UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
2100 RENAISSANCE BOULEVARD, SUITE 100
KING OF PRUSSIA, PA 19406-2713

July 13, 2018

Mr. Daniel G. Stoddard
Senior Vice President and Chief Nuclear Officer
Dominion Energy, Inc.
Innsbrook Technical Center
5000 Dominion Blvd.
Glen Allen, VA 23060-6711

SUBJECT: MILLSTONE POWER STATION – DESIGN BASES ASSURANCE INSPECTION (TEAMS) REPORT 05000336/2018010 AND 05000423/2018010

Dear Mr. Stoddard:

On May 4, 2018, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Millstone Power Station, Units 2 and 3. The NRC inspectors discussed the results of this inspection with John Daugherty, Site Vice President, and other members of your staff. The final results of the inspection were presented via telephone on June 13, 2018, to Michael O'Connor, Director, Nuclear Station Safety and Licensing, and other members of your staff. The results of this inspection are documented in the enclosed report.

NRC inspectors documented five findings of very low safety significance (Green) in this report. These findings involved violations of NRC requirements. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2.a of the Enforcement Policy.

If you contest the violations or significance of these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement; and the NRC Resident Inspector at Millstone Power Station. In addition, if you disagree with a cross-cutting aspect assignment or a finding not associated with a regulatory requirement in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region I, and the NRC Resident Inspector at Millstone 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 the NRC Public Document Room in accordance with Title 10 of the *Code of Federal Regulations* (CFR), Part 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Mel Gray, Chief
Engineering Branch 1
Division of Reactor Safety

Docket Numbers: 50-336 and 50-423
License Numbers: DPR-65 and NPF-49

Enclosure:
Inspection Report 05000336/2018010 and
05000423/2018010

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SUBJECT: MILLSTONE POWER STATION – DESIGN BASES ASSURANCE INSPECTION (TEAMS) REPORT 05000336/2018010 AND 05000423/2018010 dated July 13, 2018

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U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report

Docket Numbers:	50-336 and 50-423
License Numbers:	DPR-65 and NPF-49
Report Numbers:	05000336/2018010 and 05000423/2018010
Enterprise Identifier:	I-2018-010-0037
Licensee:	Dominion Energy Nuclear Connecticut, Inc. (Dominion)
Facility:	Millstone Power Station, Units 2 and 3
Location:	Waterford, CT
Inspection Dates:	April 16 to May 4, 2018
Inspectors:	K. Mangan, Senior Reactor Inspector (Team Lead), Division of Reactor Safety (DRS) M. Patel, Operations Engineer, DRS J. Brand, Reactor Inspector, DRS J. Rady, Reactor Inspector, DRS C. Lally, Reactor Inspector, Division of Reactor Projects C. Baron, NRC Contractor J. Nicely, NRC Contractor
Approved By:	Mel Gray, Chief Engineering Branch 1 Division of Reactor Safety

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring Dominion's performance at Millstone Power Station, Units 2 and 3, by conducting a team design bases assurance inspection 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. NRC-identified and self-revealed findings, violations, and additional items are summarized in the table below.

List of Findings and Violations

Over-Duty Breakers on Safety-Related Buses on Unit 2			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000336/2018010-001 Opened and Closed	[P.2] – Problem Identification and Resolution, Evaluation	71111.21M
The team identified a finding of very low safety significance (Green) and an associated non-cited violation (NCV) of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Appendix B, Criterion III, "Design Control." Specifically, Dominion incorrectly concluded that the 480V safety-related breakers were conforming to the plant's licensing basis following their identification that the calculated short circuit fault current exceeded the breaker rating. Dominion's evaluation failed to take into consideration that non-class 1E loads fed from safety-related buses must be isolated from the class 1E system by fully qualified safety-related isolation devices (breakers). Dominion's design basis requires that a circuit fault on the non-class 1E side of the isolation device shall not cause the loss of the associated safety-related system.			

Over-Duty Breakers on Safety-Related Bus 34C on Unit 3			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000423/2018010-001 Opened and Closed	[P.1] – Problem Identification and Resolution, Identification	71111.21M
The team identified a finding of very low safety significance (Green) and an associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control." Specifically, Dominion did not adequately evaluate the results of the Unit 3 short circuit calculations for the 4.16 kV breakers. Dominion's evaluation of the short circuit calculation results did not identify that the breakers were non-conforming to the licensing basis. The team's review of the calculation results found that the momentary and interrupting duty ratings of the 4kV safety-related breakers associated with Bus 34C were not within their short-circuit ratings when evaluated under design fault condition and, therefore, not in accordance with the licensing basis of the plant.			

Failure to Correct Part 21 Power Supply Defects			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000336/423/2018010-002 Opened and Closed	[P.5] Problem Identification and Resolution, Operating Experience	71111.21M
The team identified a finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings.” Specifically, Dominion did not accomplish repairs to safety-related power supplies in accordance with instructions and procedures. The team identified that actions taken by Dominion to address Part 21 Report #48863, *Foxboro Power Supply Potential Failures due to Defective Tie Wraps and Holder*, were performed without procedure or engineering evaluations and the work activities performed were not documented. Specifically, instrumentation and control technicians altered the safety-related power supplies without approved design documents, plant procedures, or work orders, and records of the completed activities were not available.			

Flood Seals Not Installed in Unit 2 ‘A’ EDG and Auxiliary Building Penetrations			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000336/2018010-03 Opened and Closed	[P.3] Problem Identification and Resolution, Resolution	71111.21M
The team identified a finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix B, Criterion XIV, “Corrective Actions.” Dominion identified a condition adverse to quality but did not correct the condition. Specifically, Dominion performed evaluations and walkdowns in 2012 and 2016 to validate that all necessary flood seals for design basis and beyond design basis flood events had been properly installed. Dominion determined that they could not verify 50 wall penetrations had seals installed and entered the deficiency into the corrective action program. The team noted that an electrical conduit that passed through a Unit 2 ‘A’ emergency diesel generator (EDG) building exterior wall, located below the design basis flood height, was one of the penetrations in question. During the inspection, following NRC questions, Dominion removed the electrical conduit cover plate and confirmed that a seal was not installed.			

Inadequate Test Control of ECCS Valve Interlocks			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000423/2018010-03 Opened and Closed	None	71111.21M
The team identified a finding of very low safety significance (Green) involving an NCV of 10 CFR Part 50, Appendix B, Criterion XI, “Test Control.” Specifically, Dominion did not ensure that all testing required to demonstrate that emergency core cooling system (ECCS) valve interlock circuits would perform satisfactorily was being performed. The team determined that certain interlocks associated with ECCS valve 3SIL*MV8804A control circuit were not properly tested to demonstrate that the valve would not open if interlocks had not been met or would open, when required, with minimum interlock requirements met during design basis accidents.			

INSPECTION SCOPES

This inspection was conducted using the appropriate portions of the inspection procedure (IP) 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

71111.21M - Design Bases Assurance Inspection (Teams)

The inspectors evaluated the following components, permanent modifications, and operating experience during the weeks of April 16 and April 30, 2018.

