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

September 26, 2022

Mr. Daniel G. Stoddard
Senior Vice President and Chief Nuclear Officer
Dominion Energy
5000 Dominion Boulevard
Innsbrook Technical Center
Glen Allen, VA 23060

SUBJECT: NORTH ANNA POWER STATION – DESIGN BASIS ASSURANCE INSPECTION (PROGRAMS) INSPECTION REPORT 05000338/2022010 AND 05000339/2022010

Dear Mr. Stoddard:

On August 10, 2022, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at North Anna Power Station. On July 1, 2022, the NRC inspectors discussed the results of this inspection with Ms. Lisa Hilbert and other members of your staff. The results of this inspection are documented in the enclosed report.

Two findings of very low safety significance (Green) are documented in this report. Two of these findings involved violations of NRC requirements. We are treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2 of the Enforcement Policy.

If you contest the violations or the significance or severity of the violations documented in this inspection report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement; and the NRC Resident Inspector at North Anna Power Station.

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 Baptist, James
on 09/26/22

James B. Baptist, Chief
Engineering Br 1
Division of Reactor Safety

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

Enclosure:
As stated

cc w/ encl: Distribution via LISTSERV

SUBJECT: NORTH ANNA POWER STATION – DESIGN BASIS ASSURANCE INSPECTION (PROGRAMS) INSPECTION REPORT 05000338/2022010 AND 05000339/2022010 dated September 26, 2022

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DATE	09/26/2022	09/26/2022	09/26/2022	09/26/2022	

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U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report

Docket Numbers:	05000338 and 05000339
License Numbers:	NPF-4 and NPF-7
Report Numbers:	05000338/2022010 and 05000339/2022010
Enterprise Identifier:	I-2022-010-0040
Licensee:	Dominion Energy
Facility:	North Anna Power Station
Location:	Mineral, VA.
Inspection Dates:	June 13, 2022 to July 01, 2022
Inspectors:	J. Bundy, Senior Operations Engineer T. Fanelli, Senior Reactor Inspector C. Franklin, Reactor Inspector
Approved By:	James B. Baptist, Chief Engineering Br 1 Division of Reactor Safety

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting a design basis assurance inspection (programs) inspection at North Anna Power Station, 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 Address Faulted Conditions for Valve Analysis			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000338/2022010-01 Open/Closed	None	71111.21N.02
The NRC identified a GREEN finding and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, for the licensee's failure to address design basis load combinations in the analysis to determine the safety-related functional performance of 16" service water butterfly valve 1-SW-MOV-103D, "Service Water Supply to "D" Recirculation Spray Heat Exchanger, Outside Containment Isolation Valve," at the North Anna Power Station (NAPS).			

Failure to Verify the Effects of Overstressing the Backseat of Valves			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000339/2022010-02 Open/Closed	None	71111.21N.02
The NRC identified a GREEN finding and associated NCV of 10 CFR Part 50, Appendix B, Criterion III for the licensee's failure to justify the model used for accurately representing the geometry of the disc and seat and the forces acting on the valves' backseat and bonnet of 2-RC-MOV-2536, "Block Valve for Pressurizer Power Operated Relief Valve."			

Additional Tracking Items

None.

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.

REACTOR SAFETY

71111.21N.02 - Design-Basis Capability of Power-Operated Valves Under 10 CFR 50.55a Requirements

POV Review (IP Section 03) (11 Samples)

The inspectors:

a. Determined whether the sampled POVs are being tested and maintained in accordance with NRC regulations along with the licensee's commitments and/or licensing bases. Specific Guidance
b. Determined whether the sampled POVs are capable of performing their design-basis functions.
c. Determined whether testing of the sampled POVs is adequate to demonstrate the capability of the POVs to perform their safety functions under design-basis conditions.
d. Evaluate maintenance activities including a walkdown of the sampled POVs (if accessible).

