



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION IV  
1600 EAST LAMAR BOULEVARD  
ARLINGTON, TEXAS 76011-4511

August 9, 2021

Mr. John Dinelli  
Site Vice President  
Arkansas Nuclear One  
Entergy Operations, Inc.  
N-TSB-58  
1448 S.R. 333  
Russellville, AR 72802-0967

**SUBJECT: ARKANSAS NUCLEAR ONE – INTEGRATED INSPECTION  
REPORT 05000313/2021002 AND 05000368/2021002**

Dear Mr. Dinelli:

On June 30, 2021, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Arkansas Nuclear One. On July 1, 2021, the NRC inspectors discussed the results of this inspection with Mr. J. Sullivan, General Manager Plant Operations, and other members of your staff. The results of this inspection are documented in the enclosed report.

One finding of very low safety significance (Green) is documented in this report. This finding involved a violation of NRC requirements. We are treating this violation as a non-cited violation (NCV) consistent with Section 2.3.2 of the Enforcement Policy.

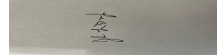
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If you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region IV; and the NRC Resident Inspector at Arkansas Nuclear One.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC Public Document

Room in accordance with Title 10 of the *Code of Federal Regulations* 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,



Signed by Dixon, John  
on 08/09/21

John L. Dixon, Jr., Chief  
Reactor Projects Branch D  
Division of Reactor Projects

Docket Nos. 05000313 and 05000368  
License Nos. DPR-51 and NPF-6

Enclosure: As stated  
w/Attachment: Momentary Loss of Power  
to 4160 Vac bus A2 Event

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ARKANSAS NUCLEAR ONE – INTEGRATED INSPECTION REPORT 05000313/2021002  
AND 05000368/2021002- DATE August 09, 2021

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NAME	RBywater RLB	TDeBey TMD	NBrown NLB	VGaddy	NTaylor NHT
DATE	8/3/2021	7/29/2021	7/30/2021	8/4/2021	8/1/2021
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NAME	HGepford HJG	MHaire msh	AAgrawal ANA	GWarnick ggw	ASanchez/AAS
DATE	8/2/2021	7/30/2021	7/31/21	8/2/2021	8/4/2021
OFFICE	BC:DRP/D				
NAME	JDixon				
DATE	8/5/2021				

**U.S. NUCLEAR REGULATORY COMMISSION  
Inspection Report**

Docket Numbers: 05000313 and 05000368

License Numbers: DPR-51 and NPF-6

Report Numbers: 05000313/2021002 and 05000368/2021002

Enterprise Identifier: I-2021-002-0109

Licensee: Entergy Operations, Inc.

Facility: Arkansas Nuclear One

Location: Russellville, AR

Inspection Dates: April 1, 2021, to June 30, 2021

Inspectors: B. Baca, Health Physicist  
N. Brown, Resident Inspector  
R. Bywater, Senior Resident Inspector  
T. DeBey, Resident Inspector  
J. Drake, Senior Reactor Inspector  
J. O'Donnell, Senior Health Physicist  
A. Patz, Senior Resident Inspector

Approved By: John L. Dixon, Jr., Chief  
Reactor Projects Branch D  
Division of Reactor Projects

Enclosure

## SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee’s performance by conducting an integrated inspection at Arkansas Nuclear One, in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC’s program for overseeing the safe operation of commercial nuclear power reactors. Refer to <https://www.nrc.gov/reactors/operating/oversight.html> for more information.

### List of Findings and Violations

Failure to Provide Appropriate Procedures for 4160 Vac Switchgear Inspections			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Initiating Events	Green NCV 05000313/2021002-01 Open/Closed	[H.9] - Training	71111.12
<p>The inspectors identified a Green finding and associated non-cited violation of Arkansas Nuclear One, Unit 1, Technical Specifications 5.4.1.a, for the licensee’s failure to have an adequate maintenance procedure as required by Regulatory Guide 1.33, “Quality Assurance Program Requirements,” Revision 2, February 1978. Regulatory Guide 1.33, Appendix A, Section 9, “Procedures for Performing Maintenance,” requires, in part, that maintenance should be properly preplanned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances. Specifically, Procedure OP-1416.002, “U1 A2 Bus Switchgear Inspection,” Revision 21, did not adequately provide the level of detail required, including qualitative or quantitative acceptance criteria, to ensure correct alignment of potential transformer contacts. A manual trip of Arkansas Nuclear One, Unit 1, from full power was caused by a bent potential transformer contact in the 4160 Vac A2 bus that was not identified during previous inspections.</p>			

### Additional Tracking Items

Type	Issue Number	Title	Report Section	Status
LER	05000313/2021-001-00	Reactor Manual Trip due to Temporary Loss of Non-Vital 4160 Volt Bus	71153	Closed

## PLANT STATUS

Unit 1 entered the inspection period at 90 percent power and then shut down for a planned refueling outage between April 9 and May 11, 2021. Unit 1 operated at or near full power for the remainder of the inspection period.

Unit 2 operated at or near full power for the duration of the inspection period.

## INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at <http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html>. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

Starting on March 20, 2020, in response to the National Emergency declared by the President of the United States on the public health risks of the coronavirus (COVID-19), resident and regional inspectors were directed to begin telework and to remotely access licensee information using available technology. During this time, the resident inspectors performed periodic site visits each week, increasing the amount of time on site as local COVID-19 conditions permitted. As part of their onsite activities, resident inspectors conducted plant status activities as described in IMC 2515, Appendix D; observed risk significant activities; and completed on site portions of IPs. In addition, resident and regional baseline inspections were evaluated to determine if all or a portion of the objectives and requirements stated in the IP could be performed remotely. If the inspections could be performed remotely, they were conducted per the applicable IP. In some cases, portions of an IP were completed remotely and on site. The inspections documented below met the objectives and requirements for completion of the IP.

## REACTOR SAFETY

### 71111.01 - Adverse Weather Protection

#### Impending Severe Weather Sample (IP Section 03.02) (1 Sample)

- (1) The inspectors evaluated the adequacy of the overall preparations to protect risk-significant systems from a severe thunderstorm warning on June 21, 2021.

