items:

- The inspectors observed selected air sampling and dosimeter monitoring stations, sampler station modifications, and the collection and preparation of environmental samples. The inspectors reviewed calibration and maintenance records for selected air samplers, composite water samplers, and environmental sample radiation measurement instrumentation, and inter-laboratory comparison program results. The inspectors reviewed selected events documented in the

annual environmental monitoring report and significant changes made by the licensee to the offsite dose calculation manual as the result of changes to the land census. The inspectors evaluated the operability, calibration, and maintenance of meteorological instruments and assessed the meteorological dispersion and deposition factors. The inspectors verified the licensee had implemented sampling and monitoring program sufficient to detect leakage from structures, systems, or components with credible mechanism for licensed material to reach ground water and reviewed changes to the licensee's written program for identifying and controlling contaminated spills/leaks to groundwater.

- Groundwater protection initiative implementation, including assessment of groundwater monitoring results, identified leakage or spill events and entries made into 10 CFR 50.75 (g) records, licensee evaluations of the extent of the contamination and the radiological source term, and reports of events associated with spills, leaks, and groundwater monitoring results.

- Problem identification and resolution for the radiological environmental monitoring program. The inspectors reviewed audits, self-assessments, and corrective action program documents to verify problems were being identified and properly addressed for resolution.

These activities constituted completion of the three required samples of radiological environmental monitoring program, as defined in Inspection Procedure 71124.07.

b. Findings

No findings were identified.

2RS8 Radioactive Solid Waste Processing and Radioactive Material Handling, Storage, and Transportation (71124.08)

a. Inspection Scope

The inspectors evaluated the effectiveness of the licensee's programs for processing, handling, storage, and transportation of radioactive material. The inspectors interviewed licensee personnel and reviewed the following items:

- Radioactive material storage, including waste storage areas including container labeling/marking and monitoring containers for deformation or signs of waste decomposition.

- Radioactive waste system, including walk-downs of the accessible portions of the radioactive waste processing systems and handling equipment. The inspectors also reviewed or observed changes made to the radioactive waste processing systems, methods for dewatering and waste stabilization, waste stream mixing methodology, and waste processing equipment that was not operational or abandoned in place.

- Waste characterization and classification, including radio-chemical sample analysis results for radioactive waste streams and use of scaling factors and

calculations to account for difficult-to-measure radionuclides, and processes for waste classification including use of scaling factors and 10 CFR Part 61 analyses.

- Shipment preparation, including packaging, surveying, labeling, marking, placarding, vehicle checking, driver instructing, and preparation of the disposal manifests.

- Shipping records for LSA I, II, III, SCO I, II, Type A, or Type B radioactive material or radioactive waste shipments.

- Problem identification and resolution for radioactive solid waste processing and radioactive material handling, storage, and transportation. The inspectors reviewed audits, self-assessments, and corrective action program documents to verify problems were being identified and properly addressed for resolution.

These activities constituted completion of the six required samples of radioactive solid waste processing, and radioactive material handling, storage, and transportation program, as defined in Inspection Procedure 71124.08.

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 Drill/Exercise Performance (EP01)

a. Inspection Scope

The inspectors reviewed the licensee's evaluated exercises and selected drill and training evolutions that occurred between October 1, 2015, and June 30, 2016, to verify the accuracy of the licensee's data for classification, notification, and protective action recommendation (PAR) opportunities. The inspectors reviewed a sample of the licensee's completed classifications, notifications, and PARs to verify their timeliness and accuracy. The inspectors used Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data. The specific documents reviewed are described in the attachment to this report.

These activities constituted verification of the drill/exercise performance indicator as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.2 Emergency Response Organization Drill Participation (EP02)

a. Inspection Scope

The inspectors reviewed the licensee's records for participation in drill and training evolutions between October 1, 2015, and June 30, 2016, to verify the accuracy of the licensee's data for drill participation opportunities. The inspectors verified that all members of the licensee's emergency response organization in the identified key positions had been counted in the reported performance indicator data. The inspectors reviewed the licensee's basis for reporting the percentage of emergency response organization members who participated in a drill. The inspectors reviewed drill attendance records and verified a sample of those reported as participating. The inspectors used Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data. The specific documents reviewed are described in the attachment to this report.

These activities constituted verification of the emergency response organization drill participation performance indicator as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.3 Alert and Notification System Reliability (EP03)

a. Inspection Scope

The inspectors reviewed the licensee's records of alert and notification system tests conducted between October 1, 2015, and June 30, 2016, to verify the accuracy of the licensee's data for siren system testing opportunities. The inspectors reviewed procedural guidance on assessing alert and notification system opportunities and the results of periodic alert and notification system operability tests. The inspectors used Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, to determine the accuracy of the reported data. The specific documents reviewed are described in the attachment to this report.

These activities constituted verification of the alert and notification system reliability performance indicator as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.4 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 July 1, 2015, through June 30, 2016, 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 Unit 1 and 2, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.5 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 July 1, 2015, through June 30, 2016, 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 Unit 1 and 2, as defined in Inspection Procedure 71151.

b. Findings

No findings were identified.

.6 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 July 1, 2015, through June 30, 2016, 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 Unit 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, 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. The inspectors also reviewed the licensee's progress in addressing a several licensee-identified trends.

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

b. Observations and Assessments

The inspectors did not identify any new adverse trends. The inspectors reviewed the adverse trends identified for all site departments and the station. The inspectors concluded that the licensee is appropriately addressing identified trends within the corrective action program.

c. Findings

No findings were identified.

4OA6 Meetings, Including Exit

Exit Meeting Summaries

On July 1, 2016, the inspectors presented the radiation safety inspection results to Mr. T. Evans, General Manager of Plant Operations, 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.

On July 7, 2016, the inspectors discussed the in-office review of the preliminary scenario for the August 17, 2016, biennial exercise with Mr. R. Carey, Manager, Emergency Preparedness, and other members of the licensee staff. The licensee acknowledged the issues presented.

On July 14, 2016, the inspectors debriefed Mr. C. O'Dell, Technical Assistant, General Manager, Plant Operations, and other members of the licensee staff of the results of the licensed operator requalification program inspection. The results of the inspection were telephonically exited with Mr. R. Martin, Operations Training Superintendent, and other members of the licensee staff on September 7, 2016. The licensee representatives acknowledged the findings presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

On September 8, 2016, the inspectors presented the results of the on-site inspection of the biennial emergency preparedness exercise conducted August 17, 2016, to Mr. T. Evans, General Manager of Plant Operations, 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.

On October 6, 2016, the inspectors presented the resident inspectors' inspection results to Mr. R. Anderson, 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.

4OA7 Licensee-Identified Violations

The following violations of very low safety significance (Green) were identified by the licensee and each is a violation of NRC requirements which meets the criteria of the NRC Enforcement Policy for being dispositioned as a Non-Cited Violation.

.1 Failure to Provide an Accurate Shipping Description on a Transport Manifest

Title 10 CFR 71.5, "Transportation of Licensed Material," requires each licensee who transports licensed material outside the site of usage, as specified in the NRC license, or where transport is on public highways, or who delivers licensed material to a carrier for transport, to comply with the applicable requirements of the DOT regulations in 49 CFR Parts 107, 171 through 180, and 390 through 397, appropriate to the mode of transport. Title 49 CFR 172.202(a) requires, in part, that the shipping description of a hazardous material on the shipping paper must include the identification number and the proper shipping name.

Contrary to the above, on September 11, 2014, the licensee failed to include the correct

identification number and the proper shipping name on the shipping paper of a hazardous material shipment. Specifically, the shipping manifest for shipment RSR 14-099 incorrectly described the package as "UN2915, Radioactive Material, Type A Package, 7, Fissile Excepted RQ - Radionuclides." The correct description was "UN3321, Radioactive Material, Low Specific Activity (LSA-II), 7." This occurred due to an error with RADMAN (versions 8 and 9.1.1), a radioactive materials management software program the licensee used to characterize, classify, manifest, and document packaged radioactive waste for shipment. This issue was identified on September 17, 2015, during the licensee's quality assurance audit for Radwaste and Radiation Protection, QA-14/15-2015-ANO-01.

The failure to provide the correct identification and proper shipping name on the shipping manifest is a performance deficiency. It adversely affected the Public Radiation Safety cornerstone objective to ensure adequate protection of public health and safety from exposure to radioactive materials released into the public domain. Using the Transportation branch of IMC 0609, Appendix D, the inspectors determined this violation to be of very low safety significance (Green) because: (1) radiation limits were not exceeded; (2) there was no breach of a package during transit; (3) it did not involve a certificate of compliance issue; (4) it was not a low level burial ground nonconformance; and (5) it did not involve a failure to make notifications or provide emergency response information.

In response to this issue, the licensee conducted an evaluation and extent of condition review from 2013 to 2015, but did not find any additional shipments with this error. They conducted training and updated their version of RADMAN used to characterize their shipments. The licensee documented the issue in their corrective action program as Condition Report CR-ANO-C-2015-03683.

.2 Failure to Properly Ship Radioactive Material in Quantities of Concern with a Transportation Security Plan

Title 10 CFR 71.5, "Transportation of Licensed Material," requires each licensee who transports licensed material outside the site of usage, as specified in the NRC license, or where transport is on public highways, or who delivers licensed material to a carrier for transport, to comply with the applicable requirements of the DOT regulations in 49 CFR Parts 107, 171 through 180, and 390 through 397, appropriate to the mode of transport. Title 49 CFR 172.800(b)(15) requires, in part, that each person who offers for transportation in commerce or transports in commerce hazardous materials of International Atomic Energy Agency (IAEA) Code of Conduct Category 1 and 2 materials as defined in 49 CFR 173.403 or known radionuclides in forms listed as Radioactive Material in Quantities of Concern (RAM-QC) by the NRC, must develop and adhere to a transportation security plan for hazardous materials.

