

VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

August 28, 2020

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Serial No.: 20-284A
SPS/SCN: R0
Docket No.: 50-281
License Nos.: DPR-37

VIRGINIA ELECTRIC AND POWER COMPANY
SURRY POWER STATION UNIT 2
REPLY TO NOTICE OF VIOLATION; EA-20-057

Reference: Surry Power Station – Final Significance Determination of a White Finding and Notice of Violation and Assessment Follow-up Letter; NRC Inspection Report 05000281/2020091

By letter dated July 30, 2020, the Nuclear Regulatory Commission (NRC) notified Virginia Electric and Power Company (Dominion Energy Virginia) of a Notice of Violation and associated White finding (ADAMS Accession No. ML20212L517). The violation involved the failure of the Surry Power Station Unit 2 turbine driven auxiliary feedwater (TDAFW) pump discharge check valve 2-FW-142 during surveillance testing. Specifically, Dominion Energy Virginia did not analyze common failure or maintenance patterns to determine their significance and did not identify potential failure mechanisms of the Unit 2 TDAFW pump discharge check valve when establishing its check valve condition monitoring program in accordance with applicable ASME Code requirements.

The required response to the notice of violation is contained in Attachment 2. Dominion Energy Virginia understands the NRC plans to conduct a supplemental inspection in accordance with Inspection Procedure (IP) 95001, "Supplemental Inspection for One or Two White Inputs in a Strategic Performance Area." Accordingly, Dominion Energy Virginia will notify the NRC of our readiness for the supplemental inspection.

Should you have any questions regarding this submittal or require additional information, please contact Mr. Richard Philpot, Manager Emergency Preparedness and Licensing, at (757) 365-2647.

Sincerely,



Daniel G. Stoddard
Senior Vice President and Chief Nuclear Officer

Commitments made in this letter:

1. The Unit 1 Motor Driven Auxiliary Feedwater pump discharge check valves will be opened, inspected, and components replaced (as necessary) during the Unit 1 spring 2021 refueling outage. In the interim, acoustic testing will be used to ensure the valves have closed following routine surveillance testing.
2. The remaining five Unit 1 and 2 High Head Safety Injection charging pump discharge check valves will be opened, inspected, and components replaced as necessary by December 31, 2021.
3. A root cause evaluation of the station's overall Check Valve Conditioning Monitoring (CVCM) program will be performed to ensure compliance with the ASME OM code requirements by October 23, 2020.

Attachments: 1. Restatement of Notice of Violation EA-20-057
2. Reply to Notice of Violation EA-20-057

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CONCURRENCE:

B. E. Standley BES (per email)
C. D. Sly CDS (per email)
W. S. Blair WSB (per email)
D. C. Lawrence/SPS DCL (see attached)

VERIFICATION OF ACCURACY:

1. Surry Power Station – Final Significance Determination of a White Finding and Notice of Violation and Assessment Follow-up Letter; NRC Inspection Report 05000281/2020091.
2. Root Cause Evaluation (RCE), “Unit 2 Auxiliary Feedwater System Declared Inoperable,” CA7783062/CR1136400.
3. Condition Report CR1136400, “2-FW-P-2 rotating in reverse direction,” reported 11/20/2019.
4. RCE #3003883, “Degraded Service Water Conditions Resulted in 0-AP-12 Entry,” 11/12/2015.

ACTION PLAN/COMMITMENTS (STATED OR IMPLIED)

1. Inspect the Unit 1 Motor Driven AFW (MD AFW) pump discharge check valves during the 2021 spring refueling outage. [CA 7853988, due 6/12/2021]

Responsibility: Maintenance Support **Due Date:** 2021 Unit 1 spring RFO
LA No.: _____

2. Until the valves have been inspected, perform acoustic testing of the Unit 1 MD AFW pump discharge check valves to ensure the valves have closed following routine surveillance testing. [CA7854184, due 7/1/2021]

Responsibility: Engineering Systems **Due Date:** July 1, 2021
LA No.: _____

3. Inspect the remaining five Unit 1 and 2 HHSI charging pump discharge check valves by December 31, 2021. [CAs 7854001, 7854225, 7854224]

Responsibility: Maintenance Support **Due Date:** December 31, 2021
LA No.: _____

4. Perform a root cause evaluation of the station's overall Check Valve Conditioning Monitoring (CVCM) program to ensure compliance with the ASME OM code requirements.