(1) **1-RC-MOV-1535, Block Valve for Pressurizer Power Operated Relief Valve**
(2) **1-SW-MOV-103D, Service Water Supply To "D" Recirc Spray Heat Exchanger, Outside Cont Isolation Valve**
(3) **2-RC-MOV-2536, Block Valve for Pressurizer Power Operated Relief Valve**
(4) **1-SI-MOV-1836, High Head SI from Charging Header to RCS Cold Legs, Outside Containment Isolation Valve**
(5) **2-CH-MOV-2115D, Charging Pump Supply Isolation Valve from Refueling Water Storage Tank**
(6) **2-SI-MOV-2867A, Boron Injection Tank High Head SI Inlet Valve**
(7) **2-SW-MOV-204D, Service Water Return from "D" Recirc Spray Heat Exchanger, Outside Cont Isolation Valve**
(8) **1-RH-MOV-1720B, RHR Return Isolation To "C" Accumulator Discharge Line**
(9) **1-RC-PCV-1456, Pressurizer Power Operated Pressure Control Valve Discharge to Pressurizer Relief Tank**
(10) **2-MS-TV-211A, Main Steam Supply Trip Valve to Turbine Driven Auxiliary Feedwater Pump**
(11) **1-RC-SOV-101A, Reactor Vessel Vent Line Isolation Valve to Refueling**

INSPECTION RESULTS

Failure to Address Faulted Conditions for Valve Analysis			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000338/2022010-01 Open/Closed	None	71111.21N.02

The NRC identified a GREEN finding and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, for the licensee's failure to address design basis load combinations in the analysis to determine the safety-related functional performance of 16" service water butterfly valve 1-SW-MOV-103D, "Service Water Supply to "D" Recirculation Spray Heat Exchanger, Outside Containment Isolation Valve," at the North Anna Power Station (NAPS).

Description: The inspectors reviewed the calculation of record that determined the functional performance of valve 1-SW-MOV-103D. The calculation (NA-CALC-MEC-ME-0317, "Service Water Motor Operated Valve Operating Torque Requirements, 59-01-SW-MOV-103D-Valve," Addendum Q, dated August 21, 2019) determined that the valve had a 3.3% margin in the open and close directions without considering additional seismic loading. However, the Updated Final Safety Analysis Report (UFSAR) Appendix 3A, "Compliance with Safety Guides," specified that loading combinations that included seismic loads must be addressed.

The UFSAR Appendix 3A.33, "Design Limits and Loading Combinations for Seismic Class I Fluid System Components (Regulatory Guide [RG] 1.48)," stated in part, that "the valves were designed to function at normal operation conditions, maximum design conditions, and DBE conditions." The inspectors noted that this statement paralleled the statement in RG 1.48, regulatory position 12.a for, "the primary-pressure rating Pr^{11} should not be exceeded when the component is subjected to either… (3) concurrent loadings associated with the normal plant condition, the vibratory motion of the SSE, and the dynamic system loadings associated with the faulted plant condition." In addition, the RG stated, in part, "to further provide a consistent basis for design of fluid system components important to safety, this guide delineates acceptable design limits and appropriate combinations of loadings associated with applicable plant conditions and specified seismic events." And that "for the particular case of active pumps and valves (i.e., pumps and valves that must perform a mechanical motion during' the course of accomplishing a 'system safety function), special design limits and supplemental requirements are specified to provide assurance of operability. These special design limits and supplemental requirements are provided for active pumps and valves because the rules for construction of [ASME] Section III apply to the assurance of pressure-retaining integrity but do not assure that pumps and valves designated to perform a system safety function will operate when required." The inspectors determined that the licensee was not using the loading combinations specified by the UFSAR.

The NRC regulations in 10 CFR 50.55a(b)(3)(ii) require that licensees comply with the testing provisions of the applicable ASME OM Code and must establish a program to ensure that MOVs continue to be capable of performing their design-basis safety functions. In the *Federal Register* (FR) notice dated September 22, 1999, the NRC discussed the licensee MOV programs in response to Generic Letters 89-10 and 96-05 in meeting this regulation. With GL 89-10 applying to MOV capability for design-basis events, GL 89-10, Supplement 1, "Results of The Public Workshops," dated June 13, 1990, indicates in the response to Question 16 that the NRC staff did not expect licensees to duplicate external factors (such as seismic loads) in performing MOV tests, but considered that these loads should be addressed analytically. The inspectors determined that the seismic loads could amplify the dead and live loading of the valve and fluid and might increase the thrust required

to operate 1-SW-MOV-103D as specified by the UFSAR and GL 89-10, Supplement 1. The 3.3% functional margin (19.8 ft-lb of torque) could be depleted when considering the seismic loading, and thus affecting the safety-related functional performance of the valve.

