UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
245 PEACHTREE CENTER AVENUE N.E., SUITE 1200
ATLANTA, GEORGIA 30303-1200

May 13, 2019

EA-18-159

Mr. Daniel G. Stoddard
Senior Vice President and Chief Nuclear Officer
Virginia Electric & Power Co.
Innsbrook Technical Center
5000 Dominion Boulevard
Glen Allen, VA 23060

SUBJECT: NORTH ANNA POWER STATION UNITS 1, 2 – NUCLEAR REGULATORY COMMISSION INTEGRATED INSPECTION REPORT 05000338/2019001 AND 05000339/2019001 AND INVESTIGATION REPORT 2-2017-028 AND NOTICE OF VIOLATION

Dear Mr. Stoddard:

On March 31, 2019, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your North Anna Power Station, Units 1 and 2. Additionally, this letter refers to an investigation by the NRC's Office of Investigations, completed on October 16, 2018, regarding activities at North Anna Power Station. On April 10, 2019 the NRC inspectors discussed the results of this inspection and investigation with Mr. Larry Lane and other members of your staff. The results of this inspection and investigation are documented in the enclosed report.

The enclosed report discusses a Severity Level IV violation. The NRC evaluated this violation in accordance Section 2.3.2.a of the NRC Enforcement Policy, which can be found at http://www.nrc.gov/about-nrc/regulatory/enforcement/enforce-pol.html. The violation is cited in the enclosed Notice of Violation (Notice) and the circumstances surrounding it are describe in detail in the subject inspection report. The violation is being cited in the Notice because it was willful, and the non-cited violation criteria of the Enforcement Policy Section 2.3.2.a.4 was not satisfied. In this case, the violation was not the isolated action of an employee without management involvement (i.e., the individual involved was a supervisor), and because the violation was caused, at least in part, by a lack of management oversight.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. If you have additional information that you believe the NRC should consider, you may provide it in your response to the Notice. The NRC's review of your response will also determine whether further enforcement action is necessary to ensure your compliance with regulatory requirements.

This letter, its enclosure, and your response (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 10 CFR 2.390, “Public Inspections, Exemptions, Requests for Withholding.” To the extent possible, your response should not include any personal privacy or proprietary, information so that it can be made available to the Public without redaction.

Sincerely,

**/RA/**

Lundy F. Pressley, Acting Chief
Reactor Projects Branch 4
Division of Reactor Projects

Docket Nos.: 05000338 and 05000339
License Nos.: NPF-4 and NPF-7

Enclosures:
1. Notice of Violation
2. Inspection Report 05000338/2019001 and 05000339/2019001

cc w/ encl via Distribution Listserv

SUBJECT: NORTH ANNA POWER STATION UNITS 1, 2 – NUCLEAR REGULATORY COMMISSION INTEGRATED INSPECTION REPORT 05000338/2019001 AND 05000339/2019001, AND NOTICE OF VIOLATION
May XX, 2019

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| DATE | 5/7/2019 | | 5/9/2019 | 5/7/2019 | 5/7/2019 | 5/7/2019 | 5/7/2019 | 5/9/2019 |
| OFFICE | RII:DRP | | RII:DRP | RII:EICS | RII:DRP | | | |
| NAME | PNiebaum | | JDodson | MKowal | LPressley | | | |
| DATE | 5/9/2019 | | 5/8/2019 | 5/8/2019 | 5/13/19 | | | |

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NOTICE OF VIOLATION

Virginia Electric and Power Company
North Anna Power Station, Unit 1

Docket No. 05000338
License No. NPF-4
EA-18-159

During an NRC investigation completed on October 16, 2018, and an NRC inspection completed on March 31, 2019, a violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the particular violation is set forth below:

> Technical Specification 5.4.1.a, required in part, that written procedures shall be established, implemented, and maintained covering the following activities: The applicable procedures recommended in Regulatory Guide (RG) 1.33, Revision 2, Appendix A. RG 1.33, Appendix A, Section 1 included procedures for Equipment Control (e.g. locking and tagging) related to safety-related activities.
>
> Licensee procedure OP-AA-200, "Equipment Clearance," implemented this requirement. Section 3.2.7, Tagout Holder/Lead Craft Acceptance of Tagout, of procedure OP-AA-200, required the first individual of each craft who will hold an equipment clearance to walk down that clearance prior to signing as a holder in the electronic database.
>
> Contrary to the above, between September 10 and October 16, 2016, the licensee failed to adequately implement procedure OP-AA-200, "Equipment Clearance," Revisions 24 and 25, for certain safety-related maintenance activities (e.g., safety injection system and charging pumps). Specifically, the licensee willfully failed to ensure the first individual to hold the equipment clearance, performed the clearance walkdown and verified tagout boundaries, prior to signing as a holder in the electronic database and work commencing for safety-related maintenance activities.

This is a Severity Level IV violation (NRC Enforcement Policy Section 2.2.1).

Pursuant to the provisions of 10 CFR 2.201, Virginia Electric and Power Company, is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001 with a copy to the Regional Administrator, Region 2, and a copy to the NRC Resident Inspector at the facility that is the subject of this Notice, within 30 days of the date of the letter transmitting this Notice of Violation (Notice). This reply should be clearly marked as a "Reply to a Notice of Violation; EA-18-159" and should include for the violation: (1) the reason for the violation, or, if contested, the basis for disputing the violation or severity level, (2) the corrective steps that have been taken and the results achieved, (3) the corrective steps that will be taken, and (4) the date when full compliance will be achieved. Your response may reference or include previous docketed correspondence, if the correspondence adequately addresses the required response. If an adequate reply is not received within the time specified in this Notice, an order or a Demand for Information may be issued as to why the license should not be modified, suspended, or revoked, or why such other action as may be proper should not be taken. Where good cause is shown, consideration will be given to extending the response time.

If you contest this enforcement action, you should also provide a copy of your response, with the basis for your denial, to the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

Because your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html, to the extent possible, it should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the public without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If safeguards information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

In accordance with 10 CFR 19.11, you may be required to post this Notice within two working days of receipt.

Dated this 13th day of May 2019

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

| | |
|---|---|
| Docket Numbers: | 05000338 and 05000339 |
| License Numbers: | NPF-4 and NPF-7 |
| Report Numbers: | 05000338/2019001 and 05000339/2019001 |
| Enterprise Identifier: | I-2019-001-0027 |
| Licensee: | Virginia Electric & Power Co. |
| Facility: | North Anna, Units 1 and 2 |
| Location: | Mineral, VA 23060 |
| Inspection Dates: | January 01, 2019 to March 31, 2019 |
| Inspectors: | M. Tobin, Senior Resident Inspector<br>G. Eatmon, Resident Inspector/Acting Senior Resident Inspector<br>S. Bussey, Senior Reactor Technology Instructor<br>R. Carrion, Senior Reactor Inspector<br>B. Collins, Reactor Inspector<br>R. Kellner, Senior Health Physicist<br>D. Jackson, Project Engineer<br>P. Niebaum, Senior Project Engineer |
| Approved By: | Lundy F. Pressley, Acting Chief<br>Reactor Projects Branch 4<br>Division of Reactor Projects |

## SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting a Quarterly inspection at North Anna Units 1 and 2 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. Findings and violations being considered in the NRC's assessment are summarized in the table below.