For the components, the team reviewed the attributes listed in IP 71111.21M, Appendix A, *Component Review Attributes*. Specifically, the team evaluated these attributes as per 71111.21M, Appendix B, *Component Design Review Considerations,* and 71111.21M, Appendix C, *Component Walkdown Considerations*.

Components (7 Samples)

- 301C-1, U3 125 volt DC Bus. The team used Appendix B guidance for Circuit Breakers and Fuses, Cables, and Electrical Loads and conducted a walkdown of the equipment.
- 15G-12U, U2 'A' EDG Mechanical Components. The team used Appendix B guidance for Electric Loads and conducted a walkdown of the equipment.
- 3SIL-MOV-8812B, U3 Reactor Water Storage Tank (RWST)/RHR Pump B Suction Valve. The team used Appendix B guidance for Valves and Electric Loads.
- 34C-IT-2, U3 4kV Breaker (tie between 34A and 34C). The team used Appendix B guidance for Breaker and Electric Loads and conducted a walkdown of the equipment.
- 22F, U2 480 Volt Bus. The team used Appendix B guidance for Electrical Loads and Motor Control Centers and conducted a walkdown of the equipment.
- M7-7, Diesel Driven Fire Pump. The team used Appendix B guidance for Valves, Pumps, and Instrumentation and conducted a walkdown of the equipment.
- 3RCS*PCV456, U3 Power Operated Relief Valve. The team used Appendix B guidance for Valves, Instrumentation, Circuit Breakers and Fuses, Cables, and Electrical Loads.

Component, Large Early Release Frequency (1 Sample)

- 3SIL-MOV-8804A, U3 Recirculation Spray System to Charging and Safety Injection Suction Isolation Valve. The team used Appendix B guidance for Valves and Electric Loads and conducted a walkdown of the equipment.

Permanent Modifications (8 Samples)

- U3 48/15Vdc Power Supplies for Solid State Protection System Replacement
- U3 EDG Oil and Cooling Water Temperature Switch Replacement
- U2 Equipment Drain Sump Pump Tank Over Pressurization Mitigation Relief Valve 2-SI-468 Discharge Re-Route Modification
- U2 Reserve Station Service Transformer Replacement Project
- U3 Turbine Driven Auxiliary Feedwater Pump Overspeed Margin Change
- U3 EDG Governor Replacement - Train A
- U3 Transformer Replacement of 480 V Load Center Bus 32D
- U3 Replacement of Actuators on 3FWS*CDV41-A, B, C

Operating Experience (3 Samples)

- 10 CFR Part 21 Notification - Foxboro Power Supply Potential Failures due to Defective Tie Wraps and Holders, dated July 5, 2013
- NRC Regulatory Issue Summary 2011-12, Adequacy of Station Electrical Distribution System Voltages, Revision 1
- NRC Safety Evaluation Report related to use of the Electric Power Research Institute Motor Operated Valve Performance Prediction Program

INSPECTION RESULTS

Over-Duty Breakers on Safety-Related Buses on Unit 2			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000336/2018010-001 Opened and Closed	[P.2] – Problem Identification and Resolution, Evaluation	71111.21M
The team identified a finding of very low safety significance (Green) and an associated NCV of 10 CFR Part 50, Appendix B, Criterion III, “Design Control.” Specifically, Dominion incorrectly concluded that the 480V safety-related breakers conformed with the Unit 2 design and licensing bases following their identification that the calculated short circuit fault current exceeded the breakers’ electrical ratings. Dominion’s evaluation failed to take into consideration that non-			

Class 1E loads fed from safety-related buses must be isolated from the Class 1E system by fully qualified 480V safety-related isolation devices (breakers); and that a failure of any connected non-Class 1E load supplied by the safety-related 480V bus must not cause the loss of connected safety-related equipment.
Description: The team reviewed the Unit 2 short circuit calculation, MP2-ENG-ETAP-0414E2, "MP2 Electrical Distribution System Analysis," Addendum D, Revision 3, which was revised to address performance deficiencies identified by the 2015 NRC Component Design Bases Inspection team (NCV 05000336/2015007-01). Following the revision to the calculation, Dominion staff identified, in addition to the several 4kV breakers identified by the 2015 NRC team, that the calculated short circuit current for 480V safety-related buses and breakers exceeded the manufacture ratings and capabilities. Dominion staff identified the deficiency and entered the issue into their corrective action program as condition report (CR) 1010394. However, the team noted that Dominion staff dispositioned the issue as "Accept-as-is" because they considered the resulting bus failure assumed in the calculation as the design basis single failure and, therefore, the electrical system met the single failure criterion design basis of the plant because the assumed fault would not affect the opposite safety-related train or division. The team reviewed the Unit 2 design and licensing bases related to the single failure criterion, and identified that only failures of safety-related equipment should be assessed as to their impact on the opposite train under the single failure criterion analysis. The team determined that the design and licensing bases assumed that non-safety-related components fail in addition to a failure of a single safety-related component. As a result, the team determined that breakers used as the Class 1E to non-Class 1E isolation must be capable of operating within their ratings and capabilities prior to operation of the upstream safety-related bus protective device. The design and licensing bases precludes a failure of a non-Class 1E component from causing failures of safety-related structures, systems, and components. In this case, the failure could have caused consequential failures of the safety-related bus or motor control center due to tripping of the supply breaker. Also, because Dominion identified that a non-Class 1E load could cause the failure of a safety-related bus, the team questioned the basis for the operability of the electrical system. The team also reviewed the Unit 2 Updated Final Safety Analysis Report (UFSAR), Sections 8.2.2.2 and 8.4.2.2, which stated that the equipment was within its manufacture ratings. Further, Section 8.7.1.2 stated that the design meets the requirements of Section 4 of Institute of Electrical and Electronics Engineers (IEEE) 279-1971. Section 4.7.2 of IEEE 279, *Isolation Devices*, stated that breakers shall protect the Class 1E system from degradation due to failures, including short-circuits of non-Class 1E loads fed from the safety buses. The team's review of the CRs related to the over-current condition noted that there were no additional corrective actions planned or in place to address the over-duty condition previously identified on the 4kV breakers, or on the 480V safety-related buses and breakers identified following the revision to the calculation. Based on this review, the team concluded that the short circuit postulated overcurrent condition for the subject breakers and buses did not conform to the design and licensing bases of the plant. Following identification of the issues, Dominion staff performed preliminary calculations to show that if the fault on the non-Class 1E load was on the cabling at least 33 feet from the breaker/bus, then the resulting short-circuit current would be reduced (due to cable impedance) to within the breaker/bus ratings and capability. Dominion staff then reviewed the pedigree and routing of the first 33 feet of cable from the breakers to evaluate if the cables were protected from applicable design basis hazards (e.g., high energy line break, seismic, etc.). Following the

review, Dominion staff concluded the safety-related bus was operable but did not conform to the applicable design and licensing bases. In response, Dominion staff established additional actions to address the non-conformance with the design and licensing bases for both the 4kV and 480 volt buses. The team reviewed the operability evaluation and found it to be acceptable.