### 71111.04 - Equipment Alignment

#### Partial Walkdown Sample (IP Section 03.01) (3 Samples)

The inspectors evaluated system configurations during partial walkdowns of the following systems/trains:

- (1) Unit 1 emergency diesel generator 1 during Unit 1 emergency diesel generator 2 outage on May 20, 2021
- (2) Unit 1 service water loop 1 during Unit 1 emergency diesel generator 2 outage on June 9, 2021
- (3) Unit 2 emergency diesel generator 2 during Unit 2 emergency diesel generator 1 outage on June 30, 2021

#### 71111.05 - Fire Protection

##### Fire Area Walkdown and Inspection Sample (IP Section 03.01) (4 Samples)

The inspectors evaluated the implementation of the fire protection program by conducting a walkdown and performing a review to verify program compliance, equipment functionality, material condition, and operational readiness of the following fire areas:

- (1) Unit 2 post-accident sampling building, Fire Zone PASS building, on April 1, 2021
- (2) Unit 2 turbine-driven emergency feedwater pump A room, Fire Zone 2024, on May 21, 2021
- (3) Unit 1 intake structure, Fire Area N, on June 21, 2021
- (4) Unit 2 intake structure, Fire Area OO, on June 30, 2021

#### 71111.08P - Inservice Inspection Activities (PWR)

##### PWR Inservice Inspection Activities Sample (IP Section 03.01) (1 Sample)

- (1) The inspectors verified that the Unit 1 reactor coolant system boundary, steam generator tubes, reactor vessel internals, risk-significant piping system boundaries, and containment boundary are appropriately monitored for degradation and that repairs and replacements were appropriately fabricated, examined and accepted by reviewing the following activities from March 22 to May 4, 2021:

##### 03.01.a - Nondestructive Examination and Welding Activities

- Ultrasonic Examination
  - a. Containment Sump, P-66 IWE CS Sleeve to Flued Head
  - b. Containment Sump, P-67 IWE CS Sleeve to Flued Head
  - c. Containment Sump, P-68 IWE CS Sleeve to Flued Head
  - d. Oily Waste Separator, OW-117-201, 6-inch Buried Pipe
  - e. Service Water, MIC-I (HBD-2-18"), straight pipe
- Visual Examination
  - a. Containment, P- 66, Reactor Building Sump Recirc Penetration Type VII
  - b. Containment, P- 67, Reactor Building Sump Recirc Penetration Type VII
  - c. Containment, P- 68, Reactor Building Sump Recirc Penetration Type VII
- The inspector reviewed the weld package for repairs on the main feedwater system for valve FW-2837, welds FW-1, FW-2, FW-3, FW-4, FW-5.

03.01.b - Pressurized-Water Reactor Vessel Upper Head Penetration Examination Activities

- The inspector reviewed the NDE report for the Reactor Vessel Upper Head Penetration examination activities which consisted of an ultrasonic examination of all CRDM nozzles and a demonstrated volumetric leak path assessment of all J-groove welds and supplemental eddy current examination of 35 CRDM nozzle inside surfaces.

03.01.c – Pressurized-Water Reactor Boric Acid Corrosion Control Activities

- The following boric acid evaluations and condition reports were reviewed:
  - a. CR-ANO-1-2018-01078, CR-ANO-1-2019-02272, CR-ANO-1-2020-01226, CR-ANO-1-2020-01229, CR-ANO-1-2020-01377

03.01.d – Pressurized-Water Reactor Steam Generator Tube Examination Activities

- 100 percent full length inspection of all tubes with bobbin coil probe
- X-Probe and bobbin probe inspection of the tubes surrounding each tie rod to evaluate tie rod bowing

Problem Identification and Resolution review of Inservice items

The inspector evaluated a sample of 34 condition reports associated with inservice inspection activities. No findings or violations of more than minor significance were identified.

71111.11Q - Licensed Operator Requalification Program and Licensed Operator Performance

Licensed Operator Performance in the Actual Plant/Main Control Room (IP Section 03.01) (1 Sample)

- (1) The inspectors observed and evaluated licensed operator performance in the Unit 1 control room during plant cooldown, depressurization, and transfer to shutdown cooling in preparation for Refueling Outage 29 on April 12, 2021.

Licensed Operator Requalification Training/Examinations (IP Section 03.02) (1 Sample)

- (1) The inspectors observed and evaluated the Unit 2 licensed operator simulator evaluation scenario on June 15, 2021.

71111.12 - Maintenance Effectiveness

Maintenance Effectiveness (IP Section 03.01) (1 Sample)

The inspectors evaluated the effectiveness of maintenance to ensure the following structures, systems, and components (SSCs) remain capable of performing their intended function:



- (1) Alignment checks of potential transformer contacts in 4160 Vac switchgear on June 7, 2021

#### Quality Control (IP Section 03.02) (1 Sample)

The inspectors evaluated the effectiveness of maintenance and quality control activities to ensure the following SSC remains capable of performing its intended function:

- (1) Quality control for stored fuel oil/preventive maintenance strategy of diverse and flexible mitigation capability response equipment on June 29, 2021

#### 71111.13 - Maintenance Risk Assessments and Emergent Work Control

##### Risk Assessment and Management Sample (IP Section 03.01) (3 Samples)

The inspectors evaluated the accuracy and completeness of risk assessments for the following planned and emergent work activities to ensure configuration changes and appropriate work controls were addressed:

- (1) Unit 1 Refueling Outage 29 plan on April 6, 2021
- (2) Unit 1 planned entry into lowered reactor coolant system inventory on April 29, 2021
- (3) Unit 1 and Unit 2 work controls for spurious opening of 161 kV switchyard breaker B1218 during alternate AC diesel generator maintenance outage on June 24, 2021

#### 71111.15 - Operability Determinations and Functionality Assessments

##### Operability Determination or Functionality Assessment (IP Section 03.01) (5 Samples)

The inspectors evaluated the licensee's justifications and actions associated with the following operability determinations and functionality assessments:

- (1) Unit 1 emergency feedwater initiation and control channel B steam generator B pressure transmitter containment isolation valve MS-6843 seat leakage operability determination on April 1, 2021
- (2) Unit 2 Loop 2 service water pinhole leak operability determination on May 7, 2021
- (3) Unit 1 high pressure injection system, all flow transmitters improper calibration/recalibration operability determination, on May 25, 2021
- (4) Common unit meteorological tower functionality assessment and availability of alternate meteorological data on June 1, 2021
- (5) Unit 1 borated water storage tank internal inspection operability determination on June 3, 2021

#### 71111.18 - Plant Modifications

##### Temporary Modifications and/or Permanent Modifications (IP Section 03.01 and/or 03.02) (1 Sample)

The inspectors evaluated the following temporary or permanent modifications:

- (1) Unit 1 emergency diesel room exhaust fan replacements on May 24, 2021

### 71111.19 - Post-Maintenance Testing

#### Post-Maintenance Test Sample (IP Section 03.01) (2 Samples)

The inspectors evaluated the following post-maintenance test activities to verify system operability and functionality:

- (1) Unit 1 service water pump P-4C post-maintenance testing after pump shaft replacement on June 29, 2021
- (2) Common unit diesel-driven fire pump P-6B post-maintenance testing after semi-annual inspection and preventive maintenance on June 30, 2021

### 71111.20 - Refueling and Other Outage Activities

#### Refueling/Other Outage Sample (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated Unit 1 Refueling Outage 29 activities from April 9 to May 11, 2021.