## List of Findings and Violations

| Failure to Adequately Implement the Equipment Clearance Procedure | | | |
|---|---|---|---|
| Cornerstone | Significance | Cross-cutting Aspect | Report Section |
| Not Applicable | NOV 05000338/2019001-01<br>Open<br>EA-18-159 | Not Applicable | Not Applicable |
| A licensee-identified Severity Level IV violation (NOV) of TS 5.4.1.a, "Procedures", was identified when the licensee failed to adequately implement licensee procedure OP-AA-200, "Equipment Clearance." | | | |

## Additional Tracking Items

None.

## PLANT STATUS

Unit 1 operated at or near rated thermal power for the entire inspection period.

Unit 2 began the inspection period at rated thermal power. On February 12, 2019, the unit began coasting down for a planned refueling outage. On March 2, 2019, the refueling outage commenced several hours earlier than planned due to a manual trip at approximately 12 percent power due to a loss of condenser vacuum. The unit remained in the refueling outage for the remainder 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 performed plant status activities described in IMC 2515 Appendix D, "Plant Status" and conducted routine reviews using IP 71152, "Problem Identification and Resolution." 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.

## REACTOR SAFETY

### 71111.01 - Adverse Weather Protection

#### Seasonal Extreme Weather Sample (IP Section 03.02) (1 Sample)

The inspectors evaluated readiness for seasonal extreme weather conditions prior to the onset of seasonal cold temperatures for the following systems:

- Emergency power - emergency diesel generator
- Low head safety injection system
- Outside recirculation spray system
- Service water system

### 71111.04 - Equipment Alignment

#### Partial Walkdown (IP Section 02.01) (4 Samples)

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

(1) Unit 2, high head safety injection system train A on January 17, 2019
(2) Unit 1, component cooling system train A and B on January 31, 2019
(3) Unit 1, outside recirculation spray and casing cooling system train A and B on February 5, 2019
(4) Unit 1, motor driven auxiliary feedwater system train A on March 28, 2019

71111.05A - Fire Protection (Annual)

Annual Inspection (IP Section 03.02) (1 Sample)

The inspectors evaluated fire brigade performance in the auxiliary building on January 25, 2019

71111.05Q - Fire Protection

Quarterly Inspection (IP Section 03.01) (5 Samples)

The inspectors evaluated fire protection program implementation in the following selected areas:

(1) Unit 1 and Unit 2, auxiliary building elevation 244' on January 16, 2019
(2) Unit 1 and Unit 2, auxiliary building elevation 291' on January 31, 2019
(3) Unit 1 and Unit 2, control room on February 4, 2019
(4) Unit 1, emergency switchgear and battery rooms on February 6, 2019
(5) Unit 2, emergency switchgear and battery rooms on February 6, 2019

71111.06 - Flood Protection Measures

Inspection Activities - Internal Flooding (IP Section 02.02a.) (1 Sample)

The inspectors evaluated internal flooding mitigation protections in the:

Unit 1 and Unit 2 auxiliary building elevation 244 on March 26, 2019

71111.08P - Inservice Inspection Activities (PWR)

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

The inspectors evaluated pressurized water reactor non-destructive testing by reviewing the following examinations from March 11 to March 14, 2019:

(1) Ultrasonic Examination
a) 12” Pipe to Elbow Weld SW-24 of Accumulator “B”, ASME Class 1 (observed)

(2) Visual Test (VT-3)
a) Restraint to 2-SI-P-1B, Low Head SI Pump “B”, ASME Class 2 (observed)
b) Restraint to 3-CH-402, “B” Charging Pump HPSI Discharge, ASME Class 2 (observed)

(3) Eddy Current Testing
a) SG A (tubes R3C14, R41C66, R46C45), ASME Class 1 (observed)
b) SG B (tubes R8C48, R22C86, R28C32), ASME Class 1 (observed)

The inspectors reviewed the following welding activities:
- Work Order 59103042562, Replace Check Valve 02-FW-129-CKVALV
- Work Order 59103096179, Replace PZR Head Vent Valve 02-RC-SOV-202A1-VALVE; Welds 10 and 12A

- Work Order 59203143755, Replace PZR Head Vent Valve 02-RC-SOV-202B2-VALVE; Welds 25A and Y

The Inspectors evaluated the licensee's boric acid corrosion control program performance, including the following boric acid evaluations:

- CR 1079657/CA3066957/WO 59103126349, 2-CH-RV-2382B - Seal WTR Return FLTR to Seal WTR HX Relief Valve
- CR 1103333/CA7358619/WO59203275645, 2-SI-MOV-2869A – SI Hot Leg Injection Alternate HDR Isolation
- CR 1103337/CA7358686/WO59203275646, 2-CH-249; 2-CH-FCV-2122 Inlet Isolation Valve

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)

The inspectors observed and evaluated licensed operator performance in the control room while bringing the Unit 1 main turbine online, transitioning the main feedwater regulating valves to auto and closing the bypass valves on January 7, 2019

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

The inspectors observed and evaluated two bi-annual Licensed Operator Re-qualification Program scenarios on February 6, 2019

71111.12 - Maintenance Effectiveness

Routine Maintenance Effectiveness Inspection (IP Section 02.01) (1 Sample)

The inspectors evaluated the effectiveness of routine maintenance activities associated with the following equipment and/or safety significant functions:

Units 1 and 2 safety-related station batteries following individual cell low voltage readings on March 25, 2019

71111.13 - Maintenance Risk Assessments and Emergent Work Control

Risk Assessment and Management Sample (IP Section 03.01) (6 Samples)

The inspectors evaluated the risk assessments for the following planned and emergent work activities:

(1) Unit 1, elevated risk and emergent work control that took the Unit offline to repair a hot spot on the 12G1/1 transmission line on January 12, 2019
(2) Unit 2, elevated risk during J emergency diesel generator 3-year preventative maintenance on January 14-18, 2019
(3) Units 1 and 2, elevated risk during the 2J emergency diesel generator (EDG) slow start test on February 12, 2019

(4) Unit 2, elevated risk during removal of the high pressure turbine enclosure on February 20, 2019
(5) Unit 2, emergent work on containment isolation valve, 2-BD-TV-200F, intermediate control room position indication on February 26, 2019
(6) Unit 2, elevated risk during decreased reactor coolant system inventory for outage work on March 5, 2019

71111.15 - Operability Determinations and Functionality Assessments

Operability Determinations and Functionality Assessments Sample (IP Section 02.01) (6 Samples)

The inspectors evaluated the following operability determinations and functionality assessments:

(1) Unit 1 steam flow instrument failure on January 7, 2019 (CR1113491)
(2) Unit 1 and Unit 2 service water pump house ventilation train A inoperable on January 24, 2019 (CR1114049)
(3) Unit 1 and Unit 2 main feedwater discharge MOV not scoped into maintenance rule on February 7, 2019 (CR1114777)
(4) Unit 1 and Unit 2 Velan check valve Part 21 evaluation for the auxiliary feedwater recirculation valves on February 27, 2019 (CR1116571)
(5) Unit 2 reactor coolant system loop C hydraulic snubber discovered with no visible fluid on March 21, 2019 (CR1117314)
(6) Unit 2 Anchor Darling Valve Part 21 evaluation for the residual heat removal valves on March 27, 2019 (CR1090442)

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 modification:

Unit 2, Voltage unbalance protection (NA-15-00063/64) on March 25, 2019

71111.19 - Post Maintenance Testing

Post Maintenance Test Sample (IP Section 03.01) (6 Samples)

The inspectors evaluated the following post maintenance tests:

(1) Unit 2, 2-PT-82.4B, 2J Diesel Generator Test (Start by ESF Actuation) after the 3-year preventative maintenance work package on January 19, 2019
(2) Unit 1 and 2, 1A Spent Fuel Pit Cooler Eddy Current Testing and Tube Plugging, WOs 59102749337 and 59203284026, on February 13, 2019
(3) Unit 1, Circuit breaker maintenance after MOV would not open during surveillance for Aux Feedwater header to B steam generator, WO 59203283243, on March 8, 2019
(4) Unit 1, Main Transformer fire deluge system, WO 59203285683, on March 17, 2019
(5) Unit 2, 2H diesel generator test following Woodward governor work on March 26, 2019

(6) Unit 2, bucket replacement for the motor control center supplying power to the A low head safety injection pump on March 27, 2019

71111.22 - Surveillance Testing

The inspectors evaluated the following surveillance tests:

In Service Testing (IST) (IP Section 03.01) (1 Sample)

Unit 1 low head safety injection pump A on February 5, 2019

Surveillance Testing (IP Section 03.01) (4 Samples)

(1) Unit 1 solid state protection train A on January 9, 2019
(2) Unit 1 low head safety injection valve stroke time PT on February 5, 2019
(3) Unit 1 Operations Periodic Test, Charging Pump 1-CH-P-1B, 1-PT-14.2, on February 11, 2019
(4) Unit 2 safety injection operational test on March 4, 2019

71114.06 - Drill Evaluation

Emergency Preparedness (EP) Drill (IP Section 02.01) (1 Sample)

The inspectors evaluated a full participation drill on January 8, 2019

**RADIATION SAFETY**

71124.01 - Radiological Hazard Assessment and Exposure Controls

Radiological Hazard Assessment (IP Section 02.01) (1 Sample)

The inspectors evaluated radiological hazards assessments and controls. The inspectors reviewed the following:

Radiological surveys
- U-2 Reactor Cavity
- U-2 Containment 216’ Incore Access (keyway)
- U-2 “B” Steam Generator (S/G) Manway Removal Platform Survey

Risk significant radiological work activities
- RCP Maintenance (RWP 19-2204)
- S/G Primary Side Maintenance, (RWP 19-2260)
- Repair 2-FH-FH-10 Upender as Required (RWP 19-2267)
- Valve Maintenance in Locked High Radiation Areas (RWP 19-2215)

Air sample survey records
- Air sample # 19-2259-0303-2247, U-2 216’ Keyway Insulation Removal, 03/03/2019
- Air sample # 19-2260-0307-1437, U-2 “A” S/G Platform, Removing Manways, Work Zone, 03/07/2019

- Air sample # 19-2260-0308-0143, U-2 “A” S/G Platform, Removing Manways, Work Zone, 03/08/2019
- Air sample # 19-2252-0309-2337, U-2 RC 291’ @ Cavity, Head Lift, Work Zone, 03/09/2019
- Air sample # 19-2252-0310-0024, U-2 Reactor Cavity, Head Lift, Work Zone, 03/10/2019
- Air sample # 19-2252-0310-0037, U-2 RC 262’ @ Cavity, Head Lift, Work Zone, 03/10/2019
- Air sample # 19-2252-0310-0050, U-2 RC 241’ @ Cavity, Head Lift, Work Zone, 03/10/2019

Instructions to Workers (IP Section 02.02) (1 Sample)

The inspectors evaluated instructions to workers including radiation work permits used to access high radiation areas:

Radiation work packages
- Rx Head Stud Cleaning Activities in Decon Bay
- "A" and "B" S/G Eddy Current Testing
- "B" Reactor Coolant Pump Seal Work

Electronic alarming dosimeter alarms
- No Unbriefed Electronic Dosimeter Dose / Dose Rate Alarm Log Entries Identified, 03/01/18 - 03/09/19

Labeling of containers
- Walkdown of the Protected Area, aux building, and temporary Radioactive Material Storage Area(s) Identified no issues

Contamination and Radioactive Material Control (IP Section 02.03) (1 Sample)

The inspectors evaluated licensee processes for monitoring and controlling contamination and radioactive material. The inspectors verified the following sealed sources are accounted for and are intact:
- Cs-137 Source S/N 83-CS-33
- Cs-137 Source S/N 03127GY
- Work Order 59203269944, Surveillance 0-PT-120, Sealed Source Contamination, 01/07/2019
- National Source Tracking System Annual Inventory Reconciliation Report, North Anna, 01/16/2019

Radiological Hazards Control and Work Coverage (IP Section 02.04) (1 Sample)

The inspectors evaluated in-plant radiological conditions during facility walkdowns and observation of radiological work activities.

Radiological work package for areas with airborne radioactivity
- RCP Maintenance
- Repair of 2-FH-FH-10 Upender
- Work on Valves and Equipment in Alpha Level III Areas

High Radiation Area and Very High Radiation Area Controls (IP Section 02.05) (1 Sample)

The inspectors evaluated risk-significant high radiation area and very high radiation area controls.

Radiation Worker Performance and Radiation Protection Technician Proficiency (IP Section 02.06) (1 Sample)

The inspectors evaluated radiation worker performance and radiation protection technician proficiency.

**OTHER ACTIVITIES – BASELINE**

71151 - Performance Indicator Verification

The inspectors verified licensee performance indicators submittals listed below:

IE01: Unplanned Scrams per 7000 Critical Hours Sample (IP Section 02.01) (2 Samples)

(1) Unit 1 (January 2018 – December 2018)
(2) Unit 2 (January 2018 – December 2018)

IE03: Unplanned Power Changes per 7000 Critical Hours Sample (IP Section 02.02) (2 Samples)

(1) Unit 1 (January 2018 – December 2018)
(2) Unit 2 (January 2018 – December 2018)

IE04: Unplanned Scrams with Complications (USwC) Sample (IP Section 02.03) (2 Samples)

(1) Unit 1 (January 2018 – December 2018)
(2) Unit 2 (January 2018 – December 2018)

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

North Anna Power Station Monthly Performance Indicator Data for the Occupational and Public Radiation Safety Cornerstones, March 2018 to March 2019

71152 - Problem Identification and Resolution

Semiannual Trend Review (IP Section 02.02) (1 Sample)

The inspectors reviewed the licensee's corrective action program for trends that might be indicative of a more significant safety issue.

Annual Follow-up of Selected Issues (IP Section 02.03) (1 Sample)

The inspectors reviewed the licensee’s implementation of its corrective action program related to the following issue:

- Failure to meet Class B storage requirements for oil used in safety related and non-safety related equipment, CR 1112492

71153 - Followup of Events and Notices of Enforcement Discretion

Event Followup (IP Section 03.01) (2 Samples)

(1) The inspectors evaluated the loss of condenser vacuum and manual reactor scram and the licensee's response on March 2, 2019.
(2) The inspectors evaluated the fire alarm in containment and subsequent NOUE and the licensee's response, which verified that no fire existed in containment on March 3, 2019.

**OTHER ACTIVITIES – TEMPORARY INSTRUCTIONS, INFREQUENT AND ABNORMAL**

60855.1 - Operation of an Independent Spent Fuel Storage Installation at Operating Plants

Operation of an ISFSI at Operating Plant (1 Sample)

The inspectors evaluated the licensee's operation and monitoring of the independent spent fuel storage installation on February 14, 2019.