Corrective Actions: Dominion personnel entered the issue into their corrective action program and performed walkdowns and evaluations. Dominion's evaluation provided reasonable assurance the safety-related buses were operable but non-conforming with the design and licensing bases.

Corrective Action References: CR 1096300 and CR 1096886

Performance Assessment:

Performance Deficiency: The team determined that, following the determination that 480V safety-related breakers would exceed their short circuit rating, Dominion staff incorrectly applied the single failure criterion analysis in order to conclude the safety-related Class 1E system were operable was a performance deficiency that was reasonably within their ability to foresee and prevent.

Screening: The performance deficiency was determined to be more-than-minor because it was associated with the Design Control attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of mitigating systems to respond to initiating events to prevent undesirable consequences. Specifically, the failure to identify that over-duty 480V safety-related buses and breakers did not conform to the design and licensing bases (because the inability to interrupt fault currents from non-Class 1E loads) did not ensure the availability and capability of their associated safety-related buses to supply power to the mitigating loads following an initiating event. Additionally, the performance deficiency is similar to IMC 0612, Appendix E, "Example of Minor Issues," Question 3.J. in that there was reasonable doubt of operability of the safety-related buses because a failure of non-safety-related equipment could have resulted in the loss of safety-related equipment.

Significance: The finding was evaluated using the significance determination process in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings." Because the finding impacted the Mitigating Systems cornerstone, the team screened the finding through IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," using Exhibit 2, "Mitigating Systems Screening Questions." The finding screened as of very low safety significance (Green) because it did not result in the loss of operability or functionality of mitigating systems.

Cross-cutting Aspect: The finding had a cross-cutting aspect in the Problem Identification and Resolution, cross-cutting area of Evaluation because Dominion staff did not thoroughly evaluate issues to ensure that resolutions address causes and extent of conditions commensurate with their safety significance. Specifically, in September 2015, Dominion did not adequately evaluate and correct the non-conforming short-circuit over-current condition on the safety-related buses. (P.2)

Enforcement:

Violation: The team identified a violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," which states, in part, measures shall be established to assure that applicable regulatory requirements and the design basis are correctly translated into specifications,

drawings, procedures, and instructions. These measures shall include provisions to assure that appropriate quality standards are specified and included in design documents and that deviations from such standards are controlled. Contrary to the above, between September 2015 and April 2018, Dominion did not establish measures to assure that regulatory requirements and the design basis were correctly translated into specifications, drawings, procedures, and instructions, in that following Dominion's identification that 480V safety-related breakers calculated short circuit currents exceeded the manufacture ratings, Dominion did not identify that isolation devices for non-Class 1E loads were nonconforming to the design and licensing bases and Dominion's basis for operability of the buses was not in accordance with the design basis.

Disposition: Because this violation is of very low safety significance and has been entered into Dominion's corrective action program as CR 1096300 and CR 1096886, this violation is being treated as an NCV consistent with Section 2.3.2 of the NRC Enforcement Policy.

Over-Duty Breakers on Safety-Related Bus 34C on Unit 3			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000423/2018010-001 Opened and Closed	[P.1] – Problem Identification and Resolution, Identification	71111.21M

The team identified a finding of very low safety significance (Green) and an associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control." Specifically, Dominion did not adequately evaluate the results of the Unit 3 short circuit calculations for the 4kV breakers. Dominion's evaluation of the short circuit calculation results did not identify that the breakers were non-conforming to the design and licensing bases. The team's review of the calculation results found that the momentary and interrupting duty ratings of the 4kV safety-related breakers associated with Bus 34C were not within their short-circuit ratings when evaluated under design fault conditions and, therefore, not in accordance with the design and licensing bases of the plant.

Description: The team reviewed Unit 3 short circuit calculation, MP3-ENG-ETAP-04125E3, "MP3 Electrical Distribution System Analysis," Revision 1, and identified that the calculated momentary and interrupting fault current of the safety-related breakers for Bus 34C exceeded the breaker device interrupting rating. The team noted that the calculation assumed a 3-phase bolted fault (design basis fault) at the load terminal and the associated EDG surveillance testing in progress; the associated 4kV bus voltage is at 105 percent of the nominal voltage; and the MP3-34A to MP2-24E cross-tie to Unit 2 was established as the limiting electrical lineup. Dominion's evaluation of the fault current results, documented within the calculation, stated that the design basis fault at the load terminal is not likely to occur because the switchgear bus bar and load cables are protected in enclosures, trays, and conduit and because normal plant maintenance practice control work activities during EDG testing. However, a CR documenting the discrepancy was not created.

The team found that Dominion staff had not evaluated within their corrective action program whether the calculation results conformed to the design and licensing bases of the plant. The team reviewed the UFSAR to determine the design and licensing bases of the plant. Specifically, the team reviewed Unit 3 UFSAR Section 8.3.1.1.4, *Design Criteria*, which stated that, "the generator breaker, switchgear, load centers, motor control centers, and distribution panels are sized for interrupting capacity based on maximum short circuit availability at their location. Switchgear is applied within its interrupting and latch ratings in accordance with ANSI

C37.010, *Application Guide for AC High Voltage Circuit Breakers*." Following the review, the team questioned if Dominion was maintaining the electrical system in conformance with the plant design and licensing bases.

In response to the team's questions, Dominion staff reviewed the original assumptions associated with the short circuit calculations, and revised the assumed limiting electrical lineup to align with the anticipated plant line-up during EDG surveillance testing (eliminating the Unit 2 to Unit 3 cross tie). Dominion staff determined that the revised calculation results indicated that safety-related breakers on the 4kV Bus 34C would still exceed the device rating during the postulated fault. Dominion staff performed additional calculations with more restrictive bus and equipment alignments to determine which plant line-up would place the 34C breakers within the manufacturer's rating. Based on the revised calculation, Dominion specified operating restrictions on plant components, offsite grid, and equipment during EDG surveillance testing necessary to ensure breaker fault currents did not exceed the manufactures ratings. Dominion staff also determined that during normal plant alignment to the offsite power source, no equipment restrictions were required. The team reviewed the analysis and found it was technically supported.

Corrective Actions: Dominion staff entered the issue into their corrective action program and completed additional short circuit calculation to determine the plant line-up that would ensure the short-circuit current for the safety-related breakers for Bus 34C were within their momentary and interrupting duty ratings. Dominion staff identified various restrictions and limitations during EDG surveillance testing required to ensure short circuit breaker ratings were not exceeded and established actions to incorporate the limitations into future EDG surveillance testing.

Corrective Action References: CR 1096430 and CR 1096886

Performance Assessment:

Performance Deficiency: The team determined that Dominion's failure to identify that the 4kV breakers exceeded their overcurrent design limits and were non-conforming with the UFSAR was a performance deficiency that was reasonably within their ability to foresee and prevent.