At NAPS, the failure of the licensee to address design basis loading combinations that included normal operation conditions, maximum design conditions, and DBE conditions to determine the functional performance of 1-SW-MOV-103D is a performance deficiency.

Performance Assessment:
Performance Deficiency: The failure to address design basis load combinations in the analysis to determine the safety-related functional performance of 16" service water butterfly valve 1-SW-MOV-103D was a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because it was associated with the Design Control attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the licensee failed to address design basis load combinations design calculations to determine functional performance of the service water system that required to automatically support the Recirculation Spray heat exchangers on a high-high containment signal and to close if required to provide containment isolation that affects the availability, reliability, and capability of service water system.

Significance: The inspectors assessed the significance of the finding using IMC 0609 Appendix A, “The Significance Determination Process (SDP) for Findings At-Power.” the finding was determined to be of very low safety significance GREEN because the finding is a deficiency affecting the design or qualification of a mitigating SSC, but the SSC maintains its operability or PRA functionality

Cross-Cutting Aspect: None

Enforcement:

Violation: 10 CFR Part 50, Appendix B, Criterion III, “Design Control,” states, in part, that “Measures shall also be established for the selection and review for suitability of application of materials, parts, equipment, and processes that are essential to the safety-related functions of the structures, systems and components.”

Contrary to the above, since 08/21/2019, the licensee failed to review for suitability the parts and equipment that are essential to the safety-related functions of the service water system 1-SW-MOV-103D required to automatically support the Recirculation Spray heat exchangers on a high-high containment signal and to close if required to provide containment isolation.

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

Failure to Verify the Effects of Overstressing the Backseat of Valves			
Cornerstone	Significance	Cross-Cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000339/2022010-02	None	71111.21N.02

	Open/Closed		

The NRC identified a GREEN finding and associated NCV of 10 CFR Part 50, Appendix B, Criterion III for the licensee's failure to justify the model used for accurately representing the geometry of the disc and seat and the forces acting on the valves' backseat and bonnet of 2-RC-MOV-2536, "Block Valve for Pressurizer Power Operated Relief Valve."

Description: In 2013, prior to the third and final diagnostic test stroke, block valve MOV 2-RC-MOV-2536 was manually back-seated with 12,145 lbs. of thrust or 13,120 lbs. when considering measurement uncertainties. This exceeded the backseat weak link limit per Calculation 2044498-C-056, "Seismic / Weak Link Calculation for MOVs: 2-RC-MOV-2536 at North Anna Unit 2," Rev. 1. At the time, this was identified as a Condition Adverse to Quality (CAQ) and condition report, (CR) 510969, was submitted for this loss of test control and potential over-stress of the valve backseat. The initial corrective action was to perform a visual inspection and blue check of the backseat contact surface area to determine if the backseat must be replaced. The inspectors determined from OE that similar events caused stress degradation of the valve bonnet structure.

Under CR 510969, a Corrective Action item (CA) 259171 initiated an addendum "A" to calculation 2044498-C-056 that "evaluates the inadvertent local-manual back-seating of 59-02-RC-MOV-2536." The addendum modeled the forces on the backseat as an applied force to a 45° angle and discarded one of the constituent vectors of the applied force without sufficient justification. This inaccurately implied that only one of the force vectors contributed to the seat stress. In addition, addendum A increased the established seat to disc contact area and used the less conservative full yield (30 kips per square inch (ksi)) instead of the allowable yield limit (18.7 ksi) from the American Society of Mechanical Engineers (ASME) Boiler & Pressure Vessel Code (BPV Code). As a result of this new model, the calculation determined "an acceptable condition for the substrate portion of the back-seat, since the allowed thrust of 9,779 lbs. exceeds the local-manual back-seat force of 9,289 lbs." In response to inspector questions, the licensee stated, in part, that "this evaluation determined no allowable limits were exceeded and recommended a visual inspection of the valve stem and bonnet back-seat regions be performed to visually inspect and assess the condition of 2-RC-MOV-2536. NAPS Engineering recommends cancelling WO#59102595243 (Valve Bonnet Back-Seat Inspection) and WO#59102714708 (Contingency Valve Back-Seat Replacement)." As a result, the valve bonnet-backseat area of the valve was not inspected or replaced. The inspectors determined that the licensee model did not include sufficient justification for accurately representing the geometry of the disc and seat nor the forces acting on the valves' backseat and bonnet.