71003 - Post-Approval Site Inspection for License Renewal

Post-Approval Site Inspection for License Renewal (1 Sample)

The inspectors observed and reviewed the implementation of the following license renewal activities (listed by aging management program) from September 24 – 28, 2018:

- 18.2.1, Augmented Inspection Activities
- 18.2.6, Civil Engineering Structural Inspection
- 18.2.7, Fire Protection Program
- 18.2.10, Inspection Activities – Load Handling Cranes & Devices
  - WO 59103130366, visual inspection of crane (02-MH-CRN-1-CRANE)
  - WO 59103116169, visual inspection of crane (02-FH-CRN-5-CRANE)
  - WO 59103113197, visual inspection of crane (02-MH-CRN-19-CRANE)
- 18.2.16, Flow-Accelerated Corrosion
  - WO59103132109, ultrasonic examination of 18" feedwater piping/elbow (2-CN-PSF2-29)
- 18.2.17, Service Water System Inspections
  - WO 59102545119, 24" service water piping inspection (Segment #9, "A" Supply for CCHXs)
  - WO 59102545237, 24" service water piping inspection (Segment #25, "A" Supply for CCHX)
  - WO 59102545279, 24" service water piping inspection (Segment #37, "A" Return from U2 RSHX)
- 18.2.19, Work Control Process

INSPECTION RESULTS

| Observation | 71152 – Semiannual Trend Review |
|---|---|
| The inspectors conducted a semi-annual trend review to examine potential issues that might indicate the existence of a more significant safety issue. The scope of this review includes repetitive or closely-related issues that are documented by the licensee outside of the normal corrective action program. The inspectors observed a trend related to the licensee's selection of fire drill locations, and the fire risk significant locations identified by the licensee's fire related Probabilistic Risk Assessment (PRA). The inspectors identified a potentially negative trend associated with human performance that could potentially impact nuclear safety. The licensee is an Appendix R plant, and elected to develop a fire related PRA to inform decision making. The fire related PRA results identify that a majority of the fire risk is associated with the emergency switchgear, and the cable vault and tunnel. The results from the fire PRA are displayed throughout the plant in a single page graphic, and identifies the fire program elements that mitigate fire risk; such as control of combustible material, risk screening, and fire drills. The inspectors identified that there is a gap between the identified fire risk significant areas and the location of fire drills. The licensee performs approximately 20 fire drills per year, yet the last fire drill in the emergency switchgear was in 2014, and the last fire drill in the cable vault and tunnel was in 2016. Since 2014, there has been a gradual trend of decreasing number of fire drills located in the most risk significant fire areas.<br><br>The licensee procedure, "Conduct of Fire Drills," SA-AA-115, provides a series of elements to consider when developing drill scenarios, and one of the elements is periodic drills in risk significant areas. The licensee is meeting this requirement, and they are developing and implementing fire drill scenarios in risk significant areas of the plant. However, the inspectors observed that risk significant areas of the plant and fire risk significant areas of the plant are not equivalent, and the licensee is not developing and implementing fire drills in fire risk significant areas of the plant on a periodic basis. This is a trend in drill location selection, however, the inspectors did not identify a performance deficiency. The inspectors discussed this observation with the licensee. The licensee developed CR 1116532 and CR 1120845 to document this observation. | |

| Minor Performance Deficiency | 71152 – Annual Follow-up of Selected Issues |
|---|---|
| The inspectors conducted a detailed review of an NRC identified issue in CR 1112492, initiated on December 13, 2018, regarding the failure to meet Class B storage requirements for oil used in safety related and non-safety related equipment. The inspectors selected this sample due to the potential impact of degraded oil on various pumps' ability to meet their safety function. Oil solvency can suffer, and separation can occur, when oil is not stored in temperature controlled environments.<br><br>During the inspection, the licensee discovered that not storing Class B oils in accordance with WM-AA-WHS-131 had previously been identified in 2015 by CR1012098, when a gelatinous non-ferrous contaminant was identified in the Unit 2 'B' charging pump, 2-CH-P-1B. The oil analysis from the charging pump prompted the licensee to evaluate oil storage practices, requirements, and vendor recommendations. The inspectors determined that the licensee conducted a thorough evaluation of the oil storage conditions in 2015, but failed to implement the associated corrective actions. | |

In 2018, the licensee implemented temporary corrective actions, including restricting use of the oil that was not being stored appropriately, and installed environmental controls. The licensee performed an analysis of all impacted oil and determined the oil currently in use was not degraded.

Minor Performance Deficiency: The failure to maintain Class B storage requirements, as identified in the "Storage Handling Procedure," WM-AA-WHS-131, for oil used in safety and risk significant equipment is a performance deficiency.

Screening: The inspectors used Inspection Manual Chapter 0612, Appendix B, Issue Screening, and determined that the failure to maintain Class B storage requirements was minor since all the more-than-minor screening questions were answered no. Additionally, the licensee analysis determined the oil currently in use was not degraded; and there have been no equipment failures due to degraded oil.

| Failure to Adequately Implement the Equipment Clearance Procedure | | | |
|---|---|---|---|
| Cornerstone | Severity | Cross-cutting Aspect | Report Section |
| Not Applicable | Severity Level IV<br>NOV 05000338/2019001-01<br>Open<br>EA-18-159 | Not Applicable | Not Applicable |

A licensee-identified Severity Level IV violation (NOV) of TS 5.4.1.a, "Procedures", was identified when the licensee failed to adequately implement licensee procedure OP-AA-200, "Equipment Clearance."

Description: On June 2, 2017, the NRC received information that maintenance supervisors were not properly performing the tagout procedure at North Anna Power Station. Specifically, during the Unit 1 fall 2016 refueling outage, electrical maintenance supervisors failed to perform walkdowns and verify tagout boundaries prior to work commencing, as required by licensee procedure OP-AA-200, "Equipment Clearance."

On October 16, 2018, the NRC Office of Investigations completed their investigation and concluded that one electrical maintenance supervisor deliberately falsified component tagging records. Specifically, an electrical maintenance supervisor deliberately failed to perform walkdowns of tagouts for which he/she was the tagout holder, instead delegating the responsibility to a member of his crew, contrary to section 3.2.7 of licensee procedure OP-AA-200.

Corrective Actions: When the licensee's investigation revealed this issue, a limited extent of condition was conducted, and other maintenance supervisor records were reviewed. The maintenance supervisors and staff were interviewed to determine if they were properly performing the equipment clearance procedure. All supervisors were coached on the requirement to walk down tagging boundaries. The licensee demonstrated the seriousness of the violation and took remedial action against the individual, commensurate with the circumstances.

Corrective Action Reference: CR 105655

Performance Assessment: The NRC determined this violation was not reasonably foreseeable and preventable by the licensee and therefore is not a performance deficiency.

Enforcement:
The ROP's significance determination process does not specifically consider willfulness in its assessment of licensee performance. Therefore, it is necessary to address this violation which involves willfulness using traditional enforcement.

Severity: This violation would typically be considered a minor violation, absent willfulness. Specifically, the issue was an isolated procedural noncompliance and there were no safety consequences (Enforcement Policy Minor Examples). However, Enforcement Policy Section 2.2.1.d states, in part, that willful violations are of particular concern because the NRC's regulatory program is based on licensees and their contractors, employees, and agents acting with integrity and communicating with candor. Therefore, a violation may be considered more significant than the underlying noncompliance if it includes indications of willfulness.

Violation: Technical Specification 5.4.1.a, required in part, that written procedures shall be established, implemented, and maintained covering the following activities: The applicable procedures recommended in Regulatory Guide (RG) 1.33, Revision 2, Appendix A.
RG 1.33, Appendix A, Section 1 included procedures for equipment control (e.g. locking and tagging) related to safety-related activities. Licensee procedure OP-AA-200, "Equipment Clearance," implemented this requirement. Section 3.2.7, Tagout Holder/Lead Craft Acceptance of Tagout, of procedure OP-AA-200, required the first individual of each craft who will hold an equipment clearance to walk down that clearance prior to signing as a holder in the electronic database.