Screening: The performance deficiency was determined to be 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 availability, reliability, and capability of systems that respond to initiating events. Specifically, the failure to identify safety-related breakers on the Bus 34C were non-conforming to the design and licensing bases resulted in the potential that a design basis fault could cause the loss of the associated safety-related bus following an initiating event.

Significance: The finding was evaluated using the significance determination process in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings." Because the finding impacted the Mitigating Systems cornerstone, the team screened the finding through IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," using Exhibit 2, "Mitigating Systems Screening Questions." The finding screened as of very low safety significance (Green) because it did not result in the loss of operability or functionality of mitigating systems.

Cross-cutting Aspect: The finding had a cross-cutting aspect in the Problem Identification and Resolution, cross-cutting area of Identification. Dominion did not implement a corrective action program with a low threshold for identifying issues and individuals did not identify issues completely, accurately, and in a timely manner in accordance with the program. Specifically, in

August 2016, Dominion failed to enter identified deficiencies into the corrective action program following the evaluations of the results of short circuit calculations. (P.1)

Enforcement:

Violation: The team identified a violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," which states, in part, measures shall be established to assure that applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions. These measures shall include provisions to assure that appropriate quality standards are specified and included in design documents and that deviations from such standards are controlled. Contrary to the above, prior to May 2, 2018, Dominion failed to identify and correct a deviation from the standards described in the UFSAR associated with over-duty safety-related breakers on Unit 3 safety-related 4kV Bus 34C. Specifically, Dominion failed to maintain Unit 3 UFSAR Section 8.3.1.1.4, *Design Criteria*, which states that, "the generator breaker, switchgear, load centers, motor control centers, and distribution panels are sized for interrupting capacity based on maximum short circuit availability at their location."

Disposition: Because this violation is of very low safety significance and has been entered into Dominion's corrective action program (CR 1096430), this violation is being treated as an NCV consistent with Section 2.3.2 of the NRC Enforcement Policy.

Failure to Correct Part 21 Power Supply Defects			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000336/2018010–002 NCV 05000423/2018010–002 Opened and Closed	[P.5] Problem Identification and Resolution, Operating Experience	71111.21M

The team identified a finding of very low safety significance (Green) and an associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings." Specifically, Dominion did not accomplish repairs to safety-related power supplies in accordance with instructions and procedures. The team identified that actions taken by Dominion to address 10 CFR Part 21 Report No. 48863, *Foxboro Power Supply Potential Failures due to Defective Tie Wraps and Holder*, were performed without procedures or engineering evaluations, and the associated work activities performed were not documented.

Description: The team reviewed actions taken by Dominion to address 10 CFR Part 21 Report No. 48863, *Foxboro Power Supply Potential Failures Due To Defective Tie Wraps*, dated March 17, 2013. The team noted that both Millstone units were listed in the Part 21 Report that documented defects in Foxboro Meter Company N-2ARPS-A6, Style D power supplies. The report described that the adhesive that bonds aluminum tie wrap holders to the power supply enclosure were failing and associated nylon tie wraps had become embrittled, which were also failing. The failure of both components can allow the aluminum holders to fall into the power supply enclosure, potentially resulting in electrical shorts if the holders come in contact with the power supply electrical wiring. To correct the deficiency, the vendor recommended the following corrective actions:

- Open and inspect the power supplies;
- Cut the nylon tie wraps and remove the aluminum tie wrap holders; and

- Replace the nylon tie wraps.

The team found that in June 2013, Dominion staff reviewed the Part 21 report and confirmed it was applicable to both units. Dominion issued CRs 517527 and 517528 to determine whether the deficiencies identified by the Part 21 report impacted installed power supplies and to determine appropriate actions to correct the issue.

The team reviewed the CRs and noted that both CRs had been closed in 2013 without documented corrective actions. The CR responses indicated there were no affected safety-related power supplies in Unit 3 and that the safety-related power supplies installed in Unit 2 presented no operability concerns because fuses and circuit breakers would isolate any electrical fault caused by failed tie wrap holders. The team found that Dominion did not evaluate the effect of the loss of components fed by the power supplies, and questioned whether there could be an adverse impact to safety-related equipment fed by power supplies as a result of postulated power supply failures.

During the inspection, the team observed an overhaul of a Foxboro power supply being refurbished as required by Dominion's preventive maintenance program, and discussed the Part 21 issue with the system engineer, a maintenance supervisor, and a maintenance technician. The team noted that maintenance technicians were aware of the Part 21 report and were using the associated Part 21 guidance to implement vendor recommended corrective actions. The team was also informed by Dominion staff that there were, in fact, some safety-related power supplies in Unit 3. Finally, the team noted that the work that had been performed was not documented, and as a result, Dominion staff could not validate which power supplies were repaired relative to the Part 21. Following the interview, the team discussed the maintenance activities with Dominion management. The team expressed the following concerns:

- Maintenance technicians were performing work without work orders, instructions, or procedures that had been reviewed in accordance with Dominion's quality assurance program;
- There was no traceability for work completed on safety-related power supplies to assure that recommended actions had been performed;
- Maintenance technicians removed the aluminum plates, removed the nylon tie wraps, but did not implement the recommended corrective action to replace the nylon tie wraps that had been removed, which called into question the seismic qualification of the power supplies; and
- Dominion had not established a basis for operability of equipment supplied by the power supplies for those power supplies that had not been repaired.

In response, Dominion staff physically verified the component identification numbers for the affected and installed power supplies in both units to determine the total number of installed in-scope safety-related power supplies, and to determine whether they have been overhauled in accordance with the preventive maintenance program subsequent to the issuance of the Part 21 report. Dominion staff determined there were 46 power supplies in total, 23 of which were safety-related (9 in Unit 2, and 14 in Unit 3). Dominion staff found there were two safety-related power supplies in-service in Unit 2 that had not been refurbished. For these power supplies, Dominion staff performed operability reviews and determined that a failure of the power supply would result in in an automatic auxiliary feedwater actuation or a loss of one of two pressurizer level control channels and, therefore, concluded the equipment would have remained capable of performing their respective safety function. Dominion staff also interviewed maintenance

technicians to determine what maintenance activities they had performed to address the Part 21 issue and then discussed these activities with the vendor to determine if the qualification of the power supplies had been invalidated by the maintenance. Following the discussion, Dominion staff determined that the equipment had retained its safety-related qualification.

Because there was no documentation that repairs had been completed on the remaining power supplies, Dominion staff also evaluated the operational impact of each power supply on supplied components in order to determine if associated safety-related equipment could become inoperable if repairs had not been performed correctly. Dominion staff then prioritized inspections of installed power supplies to verify activities to address the Part 21 issue had been completed. Dominion's initial inspection of installed power supplies identified some tie wrap holders had not been removed but determined that they were in locations that could not affect the power supply electrical components (i.e., the physical location of the holders were close to the bottom of the power supply and if they become loose and fall, they would not come in contact with any vulnerable electrical equipment), and concluded that the equipment remained operable.