Contrary to the above, on September 11, 2014, the licensee failed to adhere to a transportation security plan for hazardous materials. Specifically, the licensee shipped a hazardous material package, shipment 14-099, which contained a Category 2/RAM-QC quantity of cobalt-60 without identifying the shipment as RAM-QC or making appropriate notifications, as required by Procedure EN-RW-106, "Integrated Transportation Security Plan, the document used by the licensee to adhere to the DOT security plan requirements . The issue was identified during an audit on October 1, 2014, while reviewing radioactive waste shipment documents. The licensee determined that the Category 2 threshold values were not appropriately listed in Revision 2 of Procedure EN-RW-106. As corrective

actions, the licensee made corrections to the RAM-QC table in Procedure EN-RW-106, Revision 3, and alerted the industry of this issue.

The failure to adhere to a transportation security plan for shipping Category 2/RAM-QC hazardous materials is a performance deficiency. It adversely affected the Public Radiation Safety cornerstone objective to ensure adequate protection public health and safety from exposure to radioactive materials released into the public domain. Using the Transportation branch of IMC 0609, Appendix D, the inspectors determined this violation to be of very low safety significance (Green) because: (1) radiation limits were not exceeded; (2) there was no breach of a package during transit; (3) it did not involve a certificate of compliance issue; (4) it was not a low level burial ground nonconformance; and (5) it did not involve a failure to make notifications or provide emergency response information.

In response to this issue, the licensee performed an extent of condition review of shipments made between January 2010 and March 2014. Six additional shipments that failed to meet the transportation security plan requirements were identified. The licensee documented this issue in their corrective action program as Condition Reports CR-ANO-C-2014-02543 and CR-ANO-C-2014-03341.

.3 Failure to Maintain Exam Integrity

Title 10 CFR 55.49, “Integrity of Examination and Tests,” requires, in part, that “licensees or facility licensees shall not engage in any activity that compromises the integrity of any required exam. The exam is considered compromised if any activity, regardless of intent, affected, or but for detection, would have affected the equitable and consistent administration of the exam.” Contrary to the above, on July 7, 2016, the licensee performed an activity that compromised the integrity of a required exam. Specifically, a licensee staff member sent licensed operator examination material to an NRC inspector via electronic mail. The files, which were the job performance measure (JPM) portion of an operating test, were password-protected. However, the file titles described what the JPM tasks were and whether the tasks were alternate path or not. While performing procedural tasks to ensure receipt of materials by the NRC, licensee staff recognized the error. After discussion of the issue with the NRC lead inspector, the affected examination material was replaced by the licensee prior to usage. The violation was of very low safety significance because, if left uncorrected, the available knowledge of the examination’s content could have challenged the equitable and consistent administration of the examination, and thus required the replacement of materials on an NRC examination. This licensee entered this issue into their corrective action program as CR-ANO-2-2016-2614.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

R. Anderson, Site Vice President
T. Arnold, Manager, Training
D. Barborek, Engineer
R. Barnes, Director, Regulatory Affair & Performance Indicators
L. Blocker, Nuclear Oversight Manager
D. Burnett, Director, Emergency Preparedness, Entergy South
P. Butler, Design and Program Engineering Manager
R. Carey, Manager, Emergency Preparedness
T. Chernivec, Outage Manager
L. Cook, Chemistry Specialist
R. Cope, Senior Chemistry Specialist
B. Daiber, Recovery Manager
B. Davis, Engineering Director
T. Evans, General Manager of Plant Operations
R. Fletcher, Supervisor, Instruments and Controls
A. Freeman, Supply Chain Manager
M. Gibson, ALARA Specialist, Radiation Protection
R. Gordon, Projects Manager
K. Hodges, Supervisor, Instruments and Controls
T. Hogrefe, Supervisor, Radiation Protection
D. James, Director, Regulatory Affairs and Recovery
T. Johnson, Supervisor, Instruments and Controls
J. Jones, Lead Technician, Instruments and Controls
B. Lynch, Manager, Radiation Protection
R. Martin, Superintendent, Operations Training
D. Marvel, Radiation Protection Manager
M. McCullah, Specialist, Radiation Protection
S. Moore, Technician, Instruments and Controls
S. Morris, Manager, Chemistry
N. Mosher, Licensing Specialist
C. O'Dell, Technical Assistant to the General Manager
D. Pehrson, Unit 1 Assistant Operations Manager
D. Perkins, Operations Manager
J. Prince, Senior Technician, Instruments and Controls
M. Prock, Supervisor, Chemistry
S. Pyle, Regulatory Assurance Manager
B. Sebring, Radwaste Supervisor, Radiation Protection
T. Sherrill, Assistant Manager of Operations
B. Short, Senior Licensing Specialist
G. Sullins, Regulatory and Performance Improvement Director
J. Toben, Senior Manager, Project Management Regulatory and Performance Improvement

Other Contacts

N. Williams, Chairman, Regional Assistance Committee, FEMA Region VI

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

None.

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures

Number	Title	Revision
1015.044	Summer Reliability Operations	010
2203.054	Abnormal Grid	000
ENS-DC-201	ENS Transmission Grid Monitoring	007
ENS-PL-158	Switchyard and Transmission Interface Requirements	003

Work Orders (WOs)

52630175

Condition Reports (CRs)

CR-ANO-1-2016-01879	CR-ANO-2-2016-01680	CR-ANO-1-2016-02057
CR-ANO-2-2016-00073	CR-ANO-1-2008-01414	CR-ANO-1-2016-02148

Miscellaneous

Number	Title	Revision Date
System Health Report	AAC – Alternate AC Diesel Generator	Q1-2016
System Health Report	F – Switchyard	Q1-2016

Section 1R04: Equipment Alignment

Procedures

Number	Title	Revision
1104.032, Att. A	Fire Protection System	084
OP-2104.029	Service Water System Operations	104
OP-2203.022	Loss of Service Water	014

Procedures

Number	Title	Revision
OP-2203.008	Natural Emergencies	041
1107.003	Inverter and 120V Vital AC Distribution	026
1107.004	Battery and 125V DC Distribution	024
OP-1104.002	Makeup and Purification System Operation	087
OP-1104.004	Decay Heat Removal Operating Procedure	120

Drawings

Number	Title	Revision
M-219, Sh. 1	Piping & Instrument Diagram Fire Water	090
M-2219, Sh. 5	Piping & Instrument Diagram Unit One / Unit Two Outside Fire Water Loop	053
M-2210, Sh. 1	Piping and Instrument Diagram Service Water System	090
M-2210, Sh. 2	Piping and Instrument Diagram Service Water System	083
M-2210, Sh. 3	Piping and Instrument Diagram Service Water System	091
M-2210, Sh. 5	Piping and Instrument Diagram Service Water System	001
M-2210, Sh. 6	Piping and Instrument Diagram Service Water System Booster Pumps	000
M-2210, Sh. 7	Piping and Instrument Diagram Service Water System	001
M-2211, Sh. 1	Piping and Instrument Diagram Auxiliary Cooling Water	072
E-17, Sh. 1	Red Train Vital AC and 125V DC Single Line and Distribution	050
E-17, Sh. 1A	Green Train Vital AC and 125V DC Single Line and Distribution	016
E-17, Sh. 2	Single Line Meter & Relay Diagram 125VDC System	005

Work Orders (WOs)

292330 52620361 52656389

Miscellaneous

Number	Title	Revision
TD C470.0090	Instructions for Two Bearing Spherical Roller Oil Lubricated Alternators	000

Section 1R05: Fire Protection

Procedures

Number	Title	Revision
1b-add-unit1 intake	Prefire Plan, Unit 1 Intake Structure	002
EN-TQ-125	Fire Brigade Drills	004
2A-372-2200-MM	Prefire Plan, Unit 2 Turbine Building	005
1A-386-144-D	Prefire Plan, Unit 1 Upper South Electrical Penetration Room	002
1B-335-38-Y	Prefire Plan, Unit 2 Emergency Feedwater Pump Area	002
OP-1306.014	Unit 1 Control Room & Aux Control Room Halon Fire System Inspection	031
OP-1203.049	Fires in Areas Affecting Safe Shutdown	011

Condition Reports (CRs)

CR-ANO-1-2015-02925	CR-ANO-C-2016-03492

Work Orders (WOs)

319585	102483

Miscellaneous

Number	Title	Revision
FBDRL 2016-16	Unit 2 Fire Brigade Drill Package	000

Section 1R06: Flood Protection Measures

Miscellaneous

Number	Title	Revision Date
CALC-83-E-0062-16	Ponding Level Estimation for Diesel Fire Pump Room 242 Fire Zone N	001
PSR-89-2055	Diesel Room Floor Drains	July 2, 1993

Condition Reports (CRs)

CR-ANO-C-2016-03155	CR-ANO-1-2007-00480

Section 1R07: Heat Sink Performance

Procedures

Number	Title	Revision
OP-1309.016	Decay Heat Cooler Thermal Test	008

Miscellaneous

Number	Title	Revision
Calc 95-R-0014-01	Unit 1 Decay Heat Cooler heat Exchanger Test Protocol	004
EC 44866	E-35A 1R24 Thermal Performance Test Evaluation	000

Work Orders (WOs)