Contrary to the above, between September 10 and October 16, 2016, the licensee failed to adequately implement procedure OP-AA-200, "Equipment Clearance," Revisions 24 and 25, for certain safety-related maintenance activities (e.g., safety injection system and charging pumps). Specifically, the licensee willfully failed to ensure the first individual to hold the equipment clearance, performed the clearance walkdown and verified tagout boundaries, prior to signing as a holder in the electronic database and work commencing for safety-related maintenance activities.

Enforcement Action: A Notice of Violation is attached. This violation is being cited because the NCV criteria of the Enforcement Policy Section 2.3.2.a.4 was not satisfied. In this case, the violation was not the isolated action of an employee without management involvement (i.e., the individual involved was a supervisor), and because the violation was caused, at least in part, by a lack of management oversight.

## EXIT MEETINGS AND DEBRIEFS

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

- On April 10, 2019, the inspector presented the quarterly resident inspector inspection results to Mr. Larry Lane and other members of the licensee staff.

**DOCUMENTS REVIEWED**

**71111.01 - Adverse Weather Protection**

Procedures

0-GOP-4.2, Extreme Cold Weather Operations, Revision 41
0-GOP-4.2A, Extreme Cold Weather Operations Daily Checks, Revision 9

**71111.04 - Equipment Alignment**

Procedures

1-OP-31.2A, Valve Checkoff – Auxiliary Feedwater, Revision 25
1-PT-71.12, AFW System Valve Position Verification, Revision 7
1-PT-71.2Q, 1-FW-P-3A, A Motor-Driven AFW Pump and Valve Test, Revision 45
0-PT-74.1, Component Cooling Water Subsystem – Valves, Revision 12
2-PT-57.1C, ECCS Subsystem, Revision 12
2-OP-7.2A, Valve Checkoff- High Head Safety Injection System, Revision 16
1-AP-15, Loss of Component Cooling, Revision 25
1-AP-22.5, Loss of Emergency Condensate Storage Tank 1-CN-TK-1, Revision 9
1-AR-G-E8, Comp Cool PP 1B Auto Trip, Revision 2
1-PT-64.7, Outside Recirc Spray and Casing Cooling System Valve Lineup Verification, Rev. 6

Work Orders

WO59102878932, Offline Testing of Large Motors 4160V, 1-FW-P-3A-Motor, April 6, 2018

Condition Reports

CR1103712, Conduit damaged on 1-CC-P-1A
CR1108113, 1-CC-P-1B motors heaters not energized with pump in standby

Miscellaneous

ETE-N-2017-0029, Licensing Basis Plant Mission Times, May 23, 2017
59-A205-00006, Allis Chalmers Instruction Book, Revision 4
Station Log Entries regarding Outside Recirc Spray and Casing Cooling

**71111.05Q - Fire Protection**

Procedures

1-FS-AB-1, Auxiliary Building Fire Fighting Strategy Safe Shutdown Equipment, Revision 6
NA-2011-0021, Evaluation of Permanently Stored Combustible Material, Revision 6
SA-AA-115, Conduct of Fire Drills, Revision 4
0-FS-CR-1, Loss Prevention Fire Strategy Control Room – Units 1 & 2 Safe Shutdown Equipment, Rev. 3
CM-AA-FPA-101, Control of Combustible and Flammable Materials, Rev. 10
CM-AA-FPA-100, Fire Protection/Appendix R (Fire Safe Shutdown) Program, Rev. 13
ETE-NA-2011-0021, Evaluation of Permanently Stored Combustible Material, Rev. 6
0-PT-106.1A, Fire Protection - Simplex Fire Detectors – Outside Containment - Channel Operational Test, Rev. 8
1-FS-S-3, Loss Prevention Fire Strategy Control Room – Unit 1, Emergency Switchgear, Instrument Rack, and Air Conditioning Rooms Service Building Elev. 254 FT (S-54) Safe Shutdown Equipment, Rev. 13
2-FS-S-3, Loss Prevention Fire Strategy Control Room – Unit 1 Emergency Switchgear, Instrument Rack, and Air Conditioning Rooms Service Building Elev. 254 FT (S-54) Safe Shutdown Equipment, Rev. 11

CM-AA-FPA-101, Control of Combustible and Flammable Materials, Rev. 10
CM-AA-FPA-100, Fire Protection/Appendix R (Fire Safe Shutdown) Program, Rev. 13
ETE-NA-2011-0021, Evaluation of Permanently Stored Combustible Material, Rev. 6
0-PT-106.1A, Fire Protection – Simplex Fire Detectors – Outside Containment - Channel Operational Test, Rev. 8
Unit 2 Emergency Switchgear, Instrument Rack, Cable Vault, and Air Conditioning Rooms

Condition Reports
CR1114808, Unannounced Fire Drill conducted SAT
CR1116471, NRC Observation: Enhancement Opportunity for North Anna Power Station Pre-Fire Plans

**71111.06 - Flood Protection Measures**
Procedures
ET-N-10-0014, Development of Flooding TRM, September 6, 2013
DNES-AA-GN-BAR-1001, Passive Design Features and Barriers, Revision 7
2-AR-E-F6, Aux Building Sump Hi Level, Revision 2
0-AP-39.2, Auxiliary Building Flooding, Revision 13
02-92-4036, IPE Required Procedure Modifications
02-92-4036-028, North Anna Power Station Commitment Data Form, October 5, 1993
0-MCM-1302-01, Moving Miscellaneous Heavy Loads and Concrete Floor/Wall Plugs in the Auxiliary Building, Revision 28

**71111.08P – Inservice Inspection Activities (PWR)**
Calibration Records
Calibration Certificate for Atkins Digital Thermometer Model Number 32322-K, Dominion Asset # ATK-2, 4/25/2018

Condition Reports
CR1089457, Work Order to support 10-Year examination of RV head stud racks
CR1092725, Rejectable condition for pipe support 01-SI-PH-S-21.30D
CR1092857, Relevant indication was identified on RV interior surface
CR1092868, Unacceptable indication on 1-CH-MOV-1115B
CR1092975, Relevant indication found on RV interior surface
CR1094071, WO 59103037545 1-CH-FCV-1113A PMT did not call for VT-2 required by Section X1 R&R plan
CR1094684, Crack in full flow recirc line for 1-FW-P-2 in motor driven pump house
CR1098373, IWE/IWL examination procedures
CR1099404, 1-HRS-RV-1609 fitting weld cracked
CR1099688, VT-2s were not performed per Repair and Replacement Plan during U-1 RFO for two WOs
CR1107842, Programmatic Work Order Request for U2 MRP 227A Exams
CR1112770, Linear indication found during dye penetrant examination

Procedures
2-PT-46.21, RCS Pressure Boundary Components Affected by Boric Acid Accumulation, Rev. 37
2-PT-48, Visual Inspection of Reactor Coolant Pressure Boundary Components, Rev. 27
2-PT-48.1B, Visual Inspection of Class 2 and 3 Bolted Components inside Reactor Containment - B Group, Rev. 8
2-PT-48.2B, Visual Inspection of Class 2 and 3 Pressure Boundary Components Outside