Corrective Actions: Dominion entered this issue into the corrective action program. Dominion determined which power supplies had not been refurbished, and evaluated the operability of components fed by the power supplies and the qualification of the power supplies in their modified configuration. Additionally, some installed power supplies were inspected to validate that metal tabs had been removed during the inspection, and additional actions to inspect all power supplies were being scheduled. Dominion staff also planned to develop a modification package (Design Equivalent Change MPG 18-00139) to implement, inspect, formally evaluate, and document the as-left power supply configuration.

Corrective Action References: CRs 1095019, 1096125, 1096287, 1096362, 1096363

Performance Assessment:

Performance Deficiency: The team determined that performing modifications to safety-related equipment without procedures or engineering evaluations and not documenting the quality activities performed in response to Part 21 Report No. 48863, *Foxboro Power Supply Potential Failures due to Defective Tie Wraps and Holder,* was a performance deficiency that was reasonably within Dominion's ability to foresee and prevent.

Screening: The performance deficiency was more than minor because it was associated with the Design Control and Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of mitigating systems to respond to initiating events to prevent undesirable consequences. Specifically, implementing the vendor recommended corrective actions without prescribed instructions or procedures did not ensure the capability of the power supplies to provide their mitigating function. As a result, corrective actions recommended by the vendor could not be confirmed. Additionally, the performance deficiency is similar to IMC 0612, Appendix E, "Example of Minor Issues," Question 3.J. in that there was reasonable doubt of operability of safety-related equipment because records were not developed as to which power supplies had been repaired, documentation was not available as to tabs removed, and evaluations were not available as to the impact to the seismic qualifications of the modified power supplies.

Significance: The finding was evaluated using the significance determination process in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Initial

Characterization of Findings." Because the finding impacted the Mitigating Systems cornerstone, the team screened the finding through IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," using Exhibit 2, "Mitigating Systems Screening Questions." The finding screened as of very low safety significance (Green) because it did not result in the loss of operability or functionality of mitigating systems.

Cross-cutting Aspect: The finding had a cross-cutting aspect in the area of Problem identification and Resolution, cross-cutting area of Operating Experience, because Dominion did not systematically and effectively collect, evaluate, and implement relevant internal and external operating experience in a timely manner. Specifically, Dominion did not effectively evaluate and implement Part 21 external operating experience related to defects identified in a Foxboro Power supply Part 21 Report. (P.5)

Enforcement:

Violation: Title 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished.

Contrary to the above, between April 2013 and April 25, 2018, Dominion did not use instructions or procedures to modify safety-related power supplies to address deficiencies identified in Part 21 Report No. 48863, *Foxboro Power Supply Potential Failures due to Defective Tie Wraps and Holder*. Specifically, maintenance technicians altered the power supplies without approved design documents, plant procedures, or work orders, and did not document associated corrective actions that were implemented.

Disposition: Because this violation is of very low safety significance and has been entered into Dominion's corrective action program (CRs 1095019, 1096125, 1096287, 1096362, 1096363), this violation is being treated as an NCV consistent with Section 2.3.2 of the NRC Enforcement Policy.

Flood Seals Not Installed in Unit 2 'A' EDG and Auxiliary Building Penetrations			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Green NCV 05000336/2018010-03 Opened and Closed	[P.3] Problem Identification and Resolution, Resolution	71111.21M

The team identified a finding of very low safety significance (Green) and an associated NCV of 10 CFR Part 50, Appendix B, Criterion XIV, "Corrective Actions." Dominion identified a condition adverse to quality but did not correct the condition. Specifically, Dominion staff performed evaluations and walkdowns in 2012 and 2016 to validate that all necessary flood seals for design basis and beyond design basis flood events had been properly installed. However, Dominion staff determined that they could not verify 50 wall penetrations had seals installed and entered the deficiency into the corrective action program, but did not implement corrective actions. In particular, the team noted that an electrical conduit that passed through the Unit 2 'A' EDG building exterior wall (located below the design basis flood height) was one of the penetrations in question and was not inspected (and repaired, if necessary). During the inspection, following NRC questions, Dominion staff removed the electrical conduit cover plate and confirmed that a seal was not installed.

Description: The team conducted a walkdown and inspection of the Unit 2 'A' EDG and associated components. During the walkdown, the team identified several electric conduit penetrations that entered the EDG room and auxiliary building exterior walls. The team noted that the penetrations were below the 22' maximum flood protection level for the site as indicated in the UFSAR. The team requested documentation to validate flood seals were installed, as required, to meet external flooding event analysis assumptions. Dominion staff informed the inspectors that these penetrations had been previously identified, as part of a design basis and beyond design basis evaluation of penetrations that would require flood seals, as not having documentation confirming that the required safety-related seals were installed. Dominion staff had entered the issues into their corrective action program and provided the team with CRs that had been initiated to evaluate and correct these concerns (CRs 485973 and 1056281).

The team reviewed the CRs and associated work orders (WO 53102552878 and 53103035828) and determined that the recommended actions to open and inspect the conduit covers for verification that the penetrations were sealed had not been completed. The team also reviewed the initial operability determination performed in 2012 and 2016 when the deficiencies were entered into the corrective action program. The team found that Dominion staff credited non-safety-related conduit/pipe and associated cover plate and gasket to limit any leakage. The team noted that the conduit and cover plate were not qualified for missile protection and were not designed to be water tight as assumed in the external flooding evaluation. The team concluded that the CR identified a non-conforming condition and Dominion staff should have completed corrective actions. Finally, Dominion staff informed the team that the evaluation completed by Dominion had evaluated 241 penetrations and identified that 55 penetrations did not have the documentation necessary to confirm that flood seals were installed and action had not been taken to address the potential non-conformances.

On May 3, 2018, the team accompanied Dominion engineering personnel and technicians on examinations of some of the electric conduit seals identified. Dominion's examinations identified that three of the four penetrations were not sealed, including the conduit that created a two inch diameter opening in the 'A' EDG external wall. Following identification of the missing seals,

Dominion staff sealed the penetration and initiated a CR. Dominion staff subsequently inspected the remaining penetrations and determined 22 other penetrations had not been sealed.

Dominion staff completed a past operability evaluation that determined that the unsealed penetrations in the auxiliary building and enclosure building led to rooms with large surface area which would allow the water to disperse. Because the penetrations would be underwater for a limited time, the water entering the rooms would not challenge safety-related equipment. For the EDG building, Dominion determined that the depth of water from leakage through the penetration inside the building would be 1.5 inches. The analysis was based on an evaluation that credited internal, non-safety-related conduits and conduit pull box cover plates that would limit the water from entering the room. Dominion staff had previously evaluated that water heights below 7 inches in the EDG room would not impact EDG operability, therefore, EDG operability would not be impacted. The team reviewed the evaluations and determined they were technically supported.

Corrective Actions: Dominion staff entered the issue into their corrective action program and performed inspections of some of the conduit penetrations previously identified. Following inspections, open penetrations were promptly sealed with qualified flood seals. In addition, a past operability assessment was performed to evaluate the unsealed conduit entering the Unit 2 'A' EDG room, auxiliary building, and enclosure building. In addition, Dominion staff initiated actions to inspect the other penetrations previously identified and initiated actions to perform an extent of condition review of conduit/piping penetrations within the design bases flooding boundary.