### 71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

#### Surveillance Tests (other) (IP Section 03.01) (6 Samples)

- (1) Unit 1 surveillance testing of five main steam safety valves on April 15, 2021
- (2) Unit 2 surveillance testing of moderator temperature coefficient on April 22, 2021
- (3) Unit 1 surveillance testing of emergency diesel generator 1 on May 3, 2021
- (4) Unit 1 core power distribution surveillance testing after refueling outage on May 12, 2021
- (5) Unit 1 service water system surveillance testing on May 17, 2021
- (6) Unit 1 surveillance testing of boron concentration in primary coolant water on May 19, 2021

#### Containment Isolation Valve Testing (IP Section 03.01) (1 Sample)

- (1) Unit 1 local leak rate testing of reactor building sump isolation valve CV-4400 on April 29, 2021

#### FLEX Testing (IP Section 03.02) (1 Sample)

- (1) Annual surveillance testing of FLEX portable pumps and generators on May 11, 2021

## **RADIATION SAFETY**

### 71124.01 - Radiological Hazard Assessment and Exposure Controls

#### Radiological Hazard Assessment (IP Section 03.01) (1 Sample)

- (1) The inspectors evaluated how the licensee identifies the magnitude and extent of radiation levels and the concentrations and quantities of radioactive materials and how the licensee assesses radiological hazards.

### Instructions to Workers (IP Section 03.02) (1 Sample)

The inspectors evaluated instructions to workers including radiation work permits (RWP) used to access high radiation areas.

- (1) The inspectors reviewed the following radiation work permit (RWP) packages, electronic alarming dosimeter condition reports, and labeling of containers:
  - RWP 2021-1471, "1R29 Reactor Pressure Vessel Closure Head – Volumetric and Surface Exams," Revision 0
  - RWP 2021-1442, "1R29 Steam Generator Primary Side Eddy Current Inspection and Repair Activities," Revision 0
  - RWP 2021-1406, "1R29 Radwaste Processing and Shipping," Revision 0
  - CR-ANO-1-2020-01134 – Worker received an unanticipated dose rate alarm and took appropriate actions
  - CR-ANO-C-2020-01365 – Worker received a dose alarm during Unit 2 under vessel walk down; the alarm was determined to be instrument malfunction
  - Yellow radioactive material trash bags [various areas in the Radiologically Controlled Area]
  - Two Intermodal containers of Dry Active Waste [ESUU300322 and ESUU300545]
  - Storage box (EQ-216) containing tensioner cables on the Reactor Building - 404-foot elevation

### Contamination and Radioactive Material Control (IP Section 03.03) (2 Samples)

The inspectors evaluated licensee processes for monitoring and controlling contamination and radioactive material:

- (1) Observed licensee surveys of potentially contaminated material leaving the radiologically controlled area
- (2) Observed workers exiting the Unit 1 containment building during a refueling outage

### Radiological Hazards Control and Work Coverage (IP Section 03.04) (3 Samples)

The inspectors evaluated in-plant radiological conditions during facility walkdowns and observation of radiological work activities. The inspectors reviewed the following radiological work packages for activities within the Unit 1 containment building:

- (1) RWP 2021-1442, "1R29 Steam Generator Primary Side Eddy Current Inspection and Repair Activities," Revision 0, specifically for installation of nozzle dams and eddy current equipment
- (2) RWP 2021-1471, "1R29 Reactor Pressure Vessel Closure Head – Volumetric and Surface Exams," Revision 0, specifically for under head inspection activities
- (3) The inspectors also reviewed the following radiological work package for activities associated with processing and handling of radioactive waste: RWP 2021-1406, "1R29 Radwaste Processing and Shipping," Revision 0, specifically for Shipment RSR-21-038

High Radiation Area and Very High Radiation Area Controls (IP Section 03.05) (5 Samples)

The inspectors evaluated licensee controls of the following High Radiation Areas and Very High Radiation Areas:

- (1) In-Core Tunnel was controlled as a Very High Radiation Area on the Unit 1 Containment Building – 335-foot elevation
- (2) Access to the In-Core Tunnel was controlled as a Technical Specification (TS) High Radiation Area (HRA) on the Unit 1 Containment Building – 335-foot elevation
- (3) Reactor Vessel Closure Head stand was controlled as a TS HRA using the flashing lights control option on the Unit 1 Containment Building – 404-foot elevation
- (4) The T-11 Tank Room was controlled as a TS HRA in the Unit 1 Auxiliary Building – 317-foot elevation
- (5) The F3A/B Filter Room was controlled as a TS HRA in the Unit 1 Auxiliary Building – 335-foot elevation

Radiation Worker Performance and Radiation Protection Technician Proficiency (IP Section 03.06) (1 Sample)

- (1) The inspectors evaluated radiation worker and radiation protection technician performance as it pertains to radiation protection requirements.

71124.03 - In-Plant Airborne Radioactivity Control and Mitigation

Permanent Ventilation Systems (IP Section 03.01) (2 Samples)

The inspectors evaluated the configuration of the following permanently installed ventilation systems:

- (1) Unit 1 control room emergency ventilation system
- (2) Emergency operation facility ventilation system

Temporary Ventilation Systems (IP Section 03.02) (2 Samples)

The inspectors evaluated the configuration of the following temporary ventilation systems:

- (1) Unit 1 Reactor Containment Building, 426-foot elevation - Reactor head ventilation and Alpha Level 2 decontamination tent ventilation
- (2) Unit 1 Reactor Containment Building, 335-foot elevation - Steam Generator D-ring eddy current testing

Use of Respiratory Protection Devices (IP Section 03.03) (1 Sample)

- (1) The inspectors evaluated the licensee's use of respiratory protection devices during Unit 1 refueling outage work activities.

Self-Contained Breathing Apparatus for Emergency Use (IP Section 03.04) (1 Sample)

- (1) The inspectors evaluated the licensee's use and maintenance of self-contained breathing apparatuses.