The inspectors determined that the contact profile between disk and backseat had the same geometry as a globe valve. The inspectors noted that the Electric Power Research Institute (EPRI) had established models and equations for this contact profile to determine the disc to seat contact stresses, and what is needed to determine the effect of the backseat overstress event. In addition, the EPRI models and equations satisfy the requirements of 10 CFR Part 50, Appendix B. The EPRI model indicates that the backseat yield stress limit, 30 ksi, was most likely exceeded during the event. This was because both vector components of the applied force contribute to the disc to seat contact stress.

The licensee's current position is to rely on ASME BPV Code service level D to accept the condition of the valve internals. Level D service limits are allowed in the ASME BPV Code, and "permit gross general deformations with some consequent loss of dimensional stability and damage requiring repair, which may require removal of the component or support from service." Using Level D service limits to cancel the planned corrective actions of inspecting

and repairing potential degradation to safety related active components (such as pumps and valves), does not meet 10 CFR 50 Appendix B requirements, especially where plastic deformation of internal parts can prevent an active component from performing its safety function. Over stressing the bonnet could result in “a gross general deformation with some consequent loss of dimensional stability and damage of the backseat” which, in turn, could have affected other components in the valve. Although the licensee previously obtained peer review of its calculations, the technical issues identified by the inspectors did not appear to have been considered as part of the peer review.

Performance Assessment:

Performance Deficiency: The failure to justify the model used for accurately representing the geometry of the disc and seat and the forces acting on the valves’ backseat and bonnet for block valve 2-RC-MOV-2536, was a performance deficiency.

Screening: The inspectors determined the performance deficiency was more than minor because if left uncorrected, it would have the potential to lead to a more significant safety concern. because a failure of the structure of the pressurizer block valve could cause undesirable consequences during accident sequences.

Significance: The inspectors assessed the significance of the finding using IMC 0609 Appendix A, “The Significance Determination Process (SDP) for Findings At-Power.” the finding was determined to be of very low safety significance GREEN because the finding is a deficiency affecting the design or qualification of a mitigating SSC, but the SSC maintains its operability or PRA functionality

Cross-Cutting Aspect: None

Enforcement:

Violation: 10 CFR 50, Appendix B, Criterion III, Design Control, Requires, in part, that “the design control measures shall provide for verifying or checking the adequacy of design, such as by the performance of design reviews, by the use of alternate or simplified calculational methods, or by the performance of a suitable testing program.”

Contrary to the above, since April 23, 2013, the licensee failed to provide design control measures for verifying or checking the adequacy of design, such as by the performance of alternate or simplified calculational methods to determine the actions necessary to address potential gross general deformation with some consequent loss of dimensional stability and damage of the backseat that could have degraded other components in the valve.

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 July 1, 2022, the inspectors presented the design basis assurance inspection (programs) inspection results to Ms. Lisa Hilbert and other members of the licensee staff.

- On August 10, 2022, the inspectors presented the Re-Exit inspection results to Ms. Lisa Hilbert and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71111.21N.02	Calculations	14938.32-M-1	Maximum Differential Pressure High Pressure Safety Injection and Auxiliary Feedwater Valves	Rev. 1
		2044498-C-014	Seismic / Weak Link Calculation for MOVs: 1-CH-MOV-1115B/D, 2-CH-MOV-2115B/D, 1-SI-MOV-1863A/B, 2-SI-MOV-2863A/B	Rev. 1
		2044498-C-036-ADD-G	Seismic / Weak Link Calculation for MOVs:1-SI-MOV-1890A, 1-SI-MOV-1890B, 1-SI-MOV-1890C & 1-SI-MOV-1890D at North Anna Unit 1 1-RH-MOV-1720A and 1-RH-MOV- 1720B at North Anna Unit 1	Rev. 0
		2044498-C-050B	SEISMIC / WEAK LINK CALCULATION for MOVs: X-RC-MOV-X535 & 1-RC-MOV-1536 at North Anna X-RC-MOV-X535 & X-RC-MOV-X536 at Surry	Rev. 2
		2044498-C-056	SEISMIC / WEAK LINK CALCULATION for MOVs: 2-RC-MOV-2536 at North Anna Unit 2	Rev. 1
		2044498-C-056 Addendum A	Seismic - Weak Link Calculation for MOVs 2-RC-MOV-2536	Rev. 1
		59-02-PT-213.20	Valve Inservice Testing 2-MS-TV-211A and 2-MS-TV-211B	Rev. 13
		CE-1436	Seismic Qualification for PCV Valves, including 1-RC-PCV-1456	12/18/1998
		CT-CACL-MEC-DR-2958	Design / Seismic / Weak link report for 2-SI-MOV-2867A	02/21/2012
		CT-CALC-MEC-2044498-C-050A	Seismic / Weak Link Calculation for MOVs at North Anna 1 & 2 and Surry 1 & 2	Rev. 3
		DR-3566	16” Class 150 Triple Offset Butterfly Valve (Nuclear Safety Related) Actuator Limitorque SMB-00-10/HBC-3	Rev. 0
		ETE-NA-2013-0059	North Anna Air Operated Valve (AOV) Categorization Basis	Rev. 2
		ME-0623-ADD-00A	System Level Calculation for Category 1 Air Operated Valves	Rev. 0
		ME-0659	Evaluation of Category 1 AOVs to Perform their Design	Rev. 0