Corrective Action References: CRs 1096470, 1096986, 1096996, 1097002, 1097007, 1097010

Performance Assessment:

Performance Deficiency: The team determined that the failure to promptly identify and correct a condition adverse to quality associated with unsealed electrical conduit penetrations entering the Unit 2 'A' EDG room, auxiliary building, and enclosure building to ensure safety-related equipment would not be impacted during a design basis flood was a performance deficiency that was reasonably within Dominion's ability to foresee and prevent.

Screening: The performance deficiency was more than minor because it was associated with the External Factors (Flood Hazard) attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of mitigating systems to respond to initiating events to prevent undesirable consequences. Specifically, Dominion did not ensure the Unit 2 'A' EDG room, auxiliary building, and enclosure building wall penetrations would prevent water from entering the rooms because credited safety-related flood seals were not installed.

Significance: The finding was evaluated using the significance determination process in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings." Because the finding impacted the Mitigating Systems cornerstone, the team screened the finding through IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," using Exhibit 4, "External Events Screening Questions." This finding has been screened as of very low safety significance (Green) because it would not have caused a plant trip, initiating event, resulted in the degradation two or more trains of a system, and did not result in the total loss of any safety function. Specifically, the team concluded that the accumulation of water inside the Unit 2 'A' EDG would not have been

more than 1.5 inches deep so the EDG operability would not have been impacted during a postulated design bases flood event and no other risk significant systems were affected. Additionally, because the other unsealed penetrations lead to the auxiliary building or the enclosure building which have a very large surface area and there were additional internal flood barriers between the external flood barrier and safety-related structures, systems, or components, there would be no challenge to safety-related structures, systems, or components.

Cross-cutting Aspect: The finding had a cross-cutting aspect in the Problem Identification and Resolution, cross-cutting area of Resolution. Dominion did not takes effective corrective actions to address issues in a timely manner commensurate with their safety significance. Specifically, following identification that safety-related flood seals may not be installed as required during a design basis flood event Dominion did not take corrective actions to correct the deficiencies in a timely manner. (P.3)

Enforcement:

Violation: Title 10 CFR Part 50, Appendix B, Criterion XVI, “Corrective Action,” requires in part, that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective materials and equipment, and non-conformances are promptly identified and corrected. Contrary to this, between 2012 and May 3, 2018, following identification by Dominion that it could not determine if required Unit 2 ‘A’ EDG room, auxiliary building, and enclosure building safety-related flood seals were installed Dominion did not take action to correct the condition. On May 3, 2018, following NRC review and associated questions, Dominion removed cover plates, determined which flood seals were not installed, and installed the seals.

Disposition: Because this violation is of very low safety significance and has been entered into Dominion’s corrective action program (CRs 1096470, 1096986, 1096996, 1097002, 1097007, 1097010), this violation is being treated as an NCV consistent with Section 2.3.2 of the NRC Enforcement Policy.

Inadequate Test Control of ECCS Valve Interlocks			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating System	Green NCV 05000423/2018010-003 Opened and Closed	None	71111.21M

The team identified a finding of very low safety significance (Green) and an associated NCV of 10 CFR 50, Appendix B, Criterion XI, "Test Control." Specifically, Dominion did not ensure that all testing required to demonstrate that ECCS valve interlock circuits would perform satisfactorily was being performed. The team determined that certain interlocks associated with Unit 3 ECCS valve 3SIL*MV8804A control circuit were not properly tested to demonstrate that the valve would not open if interlocks had not been met or would open, when required, with minimum interlock requirements met during design basis accidents.

Description: The team reviewed UFSAR Chapter 6 and determined the control circuit associated with ECCS valve 3SIL*MV8804A, as shown in Unit 3 UFSAR Table 6.3-3, is designed with interlocks to prevent the valve from opening until several other valves are in their required positions. The valve circuit interlocks prevent opening valve 3SIL*MV8804A (or 3SIL*MV8804B) unless the flow path from the ECCS systems to the RWST has been isolated. This circuit logic ensures the transfer to the post-accident ECCS recirculation operation lineup has been established and prevents a potential post-accident fission product release through the RWST. The team also reviewed [emergency operating procedure] EOP 35 ES-1.3, "Transfer to

Cold Leg Recirculation," which directed operators to realign several ECCS isolation valves, and then to open valves 3SIL*MV8804A (and 3SIL*MV8804B) during the transfer to post-accident ECCS recirculation operation. The team noted that the procedure did not require operators to verify associated valve positions prior to operating 3SIL*MV8804A to ensure that the RWST was isolated from the ECCS system.

The team also found that Table 1.8 in the Unit 3 UFSAR describes the station's commitment to NRC Regulatory Guide 1.53 (which endorses IEEE 279 and 379). IEEE 379-1972 describes the requirements for single failure criteria analysis that includes a discussion of detectable and non-detectable failures. To eliminate non-detectable failures from the single failure analysis, periodic testing of control circuits is required. Subsequently, the team requested testing procedures performed to demonstrate the motor operated valve control circuit was operating correctly.

Dominion staff provided procedures used to periodically test 3SIL*MV8804A. Additionally, Dominion staff provided post maintenance test procedures performed on valves associated with the 3SIL*MV8804A valve circuit. The team reviewed these test procedures and maintenance activities and determined that portions of the control circuit were tested to verify components required to allow 3SIL*MV8804A to reposition open were operating properly but not the entire circuit. Additionally, the team noted that the control circuit was not tested to verify the valve would not open if the required valves were not properly positioned. Since certain interlocks associated with ECCS valve 3SIL*MV8804A were not periodically tested, the team questioned if the ECCS system would respond as expected under postulated accident conditions.

Dominion staff reviewed the issue and concluded that they did not fully test the control circuit. As a result, the team concluded that Dominion staff had not adequately tested the control circuit to ensure the single failure analysis for cold leg recirculation was adequate since non-detectable failures had not been eliminated through an appropriate test program.

Corrective Actions: Dominion staff entered the issue into their corrective action program and evaluated the operability of the associated valves. Dominion's initial operability determination concluded that because no deficiencies had been identified during testing that had previously been performed, there was reasonable assurance that the circuit was operable. Additionally, Dominion staff plan to add steps to plant procedures to ensure operators would not reposition the valve if the system was not aligned correctly, and to perform an evaluation to determine what additional testing is required to ensure safety functions are verified such that the valve would operate under the most limiting conditions.

Corrective Action References: CR 1096359 and CR 1096885

Performance Assessment:

Performance Deficiency: The team determined that not periodically testing the interlocks associated with valve 3SIL*MV8804A was contrary to UFSAR statements related to Regulatory Guide 1.53 and was a performance deficiency that was reasonably within Dominion's ability to foresee and prevent.

