UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
2100 RENAISSANCE BLVD., Suite 100
KING OF PRUSSIA, PA 19406-2713

October 27, 2017

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 – INTEGRATED INSPECTION REPORT 05000336/2017003 AND 05000423/2017003

Dear Mr. Stoddard:

On September 30, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Millstone Power Station (Millstone), Units 2 and 3. On October 5, 2017, NRC inspectors discussed the results of this inspection with Mr. John Daugherty, Site Vice President, and other members of your staff. The results of this inspection are documented in the enclosed report.

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

If you contest the violation or significance of this NCV, 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. In addition, if you disagree with a cross-cutting aspect assignment, 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.

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 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Jonathan E. Greives, Acting Chief
Reactor Projects Branch 2
Division of Reactor Projects

Docket Nos. 50-336 and 50-423
License Nos. DPR-65 and NPF-49

Enclosure:
Inspection Report 05000336/2017003
and 05000423/2017003 w/Attachment:
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REGION I

Docket Nos.	50-336 and 50-423
License Nos.	DPR-65 and NPF-49
Report No.	05000336/2017003 and 05000423/2017003
Licensee:	Dominion Nuclear Connecticut, Inc. (Dominion)
Facility:	Millstone Power Station, Units 2 and 3
Location:	P.O. Box 128 Waterford, CT 06385
Dates:	July 1 through September 30, 2017
Inspectors:	J. Fuller, Senior Resident Inspector L. McKown, Resident Inspector C. Highley, Resident Inspector B. Dionne, Health Physicist J. DeBoer, Emergency Preparedness Inspector C. Roettgen, Resident Inspector R. Rolph, Health Physicist H. Anagnostopoulos, Senior Health Physicist
Approved By:	Jonathan E. Greives, Acting Chief Reactor Projects Branch 2 Division of Reactor Projects

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SUMMARY

IR 05000336/2017003 and 05000423/2017003; 07/01/2017 – 09/30/2017; Millstone Units 2 and 3; Problem Identification and Resolution.

This report covered a three-month period of inspection by resident inspectors and announced baseline inspections performed by regional inspectors. The inspectors identified one non-cited violation (NCV), which was of very low safety significance (Green). The significance of most findings is indicated by their color (i.e., greater than Green, or Green, White, Yellow, Red) and determined using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process", dated April 29, 2015. Cross-cutting aspects are determined using IMC 0310, "Aspects Within Cross-Cutting Areas," dated December 4, 2014. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated November 1, 2016. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 6.

Cornerstone: Barrier Integrity

- Green. A self-revealing NCV of very low safety significance (Green) of Technical Specification (TS) 6.8, "Procedures," was identified because Dominion did not adequately establish Operating Procedure (OP) 2305, "Spent Fuel Pool Cooling and Purification System." Specifically, from initial issuance until June 20, 2017, the procedure did not direct operators to verify the primary demineralizer bypass valve was closed while lining up to fill the spent fuel pool from the coolant waste receiver tanks, resulting in an unexpected loss of spent fuel pool inventory. Dominion has documented this condition within their corrective action program (CAP) as condition report (CR) 1064323, revised procedure OP 2305, and performed an apparent cause evaluation.

  The inspectors determined that the finding was more than minor because it was associated with the procedure quality attribute of the Barrier Integrity cornerstone and adversely affected its objective to provide reasonable assurance that physical design barriers, such as fuel cladding, protect the public from radionuclide releases caused by accidents or events. Specifically, spent fuel pool level was inadvertently lowered when operators aligned the system in accordance with OP 2305, which resulted in a reduced net positive suction head for the spent fuel pool cooling pumps as indicated by control room alarm. The finding screened to be of very low safety significance (Green) because it did not result in a loss of spent fuel pool water inventory below the minimum analyzed level limit and did not cause the spent fuel pool temperature to exceed the maximum analyzed temperature limit. This finding has a cross-cutting aspect in the Human Performance cross-cutting area, Avoid Complacency because Dominion did not recognize and plan for the possibility of a latent deficiency in procedure OP 2305 when used while the primary demineralizers were bypassed. [H.12] (Section 4OA2)