Reactor Containment- B Group, Rev. 9
2-PT-48.3, Visual Inspection Borated Systems in Containment, Rev. 6
2-PT-48.4, Bare Metal Inspection of Vessel BMI Nozzles, Rev. 8
2-PT-48.5, Leakage Inspection above Reactor Vessel Head, Rev. 11
51-9293972-000, Framatome, Inc. Qualified Eddy Current Examination Guidelines for North Anna Unit 2, 2R26, Rev. 000
ER-AA-NDE-UT-701, Ultrasonic Thickness Measurement Procedure, Rev. 6
ER-AA-NDE-UT-706, Ultrasonic Examination for the Detection of Laminar Indications, Rev. 1
ER-AA-NDE-UT-802, Ultrasonic Examinations of Austenitic Piping Welds, Section XI, Appendix VIII, Rev. 5
ER-AA-NDE-VT-603, VT-3 Visual Examination Procedure, Rev. 6
ER-AP-BAC-10, Boric Acid Corrosion Control Program, Rev. 12
ER-AP-BAC-101, Boric Acid Corrosion Control Program (BACCP) Inspections, Rev. 12
ER-AP-BAC-102, Boric Acid Corrosion Control Program (BACCP) Evaluations, Rev. 13
NAP-SGPMS-001, North Anna Site Specific Eddy Current Analysis Guidelines, Rev. 19
Procedure Qualification Record 801, Manual GTAW, Rev. 2

Work Orders
59103042562, Replace Check Valve 02-FW-129-CKVALV
59103096179, Replace PZR Head Vent Valve 02-RC-SOV-202A1-VALVE; Welds 10 and 12A
59203143755, Replace PZR Head Vent Valve 02-RC-SOV-202B2-VALVE; Welds 25A and Y

Miscellaneous
Krautkramer Transducer Certificate of Conformity, Serial Number 01CXBL, 1/10/2006
Magnaflux Ultragel II Certification for Batch # 17F087, 06/30/2017
NDE personnel qualification records for G. Fuechtmann, R. Jones, and B. Zollner
Procedure Qualification Record 101, Manual GTAW, Rev. 5
Procedure Qualification Record 102, Manual GTAW, Rev. A
Procedure Qualification Record 801, Manual GTAW, Rev 2
Relief Request N2-I4-CMP-001
Relief Request N2-I4-LMT-003
Relief Request N2-I4-NDE-001
Relief Request N2-I4-NDE-006
Relief Request N2-I4-NDE-007
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Relief Request N2-I4-SPT-001
Welding Technique Number 103, Manual Welding GTAW and SMAW, Rev 8
Welding Technique Number 803, Manual Welding GTAW and SMAW, Rev 9
Welder Performance Qualifications for R. Anderson and J. Brown, J. Coleman, and J. Vaughan
AREVA Certificate of Personnel Qualification (ET) – Vouyioukas, 6/28/2016
AREVA Certificate of Personnel Qualification (ET) – Washburn, 7/14/2014
Framatome Certificate of Personnel Qualification (ET) – Wells, 6/18/2018
Framatome Certificate of Vision Examination – Vouyioukas, 7/26/2018
Framatome Certificate of Vision Examination – Washburn, 1/3/2019
Framatome Certificate of Vision Examination – Wells, 6/26/2018
Boric Acid Evaluation CR 1103333/CA7358619/WO59203275645, 2-SI-MOV-2869A – SI Hot Leg Injection Alternate HDR Isolation
Boric Acid Evaluation CR 1103337/CA7358686/WO59203275646, 2-CH-249; 2-CH-FCV-2122 Inlet Isolation Valve
Boric Acid Evaluation CR1079657/CA3066957/WO 59103126349, 2-CH-RV-2382B - Seal WTR

Return FLTR to Seal WTR HX Relief Valve
BOP-PT-19-063, Component ID: Final Welds 10 and 12A
BOP-PT-19-073, Component ID: Final Weld 25A
UT-19-027, Component ID: 12050-WMKS-0113B / 12-SI-468 / SW-24, Pipe to Elbow
UT-19-028, Component ID: 12050-WMKS-0113B / 12-SI-468 / SW-24, Pipe to Elbow
VT-19-063, Component ID: 12050-WMKS-SI-P-1B / 2-SI-P-1B / H-603C, STD-LC-MECH
VT-19-064, Component ID: 12050-WMKS-0111AAM / 3-CH-402 / 2–CH-A-236, 3" CH-402-1502-Q2
Dominion Formal Self-Assessment Report PIR1079417, Fleet Inservice Inspection Program Formal Self-Assessment
PIR1030006, Dominion Self-Assessment: Steam Generator Program
Self-Assessment Report SAR002813, Boric Acid Corrosion Control Program (BACCP) Self Assessment

**71111.11Q - Licensed Operator Requalification Program and Licensed Operator Performance**

Procedures
1-OP-2.1, Unit Startup From Mode 2 To Mode 1, Rev. 125
2-OP-2.1, Unit Startup From Mode 2 To Mode 1, Rev. 126
OP-AA-100, Conduct of Operations, Rev. 38
OP-AP-300, Reactivity Management, Rev. 22
ER-AA-RXE-1004, Generation and Control of Reactivity Management Plans, Rev. 4
SXG-13, Simulator Scenario Guide, Rev. 10
1-AP-3, Loss of Vital Instrumentation, Rev. 29
0-AP-39.1, Turbine Building Flooding, Rev. 9
1-E-0, Reactor Trip or Safety Injection, Rev. 50
1-ES-0.1, Reactor Trip Response, Rev. 33
1-FR-H.1, Response to Loss of Secondary Heat Sink, Rev. 23
EPIP-1.4, Response to Site Area Emergency, Rev. 22
SXG-19, Simulator Scenario Guide, Rev. 13
1-AP-4.3, Malfunction of Nuclear Instrumentation (Power Range), Rev. 23
1-AP-16, Increasing Primary Plant Leakage, Rev. 30
1-OP-8.5, Operation of Excess Letdown, Rev. 24
1-E-1, Loss of Reactor or Secondary Coolant, Rev. 29
1-FR-C.2, Response to Degraded Core Cooling, Rev. 16
1-FR-P.1, Response to Imminent Pressurized Thermal Shock, Rev. 21
EPIP-1.01, Emergency Manager Controlling Procedure, Rev. 52
EPIP-1.03, Response to Alert, Rev. 22

**71111.12 - Maintenance Effectiveness**

Procedures
NA-TM-19-00018, Temporary Modification – Battery Cart and Spare Jar Installation for Station Battery 1-II, Rev. 0
EE-0858, NAPS Station Battery 1-II voltage Profile Calculation, Rev. 0
ER-AA-MRL-100, Implementing Maintenance Rule, Rev 12