Screening: The team determined the performance deficiency was more than minor because it affected the Design Control and procedure quality attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure availability, reliability, and capability of systems that respond to initiating events. Specifically, the failure to periodically test these valve interlock circuits could allow a failure (either an open or closed circuit) to remain

undetected, potentially resulting in the valve failing to open when required or opening when it would be required to remain closed.

Significance: The finding was evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Initial Characterization of Findings." Because the finding impacted the Mitigating Systems cornerstone, the team screened the finding through IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," using Exhibit 2, "Mitigating Systems Screening Questions." The finding screened as of very low safety significance (Green) because it did not result in the loss of operability or functionality of mitigating systems.

Cross-cutting Aspect: The finding did not have a cross-cutting aspect because it was not confirmed to reflect current performance due to the age of the performance deficiency.

Enforcement:

Violation: 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," states, in part, that a test program shall be established to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents. The test program shall include, as appropriate, proof tests prior to installation, preoperational tests, and operational tests during nuclear power plant.

Contrary to the above, as of May 2, 2018, Dominion failed to ensure that periodic operational testing was being performed to ensure that the valve would perform satisfactorily in service under postulated accident conditions. Specifically, Dominion did not perform testing to demonstrate all portions of the 3SIL*MOV8804A control circuit would perform as intended.

Disposition: Because this violation is of very low safety significance and has been entered into Dominion's corrective action program (CR 1096359 and CR 1096885), this violation is being treated as an NCV consistent with Section 2.3.2 of the NRC Enforcement Policy.

EXIT MEETINGS AND DEBRIEFS

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

- On May 4, 2018, the team presented the Design Bases Assurance Inspection (Teams) results to Mr. John Daugherty, Site Vice President, and other members of Dominion staff.

- On June 13, 2018, the team conducted a phone exit presenting the final results of the inspection with Michael O'Connor, Director, Nuclear Station Safety and Licensing, and other members of Dominion staff.

DOCUMENTS REVIEWED

71111.21M - Design Bases Assurance Inspection (Teams)

Calculations

00FP-02959M2, Fire Protection Hydraulic Calculation for Unit 2 Fire Hose Stations HS 257 and HS 260, Revision 0
02-AOV-01893M3, Millstone Unit 3 Air Operated Valve (AOV) Program-Valve Categorization and Program Scope, Revision 0
2013-04407E2, 480V MCC Contactor Pickup Voltage Analysis, Revision 0
7604-SI, U-2 Seismic Analysis of Auxiliary Roof Drains, Revision 0
89-094-00900ES, MP3 Thrust/Torque Calculation for SIL*MV8804A, 351L*MV8804B, Revision 9
89-094-00900ES, Thrust/Torque Calculation for 3SIL*MV8804, Revision 9
89-094-00992ES, MP3 Thrust/Torque Calculation for 3SIL*MV8812A, 3SIL*MV8812B, Revision 4
89-094-00992ES, Thrust/Torque Calculation for 3SIL*MV8812, Revision 4
94103-C-024, Weal Link Seismic Assessment, 3RSS*MV8837A/B, 3SIL*MV8804A/B, Revision 4
94103-C-025, Weal Link Seismic Assessment, 3SIL*MV8812A and B, Revision 3
96-067, Auxiliary Feedwater System Comprehensive Flow Analysis, Revision 3
97-ENG-01912E2, 4.16 kV Switchgear Relay Settings, Revision 0
99-026, Millstone Site Fire Loop Flow Model Benchmarking, Revision 1
BAT5-96-1247E3, Battery 5 and Charger, Associated Cable and Device Electrical Verification Calculation, Revision 0
BAT-SYST-1240E3, DC System Analysis, Methodology and Scenario Development, Revision 1
MOV8910-01542E3, MP3 MOV89-10 Electrical Sizing Calculation, Revision 2
MP1-ENG-01888-I1, Fire Tank M7-6A/M7-6B Level Setting Calculation, Revision 1
MP2-ENG-ETAP-04014E2, MP2 Electrical Distribution System Analysis, Revision 3
MP2-ENG-ETAP-0414E2-A, MP2 Short Circuit Analysis, Revision 3
MP3-ENG-ETAP-04125E3, MP3 Electrical Distribution System Analysis, Revision 1
MP-CALC-ENG-94-ENG-01018E3, MP3 COPPS/PORV Loop Uncertainty, Revision 2
MP-CALC-ENG-94-ENG-01042C3, MP33 PORV Setpoint Curves for the Cold Overpressure System for 32 EFPY, Revision 5
MP-CALC-ENG-BAT2-096-01243E3, Battery 2 and Charger, Associated Cable and Device Electrical Verification Calculation, Revision 2
P(T)-1182, AFA System Operating Pressure and Temperature for Stress Data Package, Revision 1
PA84-065-753GE, 480V Breaker overcurrent Trip Devices, Revision 2
PA89-078-272E2, MP2 MOV Voltage Drop Calculation, Revision 0
S-04231S3, SBO Calculation for NUMARC 87-00, Revision 2
SIL-MOV-01387M3, SIL System and Design Basis Review for MOVs, Revision 0
SP-3EGS-2, 3EGS*TS30A/B Coolant Low Temperature Alarm, Revision 0
SP-3EGS-7, 3EGS*TC31A/B Jacket Water Heater Temperature Control, Revision 1

Corrective Action Documents (*initiated in response to inspection)

CR322576	CR0485973	CR1035012	CR1065358	CR1085337
CR474634	CR1010394	CR1038360	CR1065365	CR1089745
CR506091	CR1011898	CR1054570	CR1065456	CR1089842
CR550118	CR1015158	CR1056281	CR1083137	CR1091380
CR576783	CR1020242	CR1064769	CR1083567	CR1095019*

CR1095039*	CR1095387*	CR1096125*	CR1096430*	CR1096888*
CR1095053*	CR1095565*	CR1096287*	CR1096470*	CR1096889*
CR1095054*	CR1095721*	CR1096294*	CR1096494*	CR1097096*
CR1095057*	CR1095735*	CR1096300*	CR1096534*	CR1097538*
CR1095058*	CR1095755*	CR1096314*	CR1096849*	
CR1095064*	CR1095764*	CR1096359*	CR1096883*	
CR1095067*	CR1095814*	CR1096362*	CR1096885*	
CR1095112*	CR1096069*	CR1096363*	CR1096886*	

Design and Licensing Basis

3DBS-ELE-001, Design Bases Summary for the 4160V AC Electrical Distribution, Revision 1
DBS-2344A & B, Design Bases Summary for the 480V AC Electrical Distribution, Revision 1
DBS-2346A, Design Bases Summary – EDG, Revision 0
DBS-2346A, Design Bases Summary Emergency Diesel Generator, Revision 0
Unit 3 Technical Specifications, Amendment 271