REPORT DETAILS

Summary of Plant Status

Unit 2 began the inspection period at 100 percent power and operated at full power until July 21 when power was reduced to 93 percent power for turbine valve testing. The reactor was restored to 100 percent power on July 22. A Notice of Unusual Event was declared on August 15, due to a fire in a safe shutdown area, containment. Upon containment entry that same day, the fire alarm was verified to be spurious and the Unusual Event was terminated. On August 30, operators performed a rapid downpower to 83 percent power due to a failure of a moisture separator reheater drain tank level control valve. Reactor power was returned to 100 percent power on August 31 and remained at or near 100 percent power for the remainder of the inspection period.

Unit 3 performed a downpower on August 4 to perform turbine valve testing. The unit returned to 100 percent power the same day and remained at or near 100 percent power for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01 – 1 sample)

.1 Readiness for Impending Adverse Weather Conditions

a. Inspection Scope

The inspectors reviewed Dominion's preparations for the onset of a tropical storm on September 18, at Units 2 and 3. The inspectors reviewed the implementation of adverse weather preparation procedures before the onset of and during this adverse weather condition. The inspectors walked down the emergency diesel generators (EDGs) and service water system to ensure system availability and a general site walkdown of all external areas of the plant to observe the condition of the flood gates, water flood doors, and general area missile hazards. The inspectors verified that operator actions defined in Dominion's adverse weather procedure maintained the readiness of essential systems. The inspectors discussed readiness and staff availability for adverse weather response with operations and work control personnel. Documents reviewed for each section of this inspection report are listed in the Attachment.

b. Findings

No findings were identified.

1R04 Equipment Alignment

.1 Partial System Walkdowns (71111.04 – 4 samples)

a. Inspection Scope

The inspectors performed partial walkdowns of the following systems:

Unit 2

- Spent fuel pool cooling and cleanup system on August 8
- 'A' service water system during 'A' service water strainer troubleshooting and repairs on September 19

Unit 3

- Secondary leak collection and release system (SLCRs) due to missing components on July 13
- Auxiliary feed water train 'B' while 'A' train discharge isolation valve to 'D' steam generator failed on August 14

The inspectors selected these systems based on their risk-significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors reviewed applicable OPs, system diagrams, the Updated Final Safety Analysis Report (UFSAR), TSs, work orders, CRs, and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have impacted the system's performance of its intended safety functions. The inspectors also performed field walkdowns of accessible portions of the systems to verify system components and support equipment were aligned correctly and were operable. The inspectors examined the material condition of the components and observed operating parameters of equipment to verify that there were no deficiencies. The inspectors also reviewed whether Dominion staff had properly identified equipment issues and entered them into the CAP for resolution with the appropriate significance characterization.

b. Findings

No findings were identified.

.2 Complete System Walkdowns (71111.04 – 1 sample)

a. Inspection Scope

On July 17, the inspectors performed a complete system walkdown of accessible portions of the Millstone Unit 2 auxiliary feedwater system. The inspectors reviewed emergency OPs, drawings, and the UFSAR to verify that the system was aligned to perform its required safety functions. The inspectors also reviewed electrical power availability, component lubrication and equipment cooling, hanger and support functionality, and operability of support systems. The inspectors performed field walkdowns of accessible portions of the systems to verify as-built system configuration matched plant documentation. The inspectors confirmed that systems and components

were aligned correctly, environmentally qualified, and protected against external threats. The inspectors also examined the material condition of the components for degradation and observed operating parameters of equipment to verify that there were no deficiencies. Additionally, the inspectors reviewed a sample of related CRs to ensure Dominion appropriately evaluated and resolved any deficiencies.

b. Findings

No findings were identified.

1R05 Fire Protection

.1 Resident Inspector Quarterly Walkdowns (71111.05Q – 6 samples)

a. Inspection Scope

The inspectors conducted tours of the areas listed below to assess the material condition and operational status of fire protection features. The inspectors verified that Dominion controlled combustible materials and ignition sources in accordance with administrative procedures. The inspectors verified that fire protection and suppression equipment was available for use as specified in the area pre-fire plan, and passive fire barriers were maintained in good material condition. The inspectors also verified that station personnel implemented compensatory measures for out of service, degraded, or inoperable fire protection equipment, as applicable, in accordance with procedures.