Condition Reports
1118052
1117988
1117942
1117865

1118557
1118819

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

Procedures

WM-AA-100, Work Management, Rev. 31
WM-AA-20, Risk Assessment of Maintenance Activities, Rev. 2
WM-AA-301, Operational Risk Assessment, Rev. 20
NF-AA-PRA-370, Probabilistic Risk Assessment Procedures and Methods; MRule (a)(4) Risk Monitor Guidance, Rev. 20
GMP-GM-103, Establishing and Maintaining Containment Closure Team During Unit Outage, Rev. 7
2-OP-5.4, Draining the Reactor Coolant System, Rev 76
2-GOP-13.1, Alternate Core Cooling Method Assessment Guidelines, Rev. 19
WM-AA-301, Operational Risk Assessment, Revision 20
WM-AA-301 – Attachment 15, High Risk Plan Actions, Casing Cooling Tank Level Calibrations
WM-AA-301 –Attachment 15, High Risk Plan Actions, Erect scaffold to support Unit 2 HP turbine 10-year disassembled inspections, February 14, 2019
WM-AA-301 – Attachment 15, High Risk Plan Actions, Erect scaffold to support HP turbine removal, January 24, 2019
WM-AA-301 – Attachment 15, High Risk Plan Actions, Remove/Install HP Turbine Enclosure, January 24, 2019
WM-AA-301 - Attachment 14, Medium Risk Plan Actions, 02-EE-EG-2J 3 year PM's –Planned EDG outage, January 7, 2019
NF-AA-PRA-370, Probabilistic Risk Assessment Procedures and Methods: MRule (a)(4) Risk Monitor Guidance, Revision 20
PI-AA-5003, Human Performance (HU) Review Board (HURB) Guidelines, Revision 2
PI-AA-5003 – Attachment 1, Human Performance Review Board Documentation for CR1116489, February 21, 2019
OP-NA-601, Protected Equipment, Revision 16
0-MPM-0701-01, 36-Month Preventive Maintenance of Emergency Diesel Generators, Revision 84
2-PT-36.5.3B, Solid State Protection System Output Slave Relay Test (Train B), Revision 40
1-AR-38 Station Service Transformers,
1-OP-2.1, Unit Startup From Mode 2 To Mode 1, Rev. 125
OP-AA-101, Operational Decision Making, Rev. 13

Condition Reports

CR1114245, 2-BD-TV-200F Indicating mid-position (C S/G blowdown trip valve) when closed
CR1113055, Hot Spot Identified on B Phase on the first 500 KV Tower from the U1 GSUs to switchyard
CR1116489, NRC identified, EOOS term was not modeled
CR1113444
CR1113446
CR1113490

Other Documents

U2 Main Control Room Logs, Feb. 12, 2019
Generic Letter 88-17, Loss of Decay Heat Removal – 10 CFR 50.54(f)
Unit 1 Forced Outage Work List, Jan 2019 12G1/1 Forced Outage
North Anna Power Station PRA Risk Summary, Revision 1

**71111.15 - Operability Determinations and Functionality Assessments**

Condition Reports

CR 1114777
CR 1108294
CR1090442
CR1113491
CR1114361, 1-HV-MOD-127A3/4 Damper for A SW not working
CR1114049, Dampers for A Train SWPH Ventilation not opening
CR1117314, 2-RC-HSS-413.09 found with low fluid

Work Orders

WO 590103102510

Other Documents

OD CA3161559
CA234062
CA3139857
TP16-1-112, Recommendations to Resolve Flowserve 10 CFR Part 21 Notification Affecting Anchor Darling Double Disc Gate Valve Wedge Pin Failures, Rev. 4
P2-74300-KO3, 4" Bolted Bonnet Swing Check Valve (Forged), Rev 0
12050-FM-074A, Flow/Valve Operating Numbers Diagram, Feedwater System, Unit 2, Rev 44
1175-FM-074A, Flow/Valve Operating Numbers Diagram, Feedwater System, Unit 1, Rev 47
WAPD-1050A, Isometric, Feedwater system, Unit 2, Rev 4
U2 Engineering Logs, Mar 13, 2019
ETE-NA-2015-0043, Operability Requirements of Tech Spec Equipment for the Loss/Removal of Support Safety Related Ventilation, April 7, 2019
WCAP-8914, Structural Analysis of Reactor Coolant System Piping for the North Anna Power Plant Unit No. 1, July 27, 2010
Calc. No. Z-2402, Support No H-108, H-109, Line No 8"-RC-413, October 30, 1978
12050-PSSK-109C.02, Pipe Support Sketch, Snubbers 2-RC-HSS-413.08 & .09 for 8"-RC-413-2501R-Q1, Reactor Containment, Elevation 241', C Loop Room, Revision 3
0-MPM-0901-01, Removal and Installation for as found functional testing and/or seal life testing of ITT Grinnell Snubbers, Revision 22
ER-NA-ISI-SN-615, Safety Related Snubbers, Revision 2
1-OP-21.4, Building Heating and Ventilation System, Revision 23
ER-AA-MRL-100, Implementing Maintenance Rule, Rev. 12
ADM-ER-AA-MOV-101, Motor-Operated Valve Program Process, Rev. 3
OP-AA-101, Operational Decision Making, Rev. 13
Prompt Operability Determination Documentation for CR1108294
OP-AA-102, Operability Determination, Rev. 15
NRC Generic Letter 89-10, Safety Related Motor-Operated Valve Testing and Surveillance
NRC Generic Letter 95-07, Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves
NRC Generic Letter 96-05, Periodic Verification of Design Basis Capability of Safety Related Motor Operated Valves
1-SC-9.1, Steam Flow Channel Tolerance, Rev. 1
1-AP-3, Loss of Vital Instrumentation, Rev. 29
OP-AA-101, Operational Decision Making, Rev. 13
1-OP-2.1, Unit Startup From Mode 2 To Mode 1, Rev. 125
OP-AA-100, Conduct of Operations, Rev. 38

**71111.18 - Plant Modifications**

Procedures

EE-0894, NAPS Open Phase Analysis, Rev 0
15-00063, Installation of Voltage Unbalance Protection (2H), Rev. 4
15-00064, Installation of Voltage Unbalance Protection (2J), Rev 2
IP 7.4.1.7-4, Voltage Balance Relay, Rev 3

**71111.19 - Post Maintenance Testing**

Procedures

WM-AA-100, Work Management, Rev. 31
0-ECM-0708-05, Woodward Digital Reference Unit (DRU) and 2301A Field Adjustments, Rev. 8
0-ECM-0706-02, Removal, Bench Testing, Adjustment, and Installation of Woodward 2301A in Emergency Diesel Generator Electronic Governor Control System, Rev 2
MOV-1001, Over-Current and Voltage Phase Imbalance Analysis for MOVs
ETE-NA-2014-0030, GL 96-05 Motor-Operated Valve Risk Ranking, Rev 0
ETE-NA-2017-0062, Transmittal of North Anna Anchor Darling Double Disk Gate Valve Classification, Rev 0
NA-CALC-000-ME-3186, Jog Calculation of Required Thrust Settings for MOV 2-RH-MOV-2720B
NA-CALC-000-ME-3185, Jog Calculation of Required Thrust Settings for MOV 2-RH-MOV-2720A
1-PT-109-1.2, Fire Protection-Deluge and Sprinkler System for Transformer, Rev 14
ET-NA-03-0159, Reduction of Oil Leakage and Elimination of Exhaust Fires, December 3, 2003
MA-AA-400, Measuring and Test Equipment, Revision 8
2-OP-6.2, Operation of 2J Emergency Diesel Generator from Control Room, Revision 53
2-PT-83.4B, 2J Diesel Generator Test (Start by ESF Actuation), Revision 73

Work Order

59203283243, 1-EE-BKR-1J1-2N-G4-CKTBRK

Condition Report

1115668, 1117121, 1117940, 1090442, 1114529

Work Orders

59102682057
59203285683
59203287388
59203141112
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59103102510
59103107086

Miscellaneous

Calibration Certificate for NQC-1770, Digital Multimeter

**71111.20 - Refueling and Other Outage Activities**

Other Documents

CR1118842
OU-AA-200, Shutdown Risk Management
2019 Unit 2 Outage Plan Safety Review
2-MOP-5.92, Removing Reactor Coolant Loops from Service for Maintenance