52399594

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

Procedures

Number	Title	Revision
OP-1104.002	Makeup & Purification System Operation	087
EN-OP-115	Conduct of Operations	017
COPD001	Operations Expectations and Standards	069
OP-2202.001	Standard Post Trip Actions	015
OP-2104.037	Alternate AC Diesel Generator Operations	032
EN-TQ-114	Licensed Operator Requalification Training Program Description	010
EN-TQ-217	Exam Security	005
DG-TRNA-015-EXAMSEC	Simulator Exam Security Guidelines	010
DG-TRNA-217-EXAMSECURITY	Exam Security	002
EN-NS-112	Medical Program	017
EN-TQ-210	Conduct of Simulator Training	009
1063.008	Operations Training Sequence	043
1064.032	Simulator Training	022

Procedures

Number	Title	Revision
DG-TRNA-4.5	Simulator Training Aids	022
DG-TRNA-032	Simulator Performance Evaluation	016
1015.050	Time Critical Operator Actions	006
EN-TQ-210	Conduct of Simulator Training	009
EN-NS-112	Medical Program	017
DG-TRNA-015-SIMCONTROL	Simulator Modification Control	006
DG-TRNA-015-CORETEST	Simulator Core Reload Acceptance Test	004
1015.050	Time Critical Operator Actions Program	006

Condition Reports (CRs)

CR-ANO-2-2016-02903	CR-ANO-2-2015-01544	CR-ANO-C-2015-03173
CR-ANO-2-2015-00269	CR-ANO-2-2016-02003	CR-ANO-2-2016-0671
CR-ANO-2-2016-01666	CR-ANO-C-2016-02003	CR-ANO-C-2016-01823
CR-ANO-1-2015-02327	CR-ANO-2-2015-02334	CR-ANO-1-2016-01849
CR-ANO-1-2016-01850	CR-ANO-2-2016-03062	CR-ANO-2-2016-0671

Simulator Discrepancy Reports

06-0130	06-0170	13-0094	14-0025
14-0074	14-0079	14-0180	15-0088
15-0104	15-0105	16-0140	

Audits, Self-Assessments, and Surveillances

Number	Title	Date
LO-ALO-2015-0048	Pre-NRC FSA Licensed Operator Requalification (LOR) Program Pre-Inspection Assessment (IP 71111.11)	April 8, 2016

Miscellaneous

Number	Title	Revision Date
A2SPGLOR170101	Standard Post Trip Actions	000
A1SPGLOR170105	Reactor Building Fire Response	000

Miscellaneous

Number	Title	Revision Date
	2016-LOR Biennial Written Exam Details – Exam-3-RO	
	Attachment C-2, Transient Test, Simultaneous Trip of All Feedwater Pumps, Transient B3.2.1(2)	December 7, 2015
	Attachment C-6B, Transient Test, Main Turbine Trip Without an Immediate Reactor Trip, Transient B3.2.1 (6)	December 7, 2015
	Attachment C-10, Transient Test, Slow Primary System Depressurization to Saturation, Transient B3.2.1 (10)	December 7, 2015
	Attachment B-3, 29% Rated Power	December 7, 2015
	ANO-2 Simulator Core Reload Acceptance Test, Cycle 25	January 18, 2016
	Attachment B-1, 100% Rated Power	January 7, 2015
	Attachment B-2, 95% Rated Power	January 7, 2015
	Attachment C-1, Transient Test, Manual Reactor Trip, Transient B3.2.1 (1)	December 7, 2015
	Attachment C-3, Transient Test, Simultaneous Closure of Both MSIVs, Transient B3.2.1 (3)	December 7, 2015
	Attachment C-4, Transient Test, Simultaneous Trip of All RCPs, Transient B3.2.1(4)	December 7, 2015
	Attachment C-6A, Transient Test, Main Turbine Trip Without an Immediate Reactor Trip, Transient B3.2.1 (6)	December 7, 2015
	Attachment C-7, Transient Test, Maximum Rate Power Ramp 100% to 75% to 100%, Transient B3.2.1(7)	December 7, 2015
	Attachment C-8, Transient Test, Maximum Size RCS Rupture and Loss of Offsite Power, Transient B3.2.1(8)	December 7, 2015
	Attachment C-9, Transient Test, Maximum Size Unisolable Main Steam Line Break, Transient B3.2.1(9)	December 7, 2015
	Attachment C-11, Transient Test, Maximum Design Load Rejection, Transient B3.2.1 (11)	December 7, 2015
	ANO-2 Open Simulator Differences	July 14, 2016
	Annunciator Out of Service Index	June 29, 2016

Miscellaneous

Number	Title	Revision Date
TQF-200-LORTAC	Licensed Operator Requalification Training Advisory Committee Meeting Agenda/Minutes	August 27, 2014
TQF-200-LORTAC	Licensed Operator Requalification Training Advisory Committee Meeting Agenda/Minutes	November 7, 2014
TQF-200-LORTAC	Licensed Operator Requalification Training Advisory Committee Meeting Agenda/Minutes	June 16, 2015
TQF-200-LORTAC	Licensed Operator Requalification Training Advisory Committee Meeting Agenda/Minutes	April 13, 2016
	U-2 Simulator Planning Meeting Cycle 15-01	June 30, 2014
	U-2 Simulator Planning Meeting Cycle 15-03	September 29, 2014
	U-2 Simulator Planning Meeting Cycle 16-03	December 3, 2015
	U-2 Simulator Planning Meeting Cycle 16-05	March 17, 2016
	U-2 Simulator Planning Meeting Cycle 16-06	April 21, 2016
	2016-LOR Biennial Written Exam Details – Exam-3-RO	
	Multiple License Reactivation and Remediation folders	
	Miscellaneous Medical Records	
	Licensed Operator Requalification Program Self-Assessment	
	Licensed Operator Requalification Curriculum Review Minutes	
	Week 4 JPMs and Scenarios	
	Week 7 JPMs and Scenarios	
	Unit 2 Licensed Operator 2015-2016 Requalification Cycle Report	
	Unit 1 Simulator Planning Meeting Minutes Cycles 1-15-01 to 1-16-05	
	Unit 1 LOR Training Advisory Committee (TAC) Meeting Minutes since last BRQ	
	Unit 1 Week 1 JPM and Scenarios	
	Unit 1 Week 2 JPM and Scenarios	

Miscellaneous

Number	Title	Revision Date
	Unit 1 Week 5 JPM and Scenarios	
	Unit 1 2015 Requalification Written Exams	
	Unit 1 Requalification Program Remediation Packages	
LER 0500-313/2014002R00		
LER 05000-313/2015001R00		

Section 1R12: Maintenance Effectiveness

Procedures

Number	Title	Revision Date
EN-DC-205	Maintenance Rule Monitoring	005
COPD-024	Risk Assessment Guidelines	055
EN-DC-203	Maintenance Rule Program	003
EN-DC-206	Maintenance Rule a(1) Process	003
	System Health Report, ANO, Unit 2 Control Room Ventilation	August 25, 2016
OP-2104.039	HPSI System Operation	077

Condition Reports (CRs)

CR-ANO-2-2015-02210	CR-ANO-2-2015-00581	CR-ANO-2-2015-01638
CR-ANO-2-2014-00907		

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures

Number	Title	Revision
OP-2104.029	Service Water System Operations	0104
COPD-024	Risk Assessment Guidelines	061
OP-1402.038	Unit 1 Equipment Hatch Opening, Closing and Maintenance	013
OP-1203.028	Loss of Decay Heat Removal	029

Condition Reports (CRs)

CR-ANO-2-2016-02716	CR-ANO-2-2016-02702	CR-ANO-2-2016-03384
CR-ANO-C-2016-04020	CR-ANO-1-2016-03198	CR-ANO-1-2016-03225

Work Orders (WOs)

451962	52569690

Miscellaneous

Number	Title	Revision Date
OLA-2015-00146	Outage Risk Assessment Team Report	1
Operator Log Entries Report	Date range September 15, 2016 to September 16, 2015	
SER (ML032230433)	Arkansas Nuclear One, Unit No. 2 – Issuance of Amendment RE: Emergency Diesel Generator Allowable Outage Time (TAC NO. MB6361)	August 8, 2003

Section 1R15: Operability Determinations and Functionality Assessments

Procedures

Number	Title	Revision
OP-2103.005	Pressurizer Operations	035
OP-2104.036	Emergency Diesel Generator Operations	090
OP-1203.028	Loss of Decay Heat Removal	029

Miscellaneous

Number	Title	Revision
CALC-85-D-2152-02	Error Analysis for 2LT-4627-1 and 2LT-4627-2 Pressurizer Level Loops	005

Condition Reports (CRs)

CR-ANO-2-1999-00595	CR-ANO-2-2016-01845	CR-ANO-1-2016-02498
CR-ANO-2-2016-02509	CR-ANO-2-2016-02524	CR-ANO-1-2016-02804
CR-ANO-1-2016-01788	CR-ANO-1-2016-02514	CR-ANO-1-2016-02752
CR-ANO-1-2016-03225	CR-ANO-1-2016-03231	CR-ANO-1-2016-03233

Section 1R18: Plant Modifications

Drawings

Number	Title	Revision
E-1, Sh. 1	Station Single Line Diagram	059
E-1, Sh. 3	Single Line Diagram Common Feedwater 4.16KV Swgr Bus A15 and A19	New
E-20, Sh. 3	Single Line Diagram Common Feedwater 480V AC Power Distribution Panels PP51 and PP91	New
E-23, Sh. 4	Single Line Diagram Common Feedwater 240/120V AC Power Distribution Panel Y-152, 153LA, Y-192 and 193LA	New
M-204, Sh. 7	Piping & Instrument Diagram Common Feedwater System	N
M-2204, Sh. 4	Piping & Instrument Diagram Emergency Feedwater	070