## **OTHER ACTIVITIES – BASELINE**

### 71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

#### MS05: Safety System Functional Failures (SSFFs) Sample (IP Section 02.04) (2 Samples)

- (1) Unit 1 (April 1, 2020 through March 31, 2021)
- (2) Unit 2 (April 1, 2020 through March 31, 2021)

#### BI01: Reactor Coolant System (RCS) Specific Activity Sample (IP Section 02.10) (2 Samples)

- (1) Unit 1 (April 1, 2020 through March 31, 2021)
- (2) Unit 2 (April 1, 2020 through March 31, 2021)

#### BI02: RCS Leak Rate Sample (IP Section 02.11) (2 Samples)

- (1) Unit 1 (April 1, 2020 through March 31, 2021)
- (2) Unit 2 (April 1, 2020 through March 31, 2021)

#### OR01: Occupational Exposure Control Effectiveness Sample (IP Section 02.15) (1 Sample)

- (1) Unit 1 and Unit 2 (January 1, 2020 through December 31, 2020)

#### PR01: Radiological Effluent Technical Specifications/Offsite Dose Calculation Manual Radiological Effluent Occurrences (RETS/ODCM) Radiological Effluent Occurrences Sample (IP Section 02.16) (1 Sample)

- (1) Unit 1 and Unit 2 (January 1, 2020 through December 31, 2020)

### 71153 - Follow Up of Events and Notices of Enforcement Discretion

#### Event Report (IP Section 03.02) (1 Sample)

The inspectors evaluated the following licensee event reports (LERs):

- (1) LER 05000313/2021-001-00, Reactor Manual Trip due to Temporary Loss of Non-Vital 4160 Volt Bus (ADAMS Accession No. ML21133A020). The inspection conclusions associated with this LER are documented in this report as Non-Cited Violation 05000313/2021002-01.

## INSPECTION RESULTS

Failure to Provide Appropriate Procedures for 4160 Vac Switchgear Inspections			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Initiating Events	Green NCV 05000313/2021002-01 Open/Closed	[H.9] - Training	71111.12
<p>The inspectors identified a Green finding and associated non-cited violation of Arkansas Nuclear One, Unit 1, Technical Specifications 5.4.1.a, for the licensee's failure to have an adequate maintenance procedure as required by Regulatory Guide 1.33, "Quality Assurance Program Requirements," Revision 2, February 1978. Regulatory Guide 1.33, Appendix A, Section 9, "Procedures for Performing Maintenance," requires, in part, that maintenance should be properly preplanned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances. Specifically, Procedure OP-1416.002, "U1 A2 Bus Switchgear Inspection," Revision 21, did not adequately provide the level of detail required, including qualitative or quantitative acceptance criteria, to ensure correct alignment of potential transformer contacts. A manual trip of Arkansas Nuclear One, Unit 1, from full power was caused by a bent potential transformer contact in the 4160 Vac A2 bus that was not identified during previous inspections.</p>			
<p><u>Description:</u> On March 14, 2021, while operating at full power, the Arkansas Nuclear One (ANO) Unit 1 reactor experienced a loss of power to the non-safety-related 4160 Vac bus A2, which feeds safety-related 4160 Vac bus A4. Reactor operators manually tripped the reactor as required by their procedures. Emergency diesel generator B automatically started and provided power to the A4 bus. The licensee's adverse condition analysis determined that a bent contact in the A2 bus potential transformer drawer resulted in contact misalignment, loss of electrical continuity, and loss of power to the A2 bus. The licensee concluded the contact most likely became bent during refurbishment of the A2 bus in 2013. The inspectors reviewed the A2 bus maintenance records and found that the licensee performed A2 bus potential transformer drawer contact alignment inspections using Procedure OP-1416.002 in 2013, 2016, and 2019. Each of these inspections documented satisfactory alignment. The technique used in the procedure to check contact alignment was a "contact wipe check" using Mobil 28 grease. The inspectors determined that Procedure OP-1416.002 was inadequate because it did not provide instructions for how to perform the wipe check and did not contain quantitative or qualitative acceptance criteria for wipe check results. The procedure had a table with entries stating, "Contact wiped using Mobil 28 grease," and, "Ensure proper contact wipe using Mobil 28 grease." Acceptance criteria specified were: "Sat" and "Unsat." The procedure was inadequate to identify the bent contact in the A2 bus potential transformer drawer.</p> <p>The inspectors also examined the licensee's procedures for inspecting potential transformer contact alignment in all the other seven Unit 1 and Unit 2 4160 Vac buses and found similar inadequate inspection acceptance criteria. Additionally, the inspectors identified several examples where the procedures were not written consistently using language required by Procedure CPG-001, "ANO Procedure Writer's Guide," Revision 2. For example, the procedures inconsistently used action words such as "verify," "check," and, "ensure," which have different specific meanings. Also, although the potential transformer drawers for the eight ANO Unit 1 and Unit 2 4160 Vac buses are identical General Electric devices, the licensee's inspection procedures varied considerably in format and content among them.</p>			

Corrective Actions: The licensee cleaned and realigned the potential transformer contacts and restored the A2 bus to normal operation. A condition report was written with corrective actions to perform an adverse condition analysis of the event, review and revise inspection procedures, and complete extent of condition inspections of potential transformer contacts in the other buses. The Unit 1 inspections were completed in the spring 2021 refueling outage and the Unit 2 inspections were scheduled to be performed in the fall 2021 refueling outage.

Corrective Action References: Condition Reports CR-ANO-1-2021-00457, CR-ANO-1-2021-00490, CR-ANO-1-2021-00491, and CR-ANO-2-2021-00709

Performance Assessment:

Performance Deficiency: The inspectors determined that the failure to have an adequate maintenance procedure to correctly perform inspection of potential transformer contact alignment in 4160 Vac bus A2 in accordance with Technical Specification 5.4.1.a and Regulatory Guide 1.33 was a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the procedure quality attribute of the Initiating Events cornerstone and adversely affected the cornerstone objective to limit the likelihood of events that upset plant stability and challenge critical safety functions during shutdown as well as power operations. Specifically, Procedure OP-1416.002, "U1 A2 Bus Switchgear Inspection," Revision 21, did not adequately provide the level of detail required, including qualitative or quantitative acceptance criteria, to ensure correct alignment of potential transformer contacts. A manual trip of ANO Unit 1 from full power was caused by a bent potential transformer contact in the 4160 Vac A2 bus that was not identified during previous inspections.

Significance: The inspectors assessed the significance of the finding using Appendix A, "The Significance Determination Process (SDP) for Findings At-Power." A detailed risk evaluation was required for this finding because it was a condition that caused a reactor trip and the loss of mitigation equipment (auxiliary feedwater pump P-75, powered from the A2 bus). A senior reactor analyst performed the detailed risk assessment and determined that the estimated increase in core damage frequency from internal events for this performance deficiency was 3.5E-7/year. The analyst determined the risk contribution due to external events was insignificant. There was no significant contribution to large early release frequency. Therefore, the finding was of very low safety significance (Green). The full Detailed Risk Assessment is provided as an attachment to this report.

Cross-Cutting Aspect: H.9 - Training: The organization provides training and ensures knowledge transfer to maintain a knowledgeable, technically competent workforce and instill nuclear safety values. Specifically, knowledge transfer and knowledge retention strategies were not applied to ensure technicians were technically competent in the performance of wipe checks of potential transformer contacts while using inadequate inspection procedures.