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			Basis Function	
		ME-0659-ADD-L	Evaluation of Cat 1 AOVs to Perform their Design Basis Function	12/18/2013
		ME-0697	MOV Differential Pressure (DP) Calculation for the Valves 59-01-SI-MOV-1	Rev. 0
		ME-0922	MOV Differential Pressure (DP) Calculation for the subject valves: 1-RH-MOV-1700, 1-RH-MOV-1701, 1-RH-MOV-1720A, 1-RH-MOV-1720B, 2-RH-MOV-2700, 2-RH-MOV-2701, 2-RH-MOV-2720A, 2-RH-MOV-2720B	Rev. 0
		ME-120 Addendum 004	maximum differential pressure across valves 01-RC-MOV-1535	Rev. 0
		ME-12166	Fatigue Analysis for HBC Actuator for 1SW-MOV-103D	Rev. 0
		ME-12181	NAPS Unit 1 and Unit 2 RSHX SW Supply and Return Valve Setup Calculation and JOG Evaluation	Rev. 0
		ME-12197	JOG Classification Document	Rev. 0
		ME-12198	Calculation of Minimum Required Closing Thrust at CST (C14) for Limit Switch (LS) controlled SB actuators with leakage requirements (1-CH-MOV-1115B/D and 2-CH-MOV-2115B/D)	Rev. 0
		ME-3050	JOG Calculation of Required Thrust Settings for MOV 1-RC-MOV-1535	Rev. 3
		ME-3055	JOG Calculation of Required Thrust Settings for MOV 1-RH-MOV-1720B	Rev. 3
		ME-3064	JOG Calculation of Required Thrust Settings and margin for 59-01-SI-MOV-1836	Rev. 2
		ME-3135	JOG Calculation of Required Thrust Settings for MOV 2-CH-MOV-2115D	Rev. 2
		ME-3182	JOG Calculation of Required Thrust Settings for MOV 2-RC-MOV-2536	Rev. 2
		NA-CALC-ASM-6730	Design and Seismic Report of Target Rock Valves including 1RC-SOV-101A	Rev. 1
		NA-PROC59-000-59-EZD	North Anna Units 1 and 2 Environmental Zone Description	07/18/2019
		PQE-03.01-P01	Environmental Qualification for Motor Operated Valves	Rev. 2