Miscellaneous

Number	Title	Revision
SR-1573	Lateral Critical Speed Analysis of the Makeup Pump	000
BWIP 9411-80-024	Technical Service Bulletin: Flexible Pump Couplings	000
EC-51555	P-36A, B & C Pump to Gear Case Installation Instructions for Flexxor 200M, Close Coupled Coupling	001
CALC-86-E-0074-50	Make Up Pump Requalification	002
TDB580-0010	Installation, Operation and Maintenance of Byron Jackson Horizontal Double-Bearing Pumps	006
EC-61465	Electrical and I&C Infrastructure Installation for CFW	001
EC-59247	NFPA 805 Common Feedwater Online Electrical Installation	000
LA161619-C-001	#1 Emergency Diesel Generator Shaft Evaluation	000

Work Order (WO)

456512

Section 1R19: Post-Maintenance Testing

Procedures

Number	Title	Revision
OP-1104.032	Fire Protection Systems	084

Procedures

Number	Title	Revision
OP-1402.010	Unit 1 Primary Make Up Pumps (P-36 A,B,C) Inspection/Repair	019

Work Orders (WOs)

50238834	292330	382145	52633802

Condition Reports (CRs)

CR-ANO-C-2016-03005	CR-ANO-1-2016-02261	CR-ANO-1-1993-00039
CR-ANO-1-2001-01337	CR-ANO-1-2016-01480	CR-ANO-1-2011-01436
CR-ANO-1-2016-02548		

Section 1R20: Refueling and Other Outage Activities

Procedures

Number	Title	Revision
OP-1102.010	Plant Shutdown and Cooldown	080

Condition Reports (CRs)

CR-ANO-C-2016-04020	CR-ANO-2-2016-02986

Miscellaneous

Number	Title	Revision
	1R26 Outage Risk Assessment Team Report	001

Section 1R22: Surveillance Testing

Procedures

Number	Title	Revision
OP-1305.007	RB Isolation and Miscellaneous Valve Stroke Test	043
OP-2104.029	Service Water System Operations	104

Condition Reports (CRs)

CR-ANO-2-2016-03287	CR-ANO-2-2016-03290

Work Orders (WOs)

52422952	52506692	52660194	50241678

Miscellaneous

Number	Title	Revision
CALC-91-R-2013-01	Service Water Performance Testing Methodology	027
EC-28463	Change Unit 2 SW Allowable Strainer (2F-6A-C) Delta P and SW Pumps 2P-4A and 2P-4B Admin Limit for Allowable Degradation	000

Section 1EP1: Exercise Evaluation

Procedures

Number	Title	Revision Date
	Arkansas Nuclear One Emergency Plan	041
EPIP 1903.010	Emergency Action Level Classification	052
EPIP 1903.011	Emergency Response Notifications	050
EPIP 1903.011-Y	Actions for Initial Notifications	043
EPIP 1903.011-Z	Actions for Follow-up Notifications	042
EPIP 1903.035	Administration of Potassium Iodide	015
EPIP 1903.064	Emergency Response Facility Control Room	016
EPIP 1903.065	Emergency Response Facility Technical Support Center	032
EPIP 1903.066	Emergency Response Facility Operational Support Center	027
EPIP 1903.067	Emergency Response Facility Emergency Operations Facility	039
QA-7-2016-ANO-1	Quality Assurance Audit Report, Emergency Planning	May 31, 2016
TP-1903-062C-20150915	Emergency Response Staffing Drill, conducted September 10, 2015	September 15, 2015
TP-1903-062C-20160119	Emergency Response Staffing Drill, conducted December 20, 2015	January 19, 2016
TP-1903-062C-20160317	Emergency Response Staffing Drill, conducted March 14, 2016	March 17, 2016
TP-1903-062C-20160512	Emergency Response Staffing Drill, conducted May 7, 2016	May 12, 2016
EP-2015-003	Evaluation Report for the September 17, 2014, Biennial Exercise	October 27, 2014
EP-2014-0031	Evaluation Report for the December 3, 2014, Full Scale Exercise	December 14, 2014

Procedures

Number	Title	Revision Date
EP-205-0004	Evaluation Report for the March 18, 2015, Full Scale Exercise	April 16, 2015
EP-2015-017	Evaluation Report for the July 22, 2015, Full Scale Exercise	August 20, 2015
EP-2015-022	Evaluation Report for the November 3-4, 2015, Medical Drills	November 5, 2015
ED-NC-Mini1-2015	Evaluation Report for the September 10, 2015, Drill	November 11, 2015
EP-2015-024	Exercise Evaluation Report for the December 9, 2015, Full Scale Drill	January 8, 2016
EP-2015-025	Drill Evaluation Report for the December 30, 2015, Environmental Sampling Drill	January 27, 2016
EP-2016-004	Drill Evaluation Report for Health Physics Drill 2016-01	June 29, 2016
EP-2016-003	Exercise Evaluation Report for the May 10, 2016, Full Scale Exercise	May 31, 2016

Condition Reports (CRs)

CR-ANO-C-2013-02107	CR-ANO-C-2015-04380	CR-ANO-C-2015-04044
CR-ANO-C-2015-04645	CR-ANO-C-2015-04865	CR-ANO-C-2015-04881
CR-ANO-C-2015-00706	CR-ANO-C-2015-00218	CR-ANO-C-2015-03866
CR-ANO-C-2015-04882	CR-ANO-C-2015-04889	CR-ANO-C-2015-04901
CR-ANO-C-2016-00861	CR-ANO-C-2016-01372	CR-ANO-C-2016-01758
CR-ANO-C-2016-02039	CR-ANO-C-2016-02049	CR-ANO-C-2016-02050
CR-ANO-C-2016-02841	CR-ANO-C-2016-03320	CR-ANO-C-2016-03323
CR-ANO-C-2016-03351	CR-ANO-C-2016-03359	CR-ANO-C-2016-03360
CR-ANO-C-2016-03481	CR-ANO-C-2016-03482	CR-ANO-C-2016-03483
CR-ANO-C-2015-04406	CR-ANO-C-2015-04407	CR-ANO-C-2015-04410
CR-ANO-C-2015-04882	CR-ANO-C-2015-04884	CR-ANO-C-2015-04950
CR-ANO-C-2015-03962	CR-ANO-C-2015-04767	CR-ANO-C-2015-04865
CR-ANO-C-2016-00411	CR-ANO-C-2016-00414	CR-ANO-C-2016-00754
CR-ANO-C-2016-01993	CR-ANO-C-2016-02020	CR-ANO-C-2016-02027
CR-ANO-C-2016-02080	CR-ANO-C-2016-02203	CR-ANO-C-2016-02265
CR-ANO-C-2016-03333	CR-ANO-C-2016-03334	CR-ANO-C-2016-03350
CR-ANO-C-2016-03361	CR-ANO-C-2016-03365	CR-ANO-C-2016-03395
CR-ANO-C-2016-03485	CR-ANO-C-2016-03486	CR-HQN-2016-00227

Nuclear Oversight O2C Reports

O2C-ANO-2015-1313	O2C-ANO-2015-1318	O2C-ANO-2015-1319
O2C-ANO-2015-1338	O2C-ANO-2016-0214	O2C-ANO-2016-0222
O2C-ANO-2016-0266	O2C-ANO-2016-0269	O2C-ANO-2016-0289
O2C-ANO-2016-0380	O2C-ANO-2016-0426	O2C-ANO-2016-0436
O2C-ANO-2016-0439	O2C-ANO-2016-0441	O2C-ANO-2016-0445

Section 1EP4: EAL and Emergency Plan Changes

Procedures

Number	Title	Date
Letter 0CAN021601	Emergency Plan Revision 40	February 2, 2016
Letter 0CAN081602	Emergency Plan Revision 41	August 9, 2016

Section 1EP6: Drill Evaluation

Condition Reports (CRs)

CR-ANO-C-2016-03004

Section 2RS5: Radiation Monitoring Instrumentation

Procedures

Number	Title	Revision
EN-RP-104	Scaling Factors	012
EN-RP-143	Source Control	012
EN-RP-301	Radiation Protection Instrument Control	009
EN-RP-303	Source Checking of Radiation Protection Instrumentation	004
EN-RP-306	Calibration & Operation of the Eberline PM-7	002
EN-RP-307	Calibration & Operation of the Eberline PCMs	002
EN-RP-308	Calibration & Operation of the Gamma Scintillation Tool Monitors	008
EN-RP-309	Calibration & Operation of the Eberline AMS 3/3A Continuous Air Monitors	001
EN-RP-312	Calibration & Operation of the Canberra GEM-5	001
EN-RP-313	Calibration & Operation of the ARGOS-5AB	002
EN-RP-317	Central Calibration Facility	006
1304.133	Unit 1 Containment High Range Radiation Monitor Functional Test	021

Procedures

Number	Title	Revision
1304.143	Unit 1 Containment High Range Radiation Monitor Monthly Test	019
1304.161	Unit 1 Reactor Building Area Radiation Monitor Test	010
2304.017	Process Radiation Monitor System Calibration (Failed Fuel)	016
2304.148	Unit 2 Containment High Range Radiation Monitor Monthly Test	009
2304.133	Unit 2 Containment High Range Rad Monitor Cal	014
2304.264	Unit 1&2 Control Room Radiation Monitor	013
1052.023	Conduct of Chemistry	020
1304.027A	Process Radiation Monitor System Current Calibration Data	010
1413.440	Unit 1 Process Radiation Monitor Test	002
1413.441	Process Radiation Monitor System Calibration	005
1601.213	Operations of the Canberra Fastscan Whole Body Counter	003
1604.004	Liquid Scintillation Counter for Gross Beta & H-3 Measurement	019
2015.016	Radiation Monitoring and Evacuation System	030