Enforcement:

Violation: Technical Specification 5.4.1.a for Unit 1 requires, in part, that written procedures be established, implemented, and maintained covering the applicable procedures recommended in Appendix A to Regulatory Guide 1.33, "Quality Assurance Program Requirements," Revision 2, February 1978. Regulatory Guide 1.33, Appendix A, Section 9, "Procedures for Performing Maintenance," requires, in part, that maintenance should be properly preplanned and performed in accordance with written procedures, documented instructions, or drawings appropriate to the circumstances.

Contrary to the above, prior to March 14, 2021, the licensee failed to create written procedures, documented instructions, or drawings appropriate to the circumstances to perform inspection of potential transformer contact alignment in 4160 Vac buses. Specifically, the licensee did not provide an adequate level of detail, including qualitative or quantitative acceptance criteria, in Procedure OP-1416.002, "Unit 1 A2 Bus Inspection," Revision 21, to ensure correct alignment of potential transformer contacts. A manual reactor trip of ANO Unit 1 from full power was caused by a bent potential transformer contact in the 4160 Vac A2 bus that was not identified during previous inspections.

Enforcement Action: This violation is being treated as a non-cited violation, consistent with Section 2.3.2 of the Enforcement Policy.

## **EXIT MEETINGS AND DEBRIEFS**

The inspectors verified no proprietary information was retained or documented in this report.

- On April 22, 2021, the inspectors presented the occupational radiation safety inspection results to Mr. J. Dinelli, Site Vice President, and other members of the licensee staff.
- On May 5, 2021, the inspectors presented the ANO Unit 1 inservice inspection results to Mr. J. Dinelli, Site Vice President, and other members of the licensee staff.
- On July 1, 2021, the inspectors presented the integrated inspection results to Mr. J. Sullivan, General Manager Plant Operations, and other members of the licensee staff.



## DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.01	Procedures	1203.025	Natural Emergencies	77
71111.04	Corrective Action Documents	CR-ANO-	2-2021-00783, 2-2021-00785, 2-2021-00812, C-2021-01519	
71111.04	Drawings	M-217, Sheet 1	Emergency Diesel Generators Fuel Oil Storage	91
71111.04	Drawings	M-217, Sheet 4	Emergency Diesel Generators K-4A/K-4B Starting Air System	9
71111.04	Procedures	OP-1104.029	Service Water and Auxiliary Cooling System	122
71111.04	Procedures	OP-1104.036	Emergency Diesel Generator Operation Attachment A	86
71111.04	Procedures	OP-2104.036	Emergency Diesel Generator Operations	99
71111.04	Work Orders	WO	52933844, 52935896	
71111.05	Corrective Action Documents	CR-ANO-	2-2021-1114, C-2021-0944, C-2021-0945, C-2021-0946	
71111.05	Drawings	FP-110, Sheet 1	Fire Zone Intake Structure	11
71111.05	Drawings	FP-2104	Fire Zone Ground Floor Plan EL 354'	40
71111.05	Drawings	FP-2105, Sheet 1	Fire Zone Plan Below Grade EL 335'-0"	29
71111.05	Drawings	FP-2112	Fire Zone Post Accident Sampling Facilities	8
71111.05	Miscellaneous		Unit 2 Prefire Plans	17
71111.05	Miscellaneous		Fire Hazards Analysis Arkansas Nuclear One – Unit 1 and Unit 2	20
71111.05	Miscellaneous		Unit 1 Prefire Plans	21
71111.05	Procedures	EN-DC-161	Control of Combustibles	24
71111.08P	Calculations	CALC-20-E-0001-24	EVALUATION OF 14-INCH SERVICE WATER PIPE WALL THINNING, LINE HBD-14-14", MIC LOCATION 9	0
71111.08P	Calculations	CALC-88-E-0100-31	Calculation for Unit 1 Intermediate Cooling Water	1
71111.08P	Calculations	CALC-ANO1-EP-20	ANO-1 Steam Generator Secondary Side Integrity Plan	3
71111.08P	Corrective Action Documents	CR-ANO-	1-2004-01230, 1-2008-02183, 1-2016-03851, 1-2018-01775, 1-2019-03062, 1-2021-00871, 1-2021-01090, 1-2021-01135, 1-2021-01456, 1-2021-01767, 1-2021-01768, 1-2021-01769, 1-2021-01770	
71111.08P	Corrective Action	CR-ANO-	1-2021-00704, 1-2021-00705, 1-2021-00708, 1-2021-00883,	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Documents Resulting from Inspection		1-2021-01031, 1-2021-01201, 1-2021-01263, 1-2021-01370, 1-2021-01468, 2-2021-00754	
71111.08P	Miscellaneous		R29 Reactor Vessel Head Inspection-BARK1	3
71111.08P	Miscellaneous	BARK1	Reactor Vessel Head Inspection Plan	3
71111.08P	Miscellaneous	WDI-PJF-344403-EPP-001	Examination Program Plan for the Arkansas Nuclear One Unit 1	1
71111.08P	Miscellaneous	WDI-PJF-344403-EPP-001	Examination Program Plan for the Arkansas Nuclear One Unit 1	29
71111.08P	Procedures	CEP-BAC-001	Boric Acid Corrosion Control (BACC) Program Plan	2
71111.08P	Procedures	CEP-CII-003_308-1	Visual Examinations of Class MC Components	308
71111.08P	Procedures	CEP-NDE-0121	Reactor Vessel Upper Head (RVUH) Nozzle Penetration Non-Visual Examination Guidelines	1
71111.08P	Procedures	CEP-NDE-0400	Ultrasonic Examination	8
71111.08P	Procedures	CEP-NDE-0407	Straight Beam Ultrasonic Examination of Bolts and Studs (ASME XI)	8
71111.08P	Procedures	CEP-NDE-0423	Manual Ultrasonic Examination of Austenitic Piping Welds (ASME XI)	9
71111.08P	Procedures	CEP-NDE-0901	VT-1 Examination	6
71111.08P	Procedures	CEP-NDE-0902	VT-2 Examination	9
71111.08P	Procedures	CEP-NDE-0903	VT-3 Examination	6
71111.08P	Procedures	CEP-NDE-0955	Visual Examination (VE) of Bare-Metal Surfaces	308
71111.08P	Procedures	CEP-WP-GWS-1	General Welding Standard ASME/ANSI	5
71111.08P	Procedures	EN-DC-319	Boric Acid Corrosion Control (BACC) Program	12
71111.08P	Procedures	SEP-ISI-ANO1-101	Program Section For ASME Section XI, Division 1 ANO 1 Inservice Inspection Program	8
71111.08P	Work Orders	WO-ANO-	301122, 528933, 51511812, 52668905, 52914122	
71111.11Q	Corrective Action Documents	CR-ANO-	C-2021-01182	
71111.11Q	Miscellaneous	ORAT	Outage Risk Assessment Team Report	03/29/2021
71111.11Q	Miscellaneous	SES-2-034	Unit 2 Dynamic Exam Scenario	7
71111.11Q	Miscellaneous	SES-2-063	Unit 2 Dynamic Exam Scenario	2