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			Outside Containment	
	Corrective Action Documents	CR1062856, CR1080095, CR1080391, CR1117567, CR1119542, CR1159527, CR1179992, CR1193543		
	Drawings	050-0029411-D01	Torqseal Triple-Offset Butterfly Valve	Rev. H
		11715-12050-6.43-24A	8" 150# Gate Valve R.S. B.B. Cast Stain Stl Butt Weld Ends Stellite Trim Seal W.B. Motor Operated	Rev. D
		11715-7.69-116A	Fisher Controls Co. NA-125 Steel Body Style 1	Rev. A
		11715-ESK-6CY-1	Elementary Diagram 480V Circuit for 01-SW-MOV-103D	Rev. 25
		11715-ESK-6NR	Elementary Diagram 1-RC-PCV-1456	Rev. 20
		11715-FM-078B	Service Water System Unit 1	Rev. 37
		11715-FM-093B	Reactor Coolant System VOND for 1-RC-PCV-1456	Rev. 29
		11715/12050-6.43-11D	10x8x10 NO. S350 W DD ASA Series 1500, Welding Ends Outside Screw & Yoke Gate Valve With Lip Seal and SMB-2-00 Limitorque Valve Control	Rev. 5
		15_NA-DWG-000-1800084-11715-RC-109 SH-001	Reactor Coolant System Pressurizer Power Relief Valve	Rev. 0
		NA-EDWG-000-11715_12050-6.43-7C SH-001	Velan Engineering, Forged Bolted Bonnet MOV for ASA 1500 lb 3”	Rev. 6
	Engineering Changes	NA-09-0116	Upgrades to 2-CH-MOV-211B/D, 2-CH-MOV-2289A, 2-SI-MOV-2860A/B, and 2-SI-MOV-2867C for MOV JOG Imporvements	Rev. 0
		NA-10-00126	Design Change for Replacement of 2-SI-MOV-2867A	12/07/2010
		NA-10-00152	Reactor Head Vent Equivalent SOV	10/03/2010

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		NA-17-00223	Anchor Darling Gate Valves Wedge Pin and Stem Replacement /NAPS /Unit I &2	Rev. 2
		NA-18-00160	1-RH-MOV-1720A/B Control Scheme Modification	Rev. 0
		NA-19-00086	2-MS-TV-211A & 2-MS-TV-211B Trim Replacement	Rev. 1
		NA-20-00051	2-SW-MOV-203B/D and 2-SW-MOV-204B/D Replacement	Rev. 2
	Engineering Evaluations	CT-EQUAL-000-PQE-35.04-P01	Plant Qualification Evaluation for Reactor Head Vents	Rev. 3
		ETE-CME-2013-1025	Design Basis COF for Gate Valves With Stellite-Stellite Disc/Seat Material Pairs	Rev. 0
		ETE-CME-2018-0011	MOV Rate-of-Loading (ROL) Evaluation for North Anna and Surry Power Stations	Rev. 0
		ETE-NA-2013-0059	North Anna Air Operated Valve Categorization Basis	06/08/2016
		ME-0985	Pressure Locking Analysis for GL 95-07: North Anna MOVs	Rev. 0
		NA-CALC-MEC-ME-0659	Evaluation to Perform Design Basis Function for 1-RC-PCV-1456	12/18/2013
		NA-CALC-PSS-CE-1641	Analysis of Reactor Head Vent Line Unit 1	
		SEWS 1-RC-PCV-1456	Screening evaluation work sheet for 1-RC-PCV-1456	12/30/1998
	Miscellaneous	59-A101-00002	Darling OS & Y Motor Operated Gate Valves	Rev. 5
		59-A101-00004	Flexible Wedge Type Gate Valves	Rev. 5
		59-F098-00001	Instruction Manual for Anchor Darling Double-Disc Gate Valves Sizes 2-1/2" and above	Rev. 1
		59-F264-00010	Fisher ES and EAS Easy-E Valves CL125 through CL600	Rev. 10
		59-F264-00011	Series 476 Actuators	Rev. 2
		59-L553-00001	SMB Series/ SB Series Installation and Maintenance	Rev. 9
		59-L553-00002	Limitorque Type HBC Series	Rev. 6
		CE-0110	Criteria and Approach for Seismic Qualification of Valves	09/30/1999
		CT-EQUAL-000-GQE-03.01-G02	Nuclear Power Station Qualification Type Test Report Limitorque Valve Actuators with Type LR Motor for Westinghouse PWR	Rev. 2