Drawings

12179-ESK-6MY, Elementary Diagram – MOV 3SIL*MV8812B, Revision 11
12179-ESK-6NF, Elementary Diagram – MOV 3SIL*MV8804A, Revision 16
25203-26005, Sh. 3, Condensate Storage and Auxiliary Feedwater, Revision 60
25203-26008, Sh. 1, Circulating Water, Revision 105
25203-26008, Sh. 2, Service Water, Revision 119
25203-26011, Sh. 1, Fire Protection, Revision 57
25203-30001, Main Single Line Diagram, Revision 42
25203-30001, MP2 Main Single Line Diagram, Revision 42
25203-30005, 4.16kV Emergency Buses 24C and 24D, Revision 25
25203-30022, Sh 10 - F and FA, U-2 120 VAC Vital Instrument Panel VIAC-1 (VA10) BKR No. 6 Distribution Diagram, Revision 6/6
25203-30022, Sh. 11- E, EA, and EB, U-2 120 VAC Vital Instrument Panel VIAC-3 (VA30) BKR No. 5 Distribution Diagram, Revision 4/4/3
25203-30022, Sh. 12 - D, DA, DB, and DC, U-2 120 VAC Vital Instrument Panel VIAC-2 (VA20) BKR No. 4 Distribution Diagram, Revision 3/5/2/5
25203-30022, Sh. 12 - F and FA, U-2 120 VAC Vital Instrument Panel VIAC-2 (VA20) BKR No. 6 Distribution Diagram, Revision 5/6
25203-30022, Sh. 12- C, CA, CB, CC, and CD, U-2 120 VAC Vital Instrument Panel VIAC-2 (VA20) BKR No. 3 Distribution Diagram, Revision 5/4/2/3/8
25203-30022, Sh. 13 - C, CA, and CB, U-2 120 VAC Vital Instrument Panel VIAC-4 (VA40) (FAC.Z4) BKR No. 3 Distribution Diagram, Revision 3/4/4
25203-30022, Sh., 10- C, CA, CB, CC, CD, CE, and CF, U-2 120 VAC Vital Instrument Panel VIAC-1 (VA10) BKR No. 3 Distribution Diagram, Revision 5/5/3/3/4/4/8
25203-39038, Sh. 4.A, U-2 Panel Outline Diesel Generator Control Panel C38, Revision 8
25212-26902, Sh. 3, Reactor Coolant System, Revision 26
25212-26912, Sh. 1, Low Pressure Safety Injection, Revision 50
25212-30001, Main One Line, Phasing Diagram Power Distribution System Composite, Revision 26
25212-30004, Main One Line Diagram 4160V Normal & Emergency Buses, Revision 21
25212-30018, Sh. 1, 4.16 kV One-Line Diagram Bus 34C, Revision 17
25212-30019, Sh. 2, 4.16 kV One-Line Diagram Bus 34C, Revision 17
25212-30040, 480V MCC One-Line Diagram (MOV 8804A), Revision 48
25212-30076, One-Line Diagram 125Vdc and 120Vac Distribution System, Revision 31
25212-30079, Unit 3 125Vdc One-Line Diagram Battery 301C-1, Revision 23

25212-30081, Unit 3 120Vac One-Line Diagram Vital Bus 1 and 3, Revision 34
25212-30082, Unit 3 120Vac One-Line Diagram Vital Bus 2 and 4, Revision 30
25212-32001 Sh. 6MY, 3SILMV8812B Control Circuit Drawing, Revision 11
25212-32001 Sh. 6NF, 3SILMV8804A Control Circuit Drawing, Revision 16
25212-32001, Sh. 5BD, 4.16 KV RSV Station Service Breaker [3ENS*ACB-AR] 23SA3-34C-2, Revision 27
25212-32001, Sh. 5BF, 4.16 KV Bus Tie Breaker [3ENS*ACB-TA] 34C-IT-2, Revision 22
25212-32001, Sh. 5DR, 4.16 KV [15G-14U-2] Emergency Diesel Generator Breaker [3ENS*ACB-G-A], Revision 23
25212-32001, Sh. 7DW1, Pressurizer Power Relief Valve 3RCS*PCV456, Revision 4
25212-32001, Sh. 7FG, 4.16 KV Bus 34C [3ENS*SWG-A] Aux Circuit, Revision 14
25212-32001, Sh. 7J, 4.16 KV Bus 34C [3ENS*SWG-A] Aux Circuit, Revision 24
25212-32001, Sh. 7SX, 4.16 KV Bus 34C [3ENS*SWG-A] Undervoltage Trip Circuit, Revision 13
25212-32001, Sh. 7SZ, 4.16 KV Bus 34C & D [3ENS*SWG-A & B] Undervoltage Relays, Revision 9

Functional, Surveillance and Modification Acceptance Testing

1303-4.16, Emergency Power System, EG-Y-1A, performed 3/6/18
C SP 600.5-001, QA Diesel Fuel Oil Delivery Tracking, performed 3/2/18
C SP 600.5-002, QA Diesel Fuel Oil Delivery Post-Offload Results, performed 2/28/18
C SP 600.8, Diesel Fire Pump M7-7 Monthly Operability Demonstration, performed 1/12/18 and 4/14/18
SL 3610B.2-019, Cold Shutdown Testing of 3SIL*MV8804A, performed 11/1/17
SL 3610B.3-001, SIL Valve Stroke Time Test – Train B, performed 1/17/18
SP 3670.1, Plant Equipment Operator Rounds, performed 11/28/17
SP-2613I-001, 'A' Emergency Diesel Generator Loss of Load Test, performed 8/3/17
SP-2613K-001, Periodic DG Slow Start Operability Test, Facility 1 (Loaded Run), performed 2/28/18
SP-2613M-001, Periodic DG Operability Test, Facility 1 (SIAS Start), performed 11/30/17

Miscellaneous

00185-MC, MP3 Training – 480V Distribution System, Revision 6
BKG EOP 35 ES-1.3, Basis Information for Transfer to Cold Leg Recirculation, Revision 17-01
EQR109C, Valve Position Limit Switch Qualification Record, Revision 6
EQR262C, Solenoid Operated Valves Qualification Record, Revision 1
ERC 25212-ER-08-0003, Engineering Record Correspondence, Single Point Vulnerability Report for System #3344A Load Centers, Revision 0
ES-1.3, Guideline - Transfer to Cold Leg Recirculation, Revision 2
ETE-MP-2012-1221, Penetration Flooding Seal Auxiliary Building East Wall, Revision 1
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MP3-14-01149, Replacement of 48/15Vdc Power Supplies for SSPS, Revision 1
MP3-15-01127, Transformer Replacement of 480V Load Center Bus 32D, Revision 3
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EOP 35 ECA-0.0, Emergency Operating Procedure, Revision 33
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OP 2347A, Reserve Station Service Transformer 15G-22S, Revision 16
OP 3310A, Residual Heat Removal System, Revision 18
OP 3343, Station Electrical Service 4.16 kV, Revision 015
OP 3344A, 480 Volt Load Centers, Revision 016
OP 3370A, Electrical Breaker Procedure, Revision 23
OP2322, Auxiliary Feedwater System, Revision 30
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Work Orders

53102213069	53102534490	53102882726	53103106283
53102263553	53102552878	53102906733	53103125756
53102263555	53102625326	53102966371	53103141696
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