Responsibility: Engineering Systems **Due Date:** October 23, 2020
LA No.: _____

REQUIRED CHANGES TO THE UFSAR, ISFSI UFSAR OR THE TOPICAL REPORT

None.

Attachment 1

RESTATEMENT OF NRC NOTICE OF VIOLATION EA-20-057

**Virginia Electric and Power Company
(Dominion Energy Virginia)
Surry Power Station Unit 2**

NOTICE OF VIOLATION

Virginia Electric and Power Company
Surry Power Station Unit 2

Docket No. 05000281
License No. DPR-37
EA-20-057

During an NRC inspection conducted November 20, 2019, through May 13, 2020, a violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the violation is listed below:

Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(f)(4) states, in part, "Throughout the service life of a boiling or pressurized water-cooled nuclear power facility, pumps and valves that are within the scope of the ASME OM Code must meet the inservice test requirements (except design and access provisions) set forth in the ASME OM Code and addenda... ."

ASME OM Code, 2004 Edition (the Code of record for Surry Power Station Unit 2), Mandatory Appendix II, "Check Valve Condition Monitoring Program," subsection II-3000, states, in part, "The Owner shall perform an analysis of the test and maintenance history of a valve or group of valves in order to establish the basis for specifying inservice testing, examination, and preventive maintenance activities. The analysis shall include the following: Identify any common failure or maintenance patterns. Analyze these patterns to determine their significance and to identify potential failure mechanisms...."

Surry Power Station Technical Specification (TS), 3.6.F.3, states in part, "With three auxiliary feedwater pumps inoperable, immediately initiate action to restore one inoperable pump to OPERABLE status. Specification 3.0.1 and all other required actions directing mode changes are suspended until one inoperable pump is restored to OPERABLE status."

Contrary to 10 CFR Part 50.55a(f)(4) above, from November 23, 2005, to November 20, 2019, the Unit 2 turbine-driven auxiliary feedwater (TDAFW) discharge check valve did not meet the inservice test requirements set forth in the ASME OM Code, 2004 Edition. Specifically, the analysis performed by the licensee of the test and maintenance history of the valve in order to establish the basis for specifying inservice testing, examination, and preventive maintenance activities did not identify known failure and maintenance patterns nor did the licensee analyze the known patterns to determine their significance and to identify potential failure mechanisms.

Consequently, contrary to Surry Power Station TS, 3.6.F.3 above, from October 28, 2019, (or earlier) to November 20, 2019, with three auxiliary feedwater pumps inoperable, the licensee did not immediately initiate action to restore one inoperable pump to OPERABLE status.

Specifically, the result of the licensee not meeting the requirements of 10 CFR Part 50.55a(f)(4) above, was that the TDAFW discharge check valve disc assembly parts experienced excessive wear. This prevented the valve from checking shut during surveillance testing on October 28, 2019, and/or earlier, rendering all three auxiliary feedwater pumps inoperable. This condition was discovered during auxiliary feedwater check valve operability testing on November 20, 2019.

This violation is associated with a White Significance Determination Process finding.

Attachment 2

REPLY TO NOTICE OF VIOLATION EA-20-057

**Virginia Electric and Power Company
(Dominion Energy Virginia)
Surry Power Station Unit 2**

REPLY TO NOTICE OF VIOLATION EA-20-057

Reason for the Violation:

The reason for the violation was failure to perform adequate preventative maintenance on the Turbine Driven Auxiliary Feedwater (TD AFW) pump discharge check valve that resulted in the inoperability of the Surry Unit 2 AFW system. This was not in compliance with applicable requirements of the American Society of Mechanical Engineers (ASME) Code for Operation and Maintenance (OM) of Nuclear Power Plants, 2004 Edition.