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		CT-PO-000-45323520	Certificate of Compliance for Valve Model 79AB-008BB-1	12/08/2003
		ETE-CME-2013-1025	Design Basis COF for Gate Valves With Stellite-Stellite Disc/Seat Material Pairs	Rev. 0
		IOM-BFVM-02-16a	Installation and Operation Manual Torqseal Valves	Rev. 1
		SDBD-NAPS-AFW	System Design Basis Document for Auxiliary Feedwater System	Rev. 22
		SDBD-NAPS-CH	System Design Basis Document for Chemical and Volume Control System	Rev. 28
		SDBD-NAPS-MS	System Design Basis Document for Main Steam And Ancillary Systems	Rev. 27
		SDBD-NAPS-NC	SDBD for Nuclear Control System	Rev. 14
		SDBD-NAPS-RC	System Design Basis Document for Reactor Coolant System	Rev. 31
		SDBD-NAPS-RH	System Design Basis Document for Residual Heat Removal System	Rev. 17
		SDBD-NAPS-SI	System Design Basis Document for Safety Injection System North Anna Power Station	Rev. 31
		SDBD-NAPS-SW	System Design Basis Document for Service Water System	Rev. 29
	Procedures	1-PT-138.3A	1-SI-MOV-1836 COMBINED CHARGING PUMP “1A” HEAD CURVE VERIFICATION AND HHSI BRANCH FLOW VERIFICATION USING SMART TRANSMITTERS	04/15/2021
		1-PT-210.12	Valve Inservice Inspection (RCS Gaseous Vent System)	04/17/2021
		1-PT-212.10	Valve Inservice Inspection, 1-RC-PCV-1456	04/14/2021
		1-PT-212.7	1-SI-MOV 1836 VALVE INSERVICE INSPECTION (SAFETY INJECTION SYSTEM)	04/07/2021
		1-PT-214.16	Valve Inservice Inspection (Residual Heat Removal System Remote Valve Position Indication and Digital Points Verification)	Rev. 11
		1-PT-78.4	Valve Inservice Inspection (Residual Heat Removal System)	Rev. 14
		2-PT-212.3	Valve Inservice Inspection (Chemical and Volume Control	Rev. 26

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			System)	
		2-PT-213.11	Valve Inservice Inspection (Service Water)	Rev. 24
		2-PT-213.20	Valve Inservice Inspection (2-MS-TV-211A AND 2-MS-TV-211B)	Rev. 19
		2-PT-214.18	Valve Inservice Inspection (Misc. Outside Containment Isolation Valve Position Indication)	Rev. 15
		2-PT-214.2	Valve Inservice Inspection (Charging System Valve Position Indication)	Rev. 14
		2-PT-215.1	Valve Inservice Inspection — RWST Isolation Valves Leakage Test	Rev. 17
		2-PT-57.4	Safety Injection Operational Test	Rev. 62
		2-PT-61.1	Reactor Containment Integrated Leak Rate Test	Rev. 25
		2-PT-61.3	Containment Type C Test	Rev. 51
		2-PT-66.3	Containment Depressurization Actuation Operational Test	Rev. 51
		2-PT-71.1Q	2-FW-P-2, Turbine Driven Auxiliary Feedwater Pump, And Valve Test	Rev. 74
		2-PT-71.1Q.1	2-FW-P-2, Turbine Driven Auxiliary Feedwater 1st Comprehensive Pump and Valve Test	Rev. 27
		DNES-AA-ME/MOV-1001	Motor-Operated Valves	Rev. 8
		DNES-AA-MOV-1001	Motor-Operated Valve Diagnostic Test Preparation and Evaluation	Rev. 4
		ER-AA-102	Preventive Maintenance Program	Rev. 15
		ER-AA-AOV-10	Air Operated Valve Program	Rev. 3
		ER-AA-AOV-100	Air Operated Valve Program Categorization	Rev. 3
		ER-AA-AOV-101	Design Basis Review	Rev. 4
		ER-AA-AOV-102	AOV Testing and Control of Setup Parameters	Rev. 4
		ER-AA-IST-10	ASME Inservice Testing Program	Rev. 7
		ER-AA-IST-107	ASME IST Program – Inservice Testing of Active Motor Operated Valves	Rev. 0
		ER-AA-MOV-10	Motor-Operated Valve Program	Rev. 3
		ER-AA-MOV-101	Motor-Operated Valve Program Process	Rev. 5
		ER-AA-PRS-	Preventive Maintenance Task Basis and Maintenance	Rev. 15

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		1010	Strategy	
		ER-NA-APJ-318	10 CFR 50 Appendix J Program (Containment Leakage)	Rev. 4
	Work Orders	59203386047, 59077471001, 59103128339, 59203386047, 59203297705, 59102632935, 59102639723, 59203378993, 59203287651, 59203287716, 59102402552, 59203288895, 59203382345, 59102102277, 59103011593, 59102425464, 59102210021, 59102208906, 59102933959, 59102648690		