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.11Q	Procedures	OP-1102.010	Plant Shutdown and Cooldown	86
71111.11Q	Procedures	OP-1104.004	Decay Heat Removal Operating Procedure	133
71111.12	Corrective Action Documents	CR-ANO-	1-2021-00490, 1-2021-00491, C-2019-00471, HQN-2015-01089	
71111.12	Miscellaneous	CPG-001	Procedure Writer's Guide	2
71111.12	Miscellaneous	EPRI 1003089	Maintenance of General Electric Magne-Blast M26 and M36 Switchgear	10/2001
71111.12	Miscellaneous	IPH1250/175DJ-TCL	Installation and Operation Manual: High Performance Industrial Pumping Module	11/2014
71111.12	Miscellaneous	OMRG36864	Operator's Manual 9.0L OEM Diesel Engines	03/07/2013
71111.12	Miscellaneous	TDG971 0010	FLEX Portable Diesel Generator	0
71111.12	Procedures	OP-1416.001	Unit 1 A1 Bus Switchgear Inspection	20
71111.12	Procedures	OP-1416.002	Unit 1 A2 Bus Switchgear Inspection	21
71111.12	Procedures	OP-1416.004	Unit 1 A4 Bus Switchgear Inspection	18
71111.12	Procedures	OP-1416.008	Unit 1 A3 Bus Switchgear Inspection	17
71111.12	Work Orders	WO	52827304	
71111.13	Corrective Action Documents	CR-ANO-	1-2021-00537, C-2021-01252	
71111.13	Miscellaneous		ANO Unit1 Operator Logs	04/29/2021
71111.13	Miscellaneous		Outage Risk Assessment Team Review Comments	03/16/2021
71111.13	Miscellaneous		ANO Unit 1 Outage Schedule	1
71111.13	Procedures	1015.048	Shutdown Operations Protection Plan	30
71111.13	Procedures	EN-OU-108	Shutdown Safety Management Program (SSMP)	10
71111.15	Calculations	CALC-21-E-0003-01	T-3 BWST Tank 1R29 NDE Review and Boric Acid Corrosion rate	05/02/2021
71111.15	Calculations	CALC-85-EQ-0003-021		
71111.15	Corrective Action Documents	CR-ANO-	1-2019-03062, 1-2021-00621, 1-2021-00641, 1-2021-01039, 1-2021-01090, 1-2021-01105, 1-2021-01106, 1-2021-01141, 1-2021-01150, 1-2021-01370, 2-2021-00739, C-2021-01467, C-2021-01499, C-2021-01673	
71111.15	Drawings	M-206, Sheet 1	Steam Generator Secondary System	133
71111.15	Miscellaneous		Arkansas Nuclear One Emergency Plan	46

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.15	Miscellaneous		Unit 1 Narrative Log	06/01/2021
71111.15	Miscellaneous		Unit 1 Shift Relief Sheet	04/01/2021
71111.15	Miscellaneous	EC 89930	Engineering Review of NDE Prepared On T-3	05/02/2021
71111.15	Miscellaneous	EC-83616	Unit 1 Online Rosemount EQ Transmitter Replacement	06/2020
71111.15	Procedures	1903.011	Emergency Response/Notifications	60
71111.15	Procedures	1904.002	Offsite Dose Projections	50
71111.15	Procedures	EN-MA-107	Post-Maintenance Testing	
71111.15	Procedures	EN-OP-104	Operability Determination Process	16
71111.15	Procedures	OP-1304.185	Unit 1 Green Channel High Pressure Injection Flow Inst Cal	11
71111.15	Procedures	OP-1304.188	Unit 1 Red Channel High Pressure Injection Flow Inst Cal	10
71111.15	Work Orders	WO	560988, 561566, 50235828, 52886069, 52914122	
71111.18	Corrective Action Documents	CR-ANO-	1-2021-00679, 1-2021-00798, 1-2021-00892, 1-2021-01076, 1-2021-01118, 1-2021-01156, 1-2021-01283, 1-2021-01284, 1-2021-01340, 1-2021-01378, 1-2021-01386, 1-2021-01634, 1-2021-01647, 1-2021-01800, 1-2021-01818	
71111.18				
71111.18	Miscellaneous	12476506	Failure Mode Analysis for CR-ANO-1-2021-01818	0
71111.18	Miscellaneous	EC-83454	Replace Unit 1 EDG Room Ventilation Fans (VEF-24A/B/C/D) With New Fans	0
71111.18	Miscellaneous	EC-85435	Replace Unit 1 EDG Room Ventilation Fan VEF-24A	0
71111.18	Miscellaneous	FCR-89796	Field Change Request to Update TDC747 0030 Which Incorrectly Identifies the Direction of Rotation as CCW Installation, Operation, Maintenance and Handling	0
71111.18	Miscellaneous	PAD for EC-83454	50.59 Screening for ANO EDG Replacement Fans	0
71111.18	Miscellaneous	TDC747 0030	Instructions for Curtiss Wright EDG Exhaust Fans	0
71111.18	Procedures	OP-6030.210	Electrical Scheme Testing	4
71111.18	Procedures	OP-6030.211	Motor Run Test	
71111.18	Work Orders	WO	527996, 527997, 527998, 527999, 562254, 552799	
71111.19	Corrective Action Documents	CR-ANO-	1-2021-01523, 1-2021-01678	
71111.19	Procedures	1104.032	Fire Protection Systems	94
71111.19	Procedures	OP-1104.029	Service Water and Aux Cooling System Attachment C	122