Audits and Self-Assessments

Number	Title	Date
LO-ALO-2015-00045	Central Calibration Instrumentation Program	July 14, 2015
LO-ALO-2015-00042	Pre-NRC Inspection Self-Assessment – Radiation Protection	February 18, 2016
ANO 2016-0028	ANO Neutron Radiation Assessment Report	January 1, 2016
QA-14/15-2015-GGN-1	Quality Assurance Audit Report – Radiation Protection and Radwaste	September 14, 2015

Condition Reports (CRs)

CR-ANO-C-2016-02733	CR-ANO-C-2016-02710	CR-ANO-C-2016-00475
CR-ANO-2-2014-01161	CR-ANO-1-2014-01208	CR-ANO-1-2014-01338
CR-ANO-1-2014-01881	CR-ANO-1-2015-01734	CR-ANO-1-2015-02360
CR-ANO-1-2015-03945	CR-ANO-1-2016-01118	CR-ANO-1-2016-01988

CR-ANO-C-2015-04838	CR-ANO-C-2014-01961	CR-ANO-1-2014-01460
CR-ANO-1-2014-01498	CR-ANO-1-2015-03290	CR-ANO-1-2015-03735
CR-ANO-1-2016-01999	CR-ANO-1-2015-02303	
HQN-2014-00619	HQN-2016-00434	

Radiation Monitoring System Calibration Records

Number	Title	Date
WO-378382	Unit 1 Process Radiation Monitor System (PRMS)	June 27, 2016
WO-418927	Unit 2 Letdown Failed Fuel PRMS	July 28, 2015
WO-50233394	Reactor Building Area Radiation Monitors	August 19, 2015
WO-52515191	18 Month Calibration Reactor Building High Range Radiation Monitor	February 10, 2015
WO-52627329	Monthly Containment High Range Radiation Monitor Test	May 3, 2016
WO-52578589	Monthly Reactor Building Radiation Monitor Test	August 19, 2015
WO-52467399	18 Month Letdown Failed Fuel PRMS Calibration	August 22, 2014
WO-52571992	Unit 2 18 Month/Refueling, Containment High Range Radiation Monitor Calibration	October 15, 2015

Portable Radiation Instrument Calibration Records

Number	Title	Date
1164	AMS-4 Continuous Air Monitor	February 12, 2015
1187	AMS-4 Continuous Air Monitor	August 15, 2015
1498	AMS-4 Continuous Air Monitor	March 22, 2016
CHP-ASA044	Hi-Vol Air Sampler	June 22, 2016
CHP-AS119	Hi-Vol Air Sampler	March 21, 2016
3990	ASP-1 (NRD)	April 28, 2015

Stationary Radiation Instrument Calibration Records

Number	Title	Date
FastScan1	Calibration of the Canberra FastScan1 WBC System	May 21, 2015
FastScan1	Calibration of the Canberra FastScan1 WBC System	May 17, 2016
FastScan2	Calibration of the Canberra FastScan2 WBC System	May 18, 2016

Miscellaneous Documents

Number	Title	Date
14-07316	Oil Scaling Factor Part 61 Waste Stream	September 8, 2014
15-03106	Oil Scaling Factor Part 61 Waste Stream	June 18, 2015
1st Quarter 2015	Radio Chemistry Cross Check Program	August 18, 2015
4th Qtr. 2016 Top 10	Radiation Monitor System Reliability	February 29, 2016

Section 2RS6: Radioactive Gaseous and Liquid Effluent Treatment

Procedures

Number	Title	Revision
1305.001	Radiation Monitoring System Check and Test (U1 Set Point Determination)	022
2105.016	Radiation Monitoring and Evacuation System (U2 Set Point Determination)	030
2034.155	Channel Functional Test of the Low Level Radwaste Storage Building 2RX09850 (SPING 11)	027
1304.027	Unit 1 Effluent Process Radiation Monitoring System Calibration (RE-4642, RE-4830)	022
1052.022	Radiological Effluents and Environmental Monitoring Program	004
1304.137	Unit 1 Calibration of the Containment Purge RX9820 (SPING 1)	035
1413.441	Unit 1 Process Radiation Monitor Calibration	005
1604.004	Reactor Building Purge Analysis	025
1604.051	Eberline Radiation Monitoring System	032
1903.010	Emergency Action level Classification	052

Procedures

Number	Title	Revision
2304.006	U2 Gaseous Process Radiation Monitoring System Calibration (2RE-8233, 2RE-2429)	022
2304.027	Unit 2 Liquid Process Radiation Monitoring System Calibration (2RE-2330, 2RE-4423)	035
2394.137	Calibration of the Containment Purge 2RX9820 (SPING 5)	032

Audits and Self-Assessments

Number	Title	Date
LO-ALO-2015-00042	Radiation Protection - Pre-NRC FSA Radiation Safety - Public and Occupational Inspection	February 18, 2016
QA-2-6-2015-ANO-1	Effluent and Environmental Monitoring; Chemistry	September 11, 2015
QA-2-6-2015-ANO-1	Quality Assurance Audit	September 2015

Condition Reports (CRs)

CR-ANO-C-2015-03275	CR-ANO-1-2015-04356	CR-ANO-1-2016-00367
CR-ANO-C-2016-00038	CR-ANO-1-2016-01162	CR-ANO-1-2015-01971
CR-ANO-C-2016-00865	CR-ANO-1-2016-00363	CR-ANO-2-2014-01161
CR-ANO-2-2015-04004	CR-ANO-2-2015-01675	CR-ANO-2-2015-01096

Air Cleaning System Surveillance Test Records

Number	Title
WO-52411963	Penetration Room Ventilation Test
WO-52501122	Penetration Room Ventilation Test
WO-52388492	Penetration Room Ventilation Test
WO-52501123	Penetration Room Ventilation Test
WO-52458533	EOF Filtration System
WO-52563510	EOF Filtration System
WO-52497361	18 M Charcoal Tests Control Room Emergency Ventilation
WO-52595050	18 M Charcoal Tests Control Room Emergency Ventilation
WO-52491801	18 M Charcoal Tests Control Room Emergency Ventilation
WO-52386770	18 M Charcoal Tests Control Room Emergency Ventilation

Radioactive Effluent Release Permits

Number	Title	Date
1GR-2015-0046	Gas Release Permit	April 2015
1GR-2015-0047	Gas Release Permit	April 2015
1GR-2015-0050	Gas Release Permit	May 2015
2GR-2015-0055	Gas Release Permit	May 2015

Miscellaneous Documents

Number	Title	Revision
EN-DC-336-ANO-RC	Plant Health Committee	000
EN-RW-105	Process Control Program	004 and 005

Section 2RS7: Radiological Environmental Monitoring Program

Procedures

Number	Title	Revision
1015.003B	Unit Two Operations Logs	048-09-0
1304.062	Meteorological Monitoring System Calibration	016
1608.005	Radiological Environmental Monitoring Program (REMP)	043
CP-D295.FLOW	Air Rotometer Calibration	002

Audits and Self-Assessments

Number	Title	Date
LO-ALO-2015-00042	Radiation Protection - Pre-NRC FSA Radiation Safety - Public and Occupational Inspection	February 18, 2016
QA-2-6-2015-ANO-1	Quality Assurance Audit Report: Chemistry, Effluent and Environmental Monitoring	September 11, 2015

Condition Reports (CRs)

CR-ANO-C-2013-02706	CR-ANO-C-2014-01380	CR-ANO-C-2014-01426
CR-ANO-C-2015-04818	CR-ANO-C-2016-00057	CR-ANO-C-2016-00797
CR-ANO-C-2016-01980	CR-ANO-C-2016-01981	CR-ANO-C-2016-01993
CR-ANO-C-2014-02377	CR-ANO-C-2016-00886	CR-ANO-C-2016-02595
CR-ANO-C-2014-02989	CR-ANO-C-2016-01694	

Meteorological Monitoring Records

Number	Title	Date
WO-ANO-52559405	Met Tower Calibration	June 4, 2015
WO-ANO-52595494	Met Tower Calibration	November 19, 2015

Groundwater Protection Documents

Number	Title	Date
WT-WTANO-2015-00013	2015 Annual Review of Groundwater Sample Data	June 2, 2016
WT-WTANO-2014-00017	2014 Annual Review of Groundwater Sample Data	June 3, 2015
R06045-0029-002	Groundwater Monitoring Program - ANO Five-Year Review	December 18, 2014

Miscellaneous Documents

Number	Title	Date
	2008-2012 Meteorological Data Review and 5-Year X/Q Report for Arkansas Nuclear One (ANO) Station	February 7, 2013
	2014 Annual Met Tower Data Review	October 14, 2015
	2015 Annual Met Tower Data Review	January, 27, 2016
	50.59 Evaluation to Remove Meteorological Instrumentation from Unit 2 TRM	June 18, 2003
	50.59 Review Form for 1015.003B Unit Two Operations Logs	February 28, 2005
0CAN051502	Annual Environmental Operating Report for 2014	May 12, 2015
0CAN05160X	Annual Environmental Operating Report for 2015	May 4, 2016
0CAN109602	Amendment Request for Relocation of Selected Instrumentation from the Technical Specifications to the Technical Requirements Manual Allowed by Generic Letter 95-10	October 2, 1996
14-017	Licensing Basis Document Change Request	July 10, 2014
2-03-06	Licensing Basis Document Change	June 18, 2003
2CAN040404	Amendment to the ANO Unit 2 Safety Analysis Report	April 7, 2004