Specifically, in 1996 the decision was made to remove the Preventative Maintenance (PM) model work orders created in 1995 from an "active" status. Then in 2005, the decision was made to change the periodic check valve "open and inspect" requirement to an "on-demand"¹ requirement. These decisions did not receive the appropriate level of scrutiny regarding their acceptability. As a result, the station did not effectively monitor the extent of wear that was occurring in the TD AFW pump discharge check valve internals.

The Corrective Steps that have been Taken and the Results Achieved:

A Root Cause Evaluation (RCE) was completed to identify the root cause of the AFW event, as well as the corrective actions necessary to prevent recurrence. Completed corrective actions include replacing the Unit 2 TD AFW pump discharge check valve's internal assembly and successfully inspecting the Unit 1 TD AFW pump discharge check valve's internal assembly.

The extent of condition investigation focused on safety-related swing check valves which are subject to excessive wear and do not have a replacement or open and inspect PM. During the investigation, it was noted that the High Head Safety Injection (HHSI) charging pumps' discharge check valves are similar in configuration to AFW (i.e., discharge check valve to a common header and a safety related system). Although the HHSI charging pump discharge check valves are tested quarterly to ensure the check valves close (i.e., backpressure leak tested), the check valves also did not have a periodic open and inspect PM to visually inspect the valve internals for excessive wear. The action to address this issue is discussed in the next section.

The Unit 1 and Unit 2 TD AFW check valves have been opened, inspected, and repaired as necessary. The Unit 2 Motor Driven (MD) AFW check valves were opened and inspected and found to be satisfactory. Additionally, one of the Unit 2 HHSI pump discharge check valves was inspected and determined to be satisfactory. The planned opening and visual inspection of the Unit 1 MD AFW pump discharge check valves and the remainder of the Unit 1 and 2 HHSI charging pump discharge check valves is addressed in the next section.

¹ On demand equates to only performing maintenance when degraded valve performance is identified.

Recurring PMs have been established to open, inspect, and replace components (as necessary) on a six refueling outage (RFO) frequency for the Unit 1 and Unit 2 TD AFW, MD AFW, and HHSI charging pump discharge check valves. The PMs will be in-effect following the initial "open and inspect" on each of the AFW and HHSI charging pump discharge check valves.

Finally, a corrective action to prevent recurrence of the ineffective TD AFW pump discharge check valve preventative maintenance program was previously implemented as part of a 2015 RCE. The 2015 RCE corrective action involved procedure changes to require additional reviews and approvals prior to deferring or cancelling PMs. This corrective action did not prevent the occurrence of the current AFW check valve event because the decisions made for its PMs were legacy issues which occurred in 1996 and 2005; however, it would prevent future occurrences.

The Corrective Steps that will be Taken:

The Unit 1 MD AFW pump discharge check valves will be opened, inspected, and components replaced (as necessary), during the 2021 Unit 1 spring RFO. In the interim, acoustic testing will be used to ensure the valves have closed following routine surveillance testing. Additionally, the remaining five Unit 1 and 2 HHSI charging pump discharge check valves will be opened, inspected, and components replaced (as necessary) by December 31, 2021.

An additional root cause evaluation of the station's overall Check Valve Conditioning Monitoring (CVCM) program will be performed to ensure compliance with the ASME OM code requirements by October 23, 2020.

The Date when Full Compliance will be Achieved:

The dates for full compliance of the AFW and HHSI charging pumps' discharge check valves are the completion of the Unit 1 spring 2021 RFO and December 31, 2021, respectively. If necessary, the date for full compliance of the station's overall Check Valve Conditioning Monitoring (CVCM) program will be established after the completion of the associated root cause evaluation.