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.19	Procedures	OP-1306.027	Unit 1 K-5 Diesel Fire Pump Engine Surveillance Inspection	30
71111.19	Work Orders	WO	488847, 527996, 527997, 527998, 527999	
71111.20	Corrective Action Documents	CR-ANO-	1-2017-00198, 1-2021-02078, C-2021-01252	
71111.20	Procedures	1015.036	Containment Building Closeout	59
71111.20	Procedures	1015.048	Shutdown Operations Protection Plan	30
71111.20	Procedures	1102.002	Plant Startup	115
71111.20	Procedures	1102.008	Approach to Criticality	34
71111.20	Procedures	1102.010	Plant Shutdown and Cooldown	87
71111.20	Procedures	1102.016	Power Reduction and Plant Shutdown	37
71111.20	Procedures	EN-OM-123	Fatigue Management Program	18
71111.20	Procedures	EN-OU-108	Shutdown Safety Management Program	10
71111.20	Procedures	EN-RE-327	PWR Startup Critical Predictions and Evaluation Process	6
71111.22	Corrective Action Documents	CR-ANO-	1-2019-02484, 1-2020-00202, 1-2021-00677, 1-2021-00697, 1-2021-01780, 1-2021-01951, 2-2008-01469, 2-2009-03483, 2-2020-02492	
71111.22	Drawings	M-213	Laundry Waste and Containment and Aux. Building Sump Drainage	33
71111.22	Miscellaneous	CALC-ANO1-NE-21-00005	ANO-1 Cycle 30 BMAC Summary Report	1
71111.22	Procedures	OP-1042.003	Radiochemistry Routine Surveillance Schedule and Technical Specification Reporting	43
71111.22	Procedures	OP-1104.036	Emergency Diesel Generator Operation	86
71111.22	Procedures	OP-1302.005	Core Power Distribution for Physics Testing	23
71111.22	Procedures	OP-1302.012	Periodic Core Power Distribution Testing	23
71111.22	Procedures	OP-1305.018	Local Leak Rate Testing – Type C	37
71111.22	Procedures	OP-1305.040	Service Water Full Flow Testing	4
71111.22	Procedures	OP-1306.017	Unit 1 Main Steam Safety Valve Test	30
71111.22	Procedures	OP-1607.001	Reactor Coolant System Sampling	4
71111.22	Procedures	OP-2302.009	Moderator Temperature Coefficient at Power	32
71111.22	Work Orders	WO	494948-04, 52901710-01, 52901711-01, 52901712-01, 52901831-01, 52902401-01, 52902483, 52931737-01	
71124.01	Corrective Action	CR-ANO-	1-2020-00776, 1-2020-00818, 1-2020-01134, 1-2021-00083,	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Documents		1-2021-00095, 1-2021-00832, 1-2021-01151, 2-2020-01509, 2-2020-01511, 2-2020-01714, 2-2020-02481, 2-2020-02917, 2-2021-00627, C-2020-01365, C-2020-01882, C-2020-02267, C-2021-00935, C-2021-00937, C-2021-01139	
71124.01	Miscellaneous	ANO-2020-0035	Annual Inventory of the Miscellaneous Material in the ANO Spent Fuel Pools (SFPs)	08/18/2020
71124.01	Procedures	EN-RE-220	Control of Non-Fuel Materials	5
71124.01	Procedures	EN-RP-100	Radiation Worker Expectations	13
71124.01	Procedures	EN-RP-101	Access Control for Radiologically Controlled Areas	15
71124.01	Procedures	EN-RP-102	Radiological Control	7
71124.01	Procedures	EN-RP-106-1	Radiological Survey Guidelines	6
71124.01	Procedures	EN-RP-108	Radiation Protection Posting	22
71124.01	Procedures	EN-RP-121	Radioactive Material Control	17
71124.01	Procedures	EN-RP-152	Conduct of Radiation Protection	6
71124.01	Radiation Surveys	Air Samples (ANO-AS-)	012821-0043, 041921-0242, 042021-0247, 042021-0248, 042021-0249, 042021-0250, 043020-0369	
71124.01	Radiation Surveys	ANO-	20-01-00178, 20-07-00342, 21-04-00202, 21-04-00225, 21-04-00226, 21-04-00228, 21-04-00786, 21-04-00826, 21-04-00829, 21-04-00831, 21-04-00833, 21-04-00837, 21-04-00856, 21-04-00865, 21-04-00868, 21-04-00870, 21-04-00871, 21-04-00892, 21-04-00971	
71124.01	Radiation Work Permits (RWPs)	2020-2471	Perform Inspections on Unit 2 Reactor Head During 2R27	0
71124.01	Radiation Work Permits (RWPs)	2020-2900	Emergent Minor Maintenance Activities During 2R27	2
71124.01	Radiation Work Permits (RWPs)	2021-1054	Unit-1 Transfer Spent Resin to T-13 or 2T-13 Spent Resin Storage Tanks; to Include T-13 to Train Bay Activities	0
71124.01	Radiation Work Permits (RWPs)	2021-1406	1R29 Radwaste Processing and Shipping	0
71124.01	Radiation Work Permits (RWPs)	2021-1442	1R29 Steam Generator (SG) Primary Side Eddy Current Inspection and Repair Activities	0
71124.01	Radiation Work Permits (RWPs)	2021-1454	1R29 Motor Operated Valves (MOV) and Air Operated Valves (AOV) Activities	0
71124.01	Radiation Work	2021-1471	1R29 Reactor Pressure Vessel Closure Head – Volumetric	0

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Permits (RWP's)		and Surface Exams	
71124.01	Self-Assessments	LO-ALO-2020-00048	Radiation Safety – Hazard Assessment, Airborne Controls, and Performance Indicators	12/09/2020
71124.03	Calibration Records	WO 52820087	Unit 1 RCS Radiation Leak Detection System 18 Month Calibration	12/12/2019
71124.03	Calibration Records	WO 52878423	Calibration of Fuel Handling Area 2RX-9830 (SPING 7)	04/01/2021
71124.03	Corrective Action Documents	CR-ANO-	1-2019-04739, 2-2020-00573, C-2019-04031, C-2019-04065, C-2019-04193, C-2020-01357, C-2020-01366	
71124.03	Corrective Action Documents	CR-HQN-	2019-02415	
71124.03	Miscellaneous		TRI Air Testing Laboratory Report - Compressed Air/Gas Quality Testing: Eagle Air (C-82A) on 08/01/2019; 01/28/2020; 07/28/2020; 01/27/2021; and 02/26/2021	
71124.03	Miscellaneous		TRI Air Testing Laboratory Report - Compressed Air/Gas Quality Testing: BAUER (C-82C) on 01/28/2020; 07/28/2020; 01/28/2021	
71124.03	Miscellaneous		TRI Air Testing Laboratory Report - Compressed Air/Gas Quality Testing: Unit 2 Breathing Air Compressor (2BA-1009) on 10/21/2019 and 03/12/2020	
71124.03	Miscellaneous		Air Sample and Results Log from 03/27/2020 through 04/05/2021	
71124.03	Miscellaneous	1601.406	Attachment 6.5 Breathing Air Analysis Sample Sheet - Dive Compressor on: 11/06/2019; 02/25/2020; 03/15/2020; 06/01/2020; and 10/27/2020	
71124.03	Miscellaneous	1601.406	Attachment 6.5 Breathing Air Analysis Sample Sheet - C-82C (Burn Building) on: 11/08/2019; 12/26/2019; 01/16/2020; 03/28/2020; 04/30/2020; 05/21/2020; 06/04/2020; 08/13/2020; 09/22/2020; 10/27/2020; and 11/09/2020	
71124.03	Miscellaneous	1601.406	Attachment 6.5 Breathing Air Analysis Sample Sheet - C-82A (Warehouse 2) on: 12/26/2019; 02/11/2020; and 08/11/2020	
71124.03	Miscellaneous	1601.406	Attachment 6.5 Breathing Air Analysis Sample Sheets -	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			Inline Air: (2BA-1009) 03/09/2020; (11A-191) 03/16/2020; and (2IA-1090) 03/04/2020	
71124.03	Miscellaneous	EN-RP-502	Inspection and Maintenance of Respiratory Protection Equipment, Attachment 9.1, Face Piece Inspection Log from 11/29/2019 through 12/01/2020	
71124.03	Miscellaneous	EN-RP-502, Attachment 9.5	Annual Respiratory Protection Equipment Inventory and Inspection	11/30/2020
71124.03	Procedures	1001.008	Surveillance Frequency Control Program	4
71124.03	Procedures	1601.406	Setup and Operation of Breathing Air Sampling Kits	2
71124.03	Procedures	EN-RP-131	Air Sampling	17
71124.03	Procedures	EN-RP-402	DOP Challenge Testing of HEPA Vacuums and Portable Ventilation Units	4
71124.03	Procedures	EN-RP-404	Operation and Maintenance of HEPA Vacuum Cleaners and HEPA Ventilation Units	9
71124.03	Procedures	EN-RP-501	Respiratory Protection Program	7
71124.03	Procedures	EN-RP-502	Inspection and Maintenance of Respiratory Protection Equipment	10
71124.03	Procedures	EN-RP-503	Selection, Issue and Use of Respiratory Protection Equipment	8
71124.03	Procedures	EN-RP-504	Breathing Air	4
71124.03	Self-Assessments	LO-ALO-2020-00048	Radiation Safety – Hazard Assessment, Airborne Controls and Performance Indicators	12/09/2020
71124.03	Work Orders	WO 52762359	In-Place Testing of the Emergency Operations Facility Filtration System	11/30/2018
71124.03	Work Orders	WO 52785908	In-Place Testing of the Unit 1 Control Room Filtration System	04/22/2019
71124.03	Work Orders	WO 52855304	In-Place Testing of the Emergency Operations Facility Filtration System	02/05/2020
71124.03	Work Orders	WO 52873446	In-Place Testing of the Unit 1 Control Room Filtration System	08/24/2020
71151	Calibration Records	AMS-025	Calibration Data Ebeline Model AMS-4 Beta Particulate/Noble Gas Monitors	10/08/2020
71151	Calibration Records	AMS-031	Calibration Data Ebeline Model AMS-4 Beta Particulate/Noble Gas Monitors	06/05/2019



Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71151	Calibration Records	AMS-044	Calibration Data Ebeline Model AMS-4 Beta Particulate/Noble Gas Monitors	10/08/2020
71151	Calibration Records	AMS-045	Calibration Data Ebeline Model AMS-4 Beta Particulate/Noble Gas Monitors	05/20/2020
71151	Miscellaneous		Radiological Controlled Area Entries Greater than 100 millirem Report: 03/26/20 - 01/28/2021	03/22/2021
71151	Miscellaneous		ANO-1 and ANO-2 NRC Performance Indicator Technique/Data Sheets – RCS Leakage	Q2-2020
71151	Miscellaneous		ANO-1 and ANO-2 NRC Performance Indicator Technique/Data Sheets - RCS Leakage	Q3-2020
71151	Miscellaneous		ANO-1 and ANO-2 NRC Performance Indicator Technique/Data Sheets - RCS Leakage	Q4-2020
71151	Miscellaneous		ANO-1 and ANO-2 NRC Performance Indicator Technique/Data Sheets - RCS Leakage	Q1-2021
71151	Miscellaneous		ANO-1 and ANO-2 NRC Performance Indicator Technique/Data Sheets – RCS Specific Activity	Q2-2020
71151	Miscellaneous		ANO-1 and ANO-2 NRC Performance Indicator Technique/Data Sheets - RCS Specific Activity	Q3-2020
71151	Miscellaneous		ANO-1 and ANO-2 NRC Performance Indicator Technique/Data Sheets - RCS Specific Activity	Q4-2020
71151	Miscellaneous		ANO-1 and ANO-2 NRC Performance Indicator Technique/Data Sheets - RCS Specific Activity	Q1-2021
71151	Miscellaneous		ANO-1 and ANO-2 NRC Performance Indicator Technique/Data Sheets – SSFF	Q2-2020
71151	Miscellaneous		ANO-1 and ANO-2 NRC Performance Indicator Technique/Data Sheets - SSFF	Q3-2020
71151	Miscellaneous		ANO-1 and ANO-2 NRC Performance Indicator Technique/Data Sheets - SSFF	Q4-2020
71151	Miscellaneous		ANO-1 and ANO-2 NRC Performance Indicator Technique/Data Sheets - SSFF	Q1-2021
71151	Miscellaneous	0CAN042102	2020 Annual Radioactive Effluent Release Report	04/21/2021
71151	Procedures	EN-LI-114	Regulatory Performance Indicator Process	17
71151	Procedures	OP-1042.003	Radiochemistry Routine Surveillance Schedule and Tech Spec Reporting	43

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71153	Corrective Action Documents	CR-ANO-	1-2021-00457, 2-2017-02384	
71153	Procedures	EN-LI-108	Causal Analysis Process	34

**Arkansas Nuclear One, Unit 1**  
**Momentary Loss of Power to 4160 Vac bus A2 Event**  
**Detailed Risk Evaluation**

A regional senior reactor analyst performed a detailed risk evaluation and determined that the finding associated with the momentary loss of power to 4160 Vac bus A2 event was of very low safety significance (Green).

The analyst performed an initiating event analysis as called for in Section 8.0, "Initiating Event Analyses," of Volume 1, "Internal Events," of the RASP Handbook. The analyst chose to run this analysis as a transient (or reactor trip) with circuit breaker 1A-409 failed open (basic event ACP-CRB-CO-1A409 set to TRUE). During the event, power was lost to bus A2, the reactor was manually tripped, and power to bus A2 was subsequently restored within 1 minute. When power was lost to bus A2, breaker 1A-409 (which supplies offsite power to bus A4) opened and was not reclosed during the initial phases of the event. The resulting conditional core damage probability was estimated to be  $3.50E-7$ . This estimate equated to an increase in core damage frequency from internal events of  $3.5E-7$ /year.

The analyst assumed that external events would be an insignificant contributor to the increase in core damage frequency because the probability of any external event coinciding with the momentary loss of power to bus A2 event would be extremely low. As a result, only the increase in core damage frequency from the initiating event was used in the final estimate, making the total safety significance of the finding very low (Green).

After reviewing Manual Chapter 0609, Appendix H, "Containment Integrity Significance Determination Process," the analyst determined that transient sequences were not significant contributors to large early release frequency and screened the finding to Green for large early release frequency.

The analyst ran the Arkansas Nuclear One, Unit 1, SPAR model, Revision 8.60, on SAPHIRE, Version 8.2.1, to calculate the conditional core damage probability using a cutset truncation of  $1.0E-12$ .