Miscellaneous Documents

Number	Title	Date
ANO-2015-CHEM-0066	2015 Land Use Census	September 1, 2015
CRO019	Rotometer, Air Flow 0 to 40 LPM	August 4, 2015
ODCM	Offsite Dose Calculation Manual (ODCM)	25, 26

Section 2RS8: Radioactive Solid Waste Processing, and Radioactive Material Handling, Storage, and Transportation

Procedures

Number	Title	Revision
EN-RW-101	Radioactive Waste Management	003
EN-RW-102	Radioactive Shipping Procedure	014
EN-RW-104	Scaling Factors	012
EN-RW-105	Process Control Program	005
EN-RW-106	Integrated Transportation Security Plan	004
EN-RP-121	Radioactive Material Control	012
TR-OP-035	Handling Procedure for Transport Cask Model 8-120B, C of C Number 9168	027
1053.007	Asbestos Abatement	004
1601.502	Radioactive Material Control at Radwaste	006
1601.504	Processing of Spent Radioactive Resin	015

Audits and Self-Assessments

Number	Title	Date
QA-14/15-2015-ANO-01	Radwaste / Radiation Protection Audit	September 14, 2015
LO-ALO-2015-00042	Radiation Protection – Pre-NRC FSA Radiation Safety – Public and Occupational Inspection	February 18, 2016

Condition Reports (CRs)

CR-ANO-2-2015-03814	CR-ANO-2-2016-01183	CR-ANO-2-2016-01229
CR-ANO-C-2014-03341	CR-ANO-C-2015-00431	CR-ANO-C-2015-00432
CR-ANO-C-2015-01335	CR-ANO-C-2015-01393	CR-ANO-C-2015-02132
CR-ANO-C-2016-00104	CR-ANO-C-2016-00192	CR-ANO-C-2016-00534

CR-ANO-C-2016-01680	CR-ANO- C-2014-02197	CR-ANO- C-2014-02543
CR-ANO-C-2015-00539	CR-ANO-C-2015-01151	CR-ANO-C-2015-03683
CR-ANO-C-2016-00535	CR-ANO-C-2015-03781	CR-ANO-C-2016-00727
HQN-2014-00661	HQN-2015-00946	HQN-2015-00993
HQN-2015-00176		

Radioactive Material and Waste Shipments

Number	Title	Date
14-045	8 B-25 Boxes of Secondary Resin – LQ	April 24, 2014
14-056	2 Sealands of Dry Active Waste – LSA	May 29, 2014
14-099	Unit 1 Primary Resin – Type A	September 11, 2014
15-075	Unit 2 Primary Resin – Type B	June 25, 2015
15-101	2 Sealands of Dry Active Waste - LSA	October 1, 2015
15-131	2 Sealands of Dry Active Waste - LSA	December 3, 2015
16-012	Unit 1 Primary Resin – Type B	January 27, 2016

Radiological Surveys

Number	Title	Date
ANO-1602-0216	Old Steam Generator and Reactor Vessel Closure Head Storage Facility	February 8, 2016
ANO-1602-0218	Pole Barn PS1-21	February 8, 2016
ANO-1605-0345	New Radwaste Storage RW-01A	May 16, 2016
ANO-1605-0349	Rad Material Storage Laundry Building	May 16, 2016
ANO-1606-0102	RW-49 Low Level Rad Waste Sealand Storage Area	June 6, 2016

Miscellaneous Documents

Number	Title	Date
	10 CFR Part 61 Analysis for Oil	May 21, 2013
0CAN021501	Spent Fuel Storage Radioactive Effluent Release Report for 2014	February 3, 2015

Miscellaneous Documents

Number	Title	Date
0CAN021602	Spent Fuel Storage Radioactive Effluent Release Report for 2015	February 9, 2016
0CAN041504	Annual Radioactive Effluent Release Report for 2014	April 28, 2015
0CAN041602	Annual Radioactive Effluent Release Report for 2015	April 28, 2016
0000047007	Engineering Change for Radwaste Reverse Osmosis System (RWRO) Unit for Liquid Radwaste Processing	January 2, 2014
351274001	10 CFR Part 61 Analysis for Dry Active Waste	June 25, 2014
351274002	10 CFR Part 61 Analysis for Unit 1 Secondary Resin	September 3, 2014
351274003	10 CFR Part 61 Analysis for Unit 2 Secondary Resin	September 4, 2014
371318001	10 CFR Part 61 Analysis for Dry Active Waste	June 17, 2015
371318002	10 CFR Part 61 Analysis for Unit 1 Secondary Resin	June 18, 2015
371318003	10 CFR Part 61 Analysis for Unit 2 Secondary Resin	June 18, 2015
371318005	10 CFR Part 61 Analysis for Unit 1 Spent Fuel Pool Filters	July 10, 2015
371318007	10 CFR Part 61 Analysis for Oil	June 18, 2015

Section 4OA1: Performance Indicator Verification

Procedures

Number	Title	Revision Date
EN-LI-114	Regulatory Performance Indicator Process	007
EN-FAP-EP-005	Emergency Preparedness Performance Indicators	005
Desk Guide EP-019	Emergency Planning Performance Indicators	002
	Upgraded Public Alert and Notification System, Arkansas Nuclear One	May 2016

Condition Reports (CRs)

CR-ANO-C-2015-04406 CR-ANO-C-2016-00754

Section 4OA2: Problem Identification and Resolution

Miscellaneous

Number	Title	Revision
TD C470.0090	Instruction for Two Bearing Spherical Roller Oil Lubricated Alternators	000

Condition Reports (CRs)

CR-ANO-2-2016-03307	CR-ANO-2-2016-03327	CR-ANO-2-2016-03384
CR-ANO-2-2013-00012	CR-ANO-2-2014-00506	

Work Orders (WOs)

52620361	52656389	356569	52590333

Section 4OA7: Licensee-Identified Violations

Procedures

Number	Title	Revision
EN-TQ-217	Exam Security	005

Condition Reports (CRs)

CR-ANO-2-2016-02614

The following items are requested for the
Occupational/Public Radiation Safety Inspection
At Arkansas Nuclear One
(June 27 – July 1, 2016)
Integrated Report 2016003

Inspection areas are listed in the attachments below.

Please provide the requested information on or before June 6, 2016.

Please submit this information using the same lettering system as below. For example, all contacts and phone numbers for Inspection Procedure 71124.0**5** should be in a file/folder titled "**5**- A," applicable organization charts in file/folder "**5**- B," etc.

If information is placed on *ims.certrec.com*, please ensure the inspection exit date entered is at least 30 days later than the on-site inspection dates, so the inspectors will have access to the information while writing the report.

In addition to the corrective action document lists provided for each inspection procedure listed below, please provide updated lists of corrective action documents at the entrance meeting. The dates for these lists should range from the end dates of the original lists to the day of the entrance meeting.

If more than one inspection procedure is to be conducted and the information requests appear to be redundant, there is no need to provide duplicate copies. Enter a note explaining in which file the information can be found.

If you have any questions or comments, please contact Natasha Greene at (817)200-1154 or Natasha.Greene@nrc.gov.

Alternatively, you can contact Martin Phalen at (817) 200-1158 or Martin.Phalen@nrc.gov.

PAPERWORK REDUCTION ACT STATEMENT

This letter does not contain new or amended information collection requirements subject to the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). Existing information collection requirements were approved by the Office of Management and Budget, control number 3150-0011.

5. Radiation Monitoring Instrumentation (71124.05)
Date of Last Inspection: May 12, 2014

A. List of contacts and telephone numbers for the following areas:
   1. Effluent monitor calibration
   2. Radiation protection instrument calibration
   3. Installed instrument calibrations
   4. Count room and Laboratory instrument calibrations

B. Applicable organization charts

C. Copies of audits, self-assessments, vendor or NUPIC audits for contractor support and LERs, written since date of last inspection, related to:
   1. Area radiation monitors, continuous air monitors, criticality monitors, portable survey instruments, electronic dosimeters, teledosimetry, personnel contamination monitors, or whole body counters
   2. Installed radiation monitors

D. Procedure index for:
   1. Calibration, use, and operation of continuous air monitors, criticality monitors, portable survey instruments, temporary area radiation monitors, electronic dosimeters, teledosimetry, personnel contamination monitors, and whole body counters.
   2. Calibration of installed radiation monitors

E. Please provide specific procedures related to the following areas noted below. Additional Specific Procedures will be requested by number after the inspector reviews the procedure indexes.
   1. Calibration of portable radiation detection instruments (for portable ion chambers)
   2. Whole body counter calibration
   3. Laboratory instrumentation quality control

F. A summary list of corrective action documents (including corporate and subtiered systems) written since date of last inspection, related to the following programs:
   1. Area radiation monitors, continuous air monitors, criticality monitors, portable survey instruments, electronic dosimeters, teledosimetry, personnel contamination monitors, whole body counters,
   2. Installed radiation monitors,
   3. Effluent radiation monitors
   4. Count room radiation instruments

   NOTE: The lists should indicate the <u>significance level</u> of each issue and the <u>search criteria</u> used. Please provide in document formats which are “searchable” so that the inspector can perform word searches.

G. Offsite dose calculation manual, technical requirements manual, or licensee controlled specifications which lists the effluent monitors and calibration requirements.