2-OP-5.4, Draining the Reactor Coolant System
2-OP-4.1, Controlling Procedure for Refueling
0-GOP-13.3, Assessment to Maintenance Activities for Potential Loss of RCS inventory
0-OP-4.26, Reactor Vessel Foreign Object Location and Retrieval, Rev 7
2-OP-3.7, Unit Shutdown from Mode 1 to Mode 5 for Refueling, Revision 52
2-OP-33.2, Steam Generator Transfer System, Revision 33-MR1
Scope Document for Cycle N2R26
EN35908
2019 Unit 2 Outage Plan and Safety Review, February 26, 2019

Condition Report
1119040

**71111.22 - Surveillance Testing:**
Procedures:
ER-AA-IST-101, ASME IST Program - Inservice Testing of Pumps, Rev. 4
ER-AA-IST-106, ASME IST Program - Control of IST Bases, Rev. 1
ER-AA-IST-100, ASME IST Program - General Requirements, Rev. 4
2-PT-57.4, Safety Injection Operational Test, Revision 2
1-PT-36.1A, Train A Reactor Protection and ESF Logic Actuation Logic Test, Rev. 73
1-PT-57.1A Emergency Core Cooling Subsystem – Low Head Safety Injection Pump (1-SI-P-1A)
1-P-213.8A Valve In-service Inspection (“A” Train of Safety Injection System)
1-PT-57.1A, Emergency Core Cooling Subsystem – Low Head Safety Injection Pump ( 1-SI-P-1A), Rev. 61
1-P-213.8A, Valve In-service Inspection (“A” Train of Safety Injection System), Rev. 13
WM-AA-100, Work Management, Rev. 31
OP-AA-100, Conduct of Operations, Rev. 38

Documents:
11715-FM-95B, Unit 1 Chemical and Volume Control System P&ID, Rev. 50
ASME OM-2012, Operation and Maintenance of Nuclear Power Plants
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**71114.06 – Drill Evaluation**
1-E-0, Reactor Trip or Safety Injection, Rev. 50
1-E-1, Loss of Reactor or Secondary Coolant, Rev. 29
1-E-3, Steam Generator Tube Rupture, Rev. 30
1-FR-H.1, Response to Loss of Secondary Heat Sink, Rev. 23
North Anna Power Station Emergency Plan, Rev. No. 45
North Anna Power Station Emergency Action Level Matrix, Rev. 8
North Anna Power Station Emergency Action Level Technical Bases Document, Rev. 8
EP-AA-100, Maintaining Emergency Preparedness, Rev. 8
EP-AA-400, Drill and Exercise Program, Rev. 13
EPIP-1.01, Emergency Manager Controlling Procedure, Rev. 52
EPIP-1.03, Response to Alert, Rev. 22
EPIP-1.04, Response to Site Area Emergency, Rev. 22
EPIP-1.05, Response to General Emergency, Rev. 24
EPIP-1.06, Protective Action Recommendation (PAR) (with 5 attachments), Rev. 13
EPIP-2.01, Notification of State and Local Governments, Rev. 39
EPIP-2.02, Notification of NRC (with 3 attachments), Rev. 23

EPIP-3.02, State Emergency Manager Guideline, Attachment 6, Rev. 38
EPIP-3.03, Activation of the Operations Support Center (OSC), Rev. 23
EPIP-3.05, Augmentation of Emergency Response Organization, (with 2 attachments). Rev. 11
EPIP-4.03, Dose Assessment Team Controlling Procedure (with 8 Attachments), Rev. 22
EPIP-4.07, Protective Measures (with 5 Attachments), Rev. 24
EPIP-4.09, Source Term Assessment (with 6 Attachments), Rev. 20
EPIP-5.03, Personnel Accountability, Rev. 21
EPIP-5.04, Access Control, Rev. 18
EPIP-5.05, Site Evacuation or Company Dismissal, Rev. 16
EPIP 5.09, Security Team Leader Controlling Procedure (with 8 attachments), Rev. 16
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PI-AA-200, Corrective Action, Rev. No. 34
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**71124.01 - Radiological Hazard Assessment and Exposure Controls**

Calibration Certificate, Eberline RO-20 S/N 5049
Calibration Certificate, Ludlum Model 2000 Scaler with 43-10 Detector, S/N 210619 and S/N PR329676
Calibration Certificate, Tennelec Series 5 S/N 41234
HP-1032.080 Controlled Area and Unrestricted Area Radiological Surveys, Rev. 9
HP-1032.131 Initial Movement of Irradiated Fuel Assemblies To and From the Reactor Vessel, Rev. 0
HP-1032.132 Guidance When Removing Items from Spent Fuel Pool or Reactor Cavity Rev. 0
HP-1032.202 Radiological Informational Posting Rev. 0
RP-AA-262 Steam Generator Primary Side Work Controls Activities Rev. 1
Air sample # 19-2259-0303-2247, U-2 216' Keyway Insulation Removal 03/03/2019
Radiological Survey, (Multiple elevations) Aux Building (Monthly Surveys), 01/19/2019, 01/20/2019, 01/21/2019, 02/16/2019, 02/17/2019, and 02/18/2019
Radiological Survey, Follow-up Survey for Lost SRD From HRA in U-2 Containment basement to PDA exit, 03/19/2019
CR1095071, CR1096735, CR1096762, CR1096784, CR1098071, CR1107260, CR1109991, CR1113156, CR1117867, CR1118605

**71152 - Problem Identification and Resolution**

Procedures
NA-2019-002, Request for Engineering Assistance, Lube oil requiring level B storage, January 7, 2019
TestOil Industrial Analysis, Analysis Reports from 2015-2019
SA-AA-115, Conduct of Fire Drills, Revision 4
CA3013550, Evaluation Oil Storage Conditions and Requirements

Condition Reports
CR1012098, 2-CH-P-1B OMB Gelatinous non-ferrous contaminant
CR1112492, Lube oil storage shed potentially doesn't meet level B material storage requirements
CR1116532, NRC-Identified Inaccurate Statement on NAPS Fire Risk Summary
Significant Safety Related Area – Fire Drill Activity by Quarter 2008-2019

**60855.1 - Operation and Installation of an Independent Spent Fuel Storage Installation (ISFSI)**

0-PT-4.3, ISFSI Dry Storage Cask Visual Inspection and DG Fuel Oil Sampling, Rev. 15
1-LOG-6E, Outsides Log, Rev. 104
North Anna Power Station ISFSI NRC Certificate of Compliance No. 1030, Rev. 11

**71003 - Post-Approval Site Inspection for License Renewal**

Condition Reports

CR 1119113, Coating Repairs Identified in 24"-SW-436-151-Q3 "A" Return Piping, 03/25/2019
CR 1119116, Erosion of Landing Area for Seat Ling on 02-SW-188, 03/25/2019
CR 1119153, Weld Repairs Identified in Service Water Segment #25, 03/26/2019

Miscellaneous

N2R26-FAC-105, Flow-Accelerated Corrosion Examination: 2-CN-PSF2-29

Work Orders

59102545119, Service Water Coating Inspection: Segment #9, "A" Supply for CCHXs, 4/3/2019
59102545237, Service Water Coating Inspection: Segment #25, "A" Supply for CCHX, 4/3/2019
59102545279, Service Water Coating Inspection: Segment #37, "A" Return from U2 RSHX, 4/2/2019
59103113197, Inspection/Lubrication/Compliance (02-MH-CRN-19-CRANE), 3/19/2019
59103116169, Inspection/Lubrication/Compliance (02-FH-CRN-5-CRANE), 3/12/2019
59103130366, Perform Post-Outage Inspection/Lubrication (02-MH-CRN-1-CRANE), 10/20/2018
59103132109, Flow-Accelerated Corrosion Inspection (2-CN-PSF2-29), 4/17/2019