H. Current calibration data for the whole body counter’s.

I. Primary to secondary source calibration correlation for effluent monitors.

J. A list of the point of discharge effluent monitors with the two most recent calibration dates and the work order numbers associated with the calibrations.

K. Radiation Monitoring System health report for the previous 12 months

6. Radioactive Gaseous and Liquid Effluent Treatment (71124.06)
Date of Last Inspection: May 12, 2014

A. List of contacts and telephone numbers for the following areas:
   1. Radiological effluent control
   2. Engineered safety feature air cleaning systems

B. Applicable organization charts

C. Audits, self-assessments, vendor or NUPIC audits of contractor support, and LERs written since date of last inspection, related to:
   1. Radioactive effluents
   2. Engineered Safety Feature Air cleaning systems

D. Procedure indexes for the following areas
   1. Radioactive effluents
   2. Engineered Safety Feature Air cleaning systems

E. Please provide specific procedures related to the following areas noted below. Additional Specific Procedures will be requested by number after the inspector reviews the procedure indexes.
   1. Sampling of radioactive effluents
   2. Sample analysis
   3. Generating radioactive effluent release permits
   4. Laboratory instrumentation quality control
   5. In-place testing of HEPA filters and charcoal adsorbers
   6. New or applicable procedures for effluent programs (e.g., including ground water monitoring programs)

F. List of corrective action documents (including corporate and subtiered systems) written since date of last inspection, associated with:
   1. Radioactive effluents
   2. Effluent radiation monitors
   3. Engineered Safety Feature Air cleaning systems

   NOTE: The lists should indicate the significance level of each issue and the search criteria used. Please provide in document formats which are "searchable" so that the inspector can perform word searches.

G. 2015 Annual Radioactive Effluent Release Report, or the two most recent reports.

H. Current Copy of the Offsite Dose Calculation Manual

I. Copy of the 2015 interlaboratory comparison results for laboratory quality control performance of effluent sample analysis, or the two most recent results.

J. Effluent sampling schedule for the week of the inspection

K. New entries into 10 CFR 50.75(g) files since date of last inspection

L. Operations department (or other responsible dept.) log records for effluent monitors removed from service or out of service

M. Listing or log of liquid and gaseous release permits since date of last inspection

N. A list of the technical specification-required air cleaning systems with the two most recent surveillance test dates of in-place filter testing (of HEPA filters and charcoal adsorbers) and laboratory testing (of charcoal efficiency) and the work order numbers associated with the surveillances

O. System Health Report for radiation monitoring instrumentation. Also, please provide a specific list of all effluent radiation monitors that were considered inoperable for 7 days or more since May 12, 2014. If applicable, please provide the relative Special Report and condition report(s).

P. A list of all radiation monitors that are considered § 50.65/Maintenance Rule equipment.

Q. A list of all significant changes made to the Gaseous and Liquid Effluent Process Monitoring System since the last inspection. If applicable, please provide the corresponding UFSAR section in which this change was documented.

R. A list of any occurrences in which a non-radioactive system was contaminated by a radioactive system. Please include any relative condition report(s).

7. Radiological Environmental Monitoring Program (71124.07)
Date of Last Inspection: May 12, 2014

A. List of contacts and telephone numbers for the following areas:
   1. Radiological environmental monitoring
   2. Meteorological monitoring

B. Applicable organization charts

C. Audits, self-assessments, vendor or NUPIC audits of contractor support, and LERs written since date of last inspection, related to:
   1. Radiological environmental monitoring program (including contractor environmental laboratory audits, if used to perform environmental program functions)
   2. Environmental TLD processing facility
   3. Meteorological monitoring program

D. Procedure index for the following areas:
   1. Radiological environmental monitoring program
   2. Meteorological monitoring program

E. Please provide specific procedures related to the following areas noted below. Additional Specific Procedures will be requested by number after the inspector reviews the procedure indexes.
   1. Environmental Program Description
   2. Sampling, collection and preparation of environmental samples
   3. Sample analysis (if applicable)
   4. Laboratory instrumentation quality control
   5. Procedures associated with the Offsite Dose Calculation Manual
   6. Appropriate QA Audit and program procedures, and/or sections of the station's QA manual (which pertain to the REMP)

F. A summary list of corrective action documents (including corporate and subtiered systems) written since date of last inspection, related to the following programs:
   1. Radiological environmental monitoring
   2. Meteorological monitoring

   NOTE: The lists should indicate the <u>significance level</u> of each issue and the <u>search criteria</u> used. Please provide in document formats which are "searchable" so that the inspector can perform word searches.

G. Wind Rose data and evaluations used for establishing environmental sampling locations

H. Copies of the 2 most recent calibration packages for the meteorological tower instruments

I. Copy of the 2015 Annual Radiological Environmental Operating Report and Land Use Census, and current revision of the Offsite Dose Calculation Manual, or the two most recent reports.

J. Copy of the environmental laboratory's interlaboratory comparison program results for 2015, or the two most recent results, if not included in the annual radiological environmental operating report

K. Data from the environmental laboratory documenting the analytical detection sensitivities for the various environmental sample media (i.e., air, water, soil, vegetation, and milk)

L. Quality Assurance audits (e.g., NUPIC) for contracted services

M. Current NEI Groundwater Initiative Plan and status

N. Technical requirements manual or licensee controlled specifications which lists the meteorological instruments calibration requirements

O. A list of Regulatory Guides and/or NUREGs that you are currently committed to relative to the *Radiological Environmental Monitoring Program*. Please include the revision and/or date for the committed item and where this can be located in your current licensing basis/UFSAR.

P. If applicable, per NEI 07-07, provide any reports that document any spills/leaks to groundwater since the last inspection

8. Radioactive Solid Waste Processing, and Radioactive Material Handling, Storage, and Transportation (71124.08)

Date of Last Inspection: May 12, 2014

A. List of contacts and telephone numbers for the following areas:
   1. Solid Radioactive waste processing
   2. Transportation of radioactive material/waste

B. Applicable organization charts (and list of all personnel involved in solid radwaste processing, transferring, and transportation of radioactive waste/materials)

C. Copies of audits, department self-assessments, and LERs written since date of last inspection related to:
   1. Solid radioactive waste management
   2. Radioactive material/waste transportation program

D. Procedure index for the following areas:
   1. Solid radioactive waste management
   2. Radioactive material/waste transportation

E. Please provide specific procedures related to the following areas noted below. Additional Specific Procedures will be requested by number after the inspector reviews the procedure indexes.
   1. Process control program
   2. Solid and liquid radioactive waste processing
   3. Radioactive material/waste shipping
   4. Methodology used for waste concentration averaging, if applicable
   5. Waste stream sampling and analysis

F. A summary list of corrective action documents (including corporate and subtiered systems) written since date of last inspection related to:
   1. Solid radioactive waste
   2. Transportation of radioactive material/waste

   NOTE: The lists should indicate the <u>significance level</u> of each issue and the <u>search criteria</u> used. Please provide in document formats which are “searchable” so that the inspector can perform word searches.

G. Copies of training lesson plans for 49 CFR Part 172, Subpart H, for radwaste processing, packaging, shipping,

H. A summary of radioactive material and radioactive waste shipments made from date of last inspection to present.

I. Waste stream sample analyses results and resulting scaling factors for 2014 and 2015, or the two most recent results.

J. Waste classification reports if performed by vendors (such as for irradiated hardware)

K. A listing of all on-site radwaste/RAM storage facilities. Please include a summary *or* listing of the items stored in each facility, including the *total* amount of radioactivity and the *highest* general area dose rate.

<u>Although it is not necessary to compile the following information, the inspector will also review:</u>

L. Training, and qualifications records of personnel responsible for the conduct of radioactive waste processing, package preparation, shipping, and security.

Additional Information Regarding Tornado-Generated Missile Protection Noncompliances

This attachment describes the plant areas the licensee identified as susceptible to tornado missile impact, the initial compensatory measures taken to restore operability, and the structure, system, and components (SSCs) and technical specification affected.

Unit 1 Upper South Electrical Penetration Room

Date Discovered: June 13, 2016

Condition Report: CR-ANO-1-2016-01788

NRC Notification: Licensee Event Report 05000313/2016-002-00

Compensatory Measures:

- The licensee confirmed the readiness of equipment and procedures dedicated to the Diverse and Flexible Coping Strategy (FLEX).
- The licensee filled an intervening cement block wall with grout to improve its ability to resist tornado missiles.
- The licensee verified that site procedures and training were in place to respond to a predicted tornado, including: site walkdowns to remove or secure potential missiles, and work management controls to protect or restore safe shutdown equipment.
- The licensee updated site procedures and training to respond to a predicted tornado to include the identified tornado missile vulnerabilities and a list of redundant equipment to protect or restore upon identification.
- The licensee verified that site procedures and training were in place to respond to an actual tornado, including: abnormal and emergency operating procedures, FLEX, and prompt damage assessment.
- The licensee instituted control room briefings and training sessions to establish a heightened level of station awareness for the vulnerabilities.

SSCs and Technical Specifications (TS) Affected:

- Cables YJR011L, YJI480G, YJR011M, YJS003K, and YJS003L, Reactor protection system channel C cabling, TS 3.3.1 Action A

- Cables YJS030P and YJS030M, Engineered safeguards actuation system analog channel 3 cabling, TS 3.3.5 Action A

- Cables YJ1421A, YJ1421B, YJ1421C, YJ1421D, YJI421E, and YJ1421F, Emergency feedwater initiation and control channel C cabling, TS 3.3.11 Action C

- Cables GCM022R, GCM022S, GCM022U, RCM021R, RCM021S, and RCM021U, Main steam isolation valve cabling, TS 3.3.11 Action A

Unit 1 Cable Spreading Room

Date Discovered: August 24, 2016

Condition Report: CR-ANO-1-2016-02514

NRC Notification: Event Notification 52195 and Licensee Event Report 05000313/2016-003-00

Compensatory Measures:

- The licensee confirmed the readiness of equipment and procedures dedicated to the Diverse and Flexible Coping Strategy (FLEX).
- The licensee verified that site procedures and training were in place to respond to a predicted tornado, including: site walkdowns to remove or secure potential missiles, and work management controls to protect or restore safe shutdown equipment.
- The licensee updated site procedures and training to respond to a predicted tornado to include the identified tornado missile vulnerabilities and a list of redundant equipment to protect or restore upon identification.
- The licensee verified that site procedures and training were in place to respond to an actual tornado, including: abnormal and emergency operating procedures, FLEX, and prompt damage assessment.
- The licensee instituted control room briefings and training sessions to establish a heightened level of station awareness for the vulnerabilities.

SSCs and Technical Specifications Affected:

- Cables RCA03K and RCG100E, for emergency diesel generator A, TS 3.8.1 Action B
- Cables RCA301F and RCA301D, for the A-3 to B-5 feeder breaker A-301, TS 3.8.9 Action A
- Cables RCA308D and RCA308J, for the emergency diesel generator A output breaker A-308, TS 3.8.1 Action B
- Cables RCA309C and RCA309F, for the A-3 feeder breaker A-309, TS 3.8.9 Action A
- Cables GCA409C and GCA409F, for the A-4 feeder breaker A-409, TS 3.8.9 Action A
- Cable RCA310J, for the A-3 to A-4 crosstie breaker A-310, TS 3.8.9 Action A
- Cable RCB512D, for the A-3 to B-5 feeder breaker B-512, TS 3.8.9 Action A
- Cable RCB513G, for the B-5 to B-6 crosstie breaker B-513, TS 3.8.9 Action A

- Cable RCG100J, for emergency safeguards interlocks for emergency diesel generator A, the A-3 to A-4 crosstie breaker A-310, the A-3 to B-5 feeder breaker A-301, the A-3 to B-5 feeder breaker B-512, the B-5 to B-6 crosstie breaker B-513, and the unit auxiliary transformer to A-1 feeder breaker A-112, TS 3.8.1 Action B and TS 3.8.9 Action A

- Cable RCB512C, for the A-3 to B-5 feeder breaker B-512, TS 3.8.9 Action A

- Cables GCA408D, GCA408J, GCA04K, and GCG200E, for emergency diesel generator B, TS 3.8.1 Action B

- Cables GCA401D and GCA401F, for the A-4 to B-6 feeder breaker A-401, TS 3.8.9 Action A

- Cable GCA410J, for the A-3 to A-4 crosstie breaker A-410, TS 3.8.9 Action A

- Cables GCB512E and GCB612C and GCB612E, for the A-4 to B-6 feeder breaker B-612, TS 3.8.9 Action A

- Cable GCG200J, for emergency safeguards interlocks for emergency diesel generator B, A-3 to A-4 crosstie breaker A-410, A-4 to B-6 feeder breaker A-401, A-4 to B-6 feeder breaker B-612, B-5 to B-6 crosstie breaker B-613, and unit auxiliary transformer feeder to A-2 breaker A-212, TS 3.8.1 Action B and TS 3.8.9 Action A

- Cable GCA08E, for emergency diesel generator B undervoltage relay, TS 3.8.1 Action B and TS 3.8.9 Action A

- Cables GCB5611D and GCB5611C, for vital pressurizer heaters, TS 3.4.9 Action C

- Cable GCB613G, for the B-5 to B-6 crosstie breaker B-613, TS 3.8.9 Action A

- Cable RJI011AB, for pressurizer level indication, TS 3.3.15 Action A

- Cable RJP0727C, for wide range reactor coolant system pressure recorder, TS 3.3.15 Action A

- Cable RJR196E, for reactor coolant system loop A hot leg temperature instrument, TS 3.3.15 Action A

- Cable RJI452B, for quality condensate storage tank level instrument, TS 3.3.15 Action A

Unit 1 Controlled Access Area

Date Discovered: September 11, 2016

Condition Report: CR-ANO-1-2016-02752

NRC Notification: Event Notification 52234 and Licensee Event Report 05000313/2016-003-00

Compensatory Measures:

- The licensee confirmed the readiness of equipment and procedures dedicated to the Diverse and Flexible Coping Strategy (FLEX).
- The licensee verified that site procedures and training were in place to respond to a predicted tornado, including: site walkdowns to remove or secure potential missiles, and work management controls to protect or restore safe shutdown equipment.
- The licensee updated site procedures and training to respond to a predicted tornado to include the identified tornado missile vulnerabilities and a list of redundant equipment to protect or restore upon identification.
- The licensee verified that site procedures and training were in place to respond to an actual tornado, including: abnormal and emergency operating procedures, FLEX, and prompt damage assessment.
- The licensee instituted control room briefings and training sessions to establish a heightened level of station awareness for the vulnerabilities.

SSCs and Technical Specifications Affected:

- Cables GCB6194C and GPB6194A, for high pressure injection pump recirculation valve, TS 3.5.2 Action A
- Cables GPB621A1, A2, B1, B2, C1, C2, and D, for motor control center B-61 and instrument ac panel Y-02, TS 3.8.9 Actions A and B
- Cables GPB614A1, B1, C1, and D, for motor control centers B-62 and B-63, TS 3.8.9 Action A
- Cables GPB623A, B, and C, for reactor building cooling fan C, TS 3.6.5 Action B
- Cables GPB633A, B, and C, for reactor building cooling fan D, TS 3.6.5 Action B
- Cables B6172B and D, for atmospheric dump isolation valve B, TS 3.6.3 Action C
- Cable GCB6326C, for decay heat cooler B outlet valve, TS 3.5.2 Action A
- Cables GJI420A and GJI420D, for steam generator A and B level transmitters, TS 3.3.11 Action A

- Cables GJI420C and GJI420F, for main steam A and B pressure transmitters, TS 3.3.11 Actions A and C, and TS 3.3.14 Action A

- Cables GJI424A1 and GJI424B1, for turbine driven emergency feedwater flow control valves, TS 3.3.11 Action C and TS 3.7.5 Action B

Unit 1 Vital Switchgear

Date Discovered: September 15, 2016

Condition Report: CR-ANO-1-2016-02804

NRC Notification: Event Notification 52242 and Licensee Event Report 05000313/2016-003-00

Compensatory Measures:

- The licensee confirmed the readiness of equipment and procedures dedicated to the Diverse and Flexible Coping Strategy (FLEX).
- The licensee verified that site procedures and training were in place to respond to a predicted tornado, including: site walkdowns to remove or secure potential missiles, and work management controls to protect or restore safe shutdown equipment.
- The licensee updated site procedures and training to respond to a predicted tornado to include the identified tornado missile vulnerabilities and a list of redundant equipment to protect or restore upon identification.
- The licensee verified that site procedures and training were in place to respond to an actual tornado, including: abnormal and emergency operating procedures, FLEX, and prompt damage assessment.
- The licensee instituted control room briefings and training sessions to establish a heightened level of station awareness for the vulnerabilities.

SSCs and Technical Specifications Affected:

- Switchgear A-4, TS 3.8.9 Action A
- Emergency diesel generator A output breaker A-308, TS 3.8.1 Action B
- Offsite power feeder breaker A-309, TS 3.8.1 Action A
- Offsite power feeder breaker A-409, TS 3.8.1 Action A
- Motor control center B-65, TS 3.8.9 Action A
- Switchgear A-3, TS 3.8.9 Action A
- Emergency diesel generator B output breaker A-408, TS 3.8.1 Action B
- Load center B-5, TS 3.8.9 Action A

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 Document Room or from the Publicly Available Records (PARS) component of the NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

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

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

Enclosure:
Inspection Report 05000313/2016003 and
05000368/2016003
w/ Attachments:
1. Supplemental Information
2. DRS Request for Information
3. Additional Information Regarding Tornado-Generated Missile Protection Noncompliances

DISTRIBUTION:
See next page

ADAMS ACCESSION NUMBER: ML16307A436

☒ SUNSI Review By: NFO		ADAMS ☒ Yes ☐ No	☒ Non-Sensitive ☐ Sensitive	☒ Publicly Available ☐ Non-Publicly Available			Keyword: NRC-002
OFFICE	**SRI:DRP/E**	**RI:DRP/E**	**DRS/EB1**	**DRS/EB2**	**DRS/PSB2**	**DRS/OB**	**ORA/ACES**
NAME	BTindell	MTobin	TRFarnholtz	GWerner	HGepford	VGaddy	MHay
SIGNATURE	***/RA/***	***/RA/***	***/RA/***	***/RA JMateycheck for/***	***/RA/***	***/RA/***	***/RAJKramer for/***
DATE	10/27/16	10/21/2016	10/26/16	10/30/16	10/31/2016	10/30/16	10/31/16
OFFICE	**BC:DRP/E**						
NAME	NO'Keefe						
SIGNATURE	***/RA/***						
DATE	11/01/16						

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Letter to Rich Anderson from Neil O'Keefe dated November 2, 2016

SUBJECT: ARKANSAS NUCLEAR ONE – NRC INSPECTION REPORT 05000313/2016003 AND 05000368/2016003 AND EXERCISE OF ENFORCEMENT DISCRETION

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