Unit 2

- Motor and turbine driven auxiliary feedwater (TDAFW) rooms (Fire Area T-3 & 4) on July 6
- Cable vault (Fire Area A-24) on July 24
- Containment (Fire Area C-1) on August 15
- 6.9 and 4.16 kV switchgear room (Fire Area T-7) on August 31

Unit 3

- East motor control center rod control switch gear room 45' elevation (Fire Area AB-5) on July 28
- Turbine building 38' 6" elevation following wet pipe sprinkler head failure (Fire Area TB-2C) on August 1

b. Findings

No findings were identified.

.2 Fire Protection – Drill Observation (71111.05A – 1 sample)

a. Inspection Scope

The inspectors observed a fire brigade drill scenario conducted on August 8 that involved a fire in the Unit 3 Hydrogen Seal Oil Unit. The inspectors evaluated the

readiness of the plant fire brigade to fight fires. The inspectors verified that Dominion personnel identified deficiencies, openly discussed them in a self-critical manner at the drill critique, and took appropriate corrective actions as required. The inspectors evaluated specific attributes as follows:

- Proper wearing of turnout gear and self-contained breathing apparatus
- Proper use and layout of fire hoses
- Employment of appropriate fire-fighting techniques
- Sufficient fire-fighting equipment brought to the scene
- Effectiveness of command and control
- Search for victims and propagation of the fire into other plant areas
- Smoke removal operations
- Utilization of pre-planned strategies
- Adherence to the pre-planned drill scenario
- Drill objectives met

The inspectors also evaluated the fire brigade's actions to determine whether these actions were in accordance with Dominion's fire-fighting strategies.

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06 – 1 sample)

.1 Internal Flooding Review

a. Inspection Scope

The inspectors reviewed the UFSAR, the site flooding analysis, and plant procedures to identify internal flooding susceptibilities for the site. The inspectors' review focused on the cable tunnel going into the switchyard containing cables for breaker controls from the Unit 2 control room. This review verified the adequacy of the cables to withstand continuing drying and rewetting issues and the possibility of being submerged for a period of time, equipment seals located below the flood line, man-way seals, common drain lines in the area of the switchyard, and temporary or removable flood barriers. It assessed the adequacy of the current conditions and operator actions that Dominion had identified as necessary to cope with flooding in this area and also reviewed the CAP to determine if Dominion was identifying and correcting problems associated with both flood mitigation features and site procedures for responding to flooding.

b. Findings

No findings were identified.

1R11 Licensed Operator Requalification Program and Licensed Operator Performance (71111.11Q – 4 samples)

.1 Quarterly Review of Licensed Operator Requalification Testing and Training

a. Inspection Scope

Unit 2

The inspectors observed Unit 2 control room simulator training for dropped rod, plant downpower, loss of reactor building closed cooling water pump, loss of a circulating water pump, reactor trip, reactor coolant system (RCS) loss of coolant accident, steam generator tube rupture, emergency action level classification, plant cooldown, and grounds on September 21. The inspectors evaluated operator performance during the simulated event and verified completion of risk significant operator actions, including the use of abnormal operating procedures (AOPs) and emergency OPs. The inspectors assessed the clarity and effectiveness of communications, implementation of actions in response to alarms and degrading plant conditions, and the oversight and direction provided by the control room supervisor. The inspectors verified the accuracy and timeliness of the emergency classifications made by the shift manager and the TS action statements entered by the unit supervisor. Additionally, the inspectors assessed the ability of the crew and training staff to identify and document crew performance problems.

Unit 3

The inspectors observed Unit 3 licensed operator simulator training during an operator licensing requalification training event on September 15, which included a reactor shutdown from 25 percent, placing feed regulating valves to manual, boration of the plant to shut down the reactor, cool down the reactor using atmospheric steam dumps, and shut down cooling. The inspectors evaluated operator performance during the simulated scenario and verified completion of risk significant operator actions, including the use of OPs. The inspectors assessed the clarity and effectiveness of communications, implementation of actions in response to alarms and changing plant conditions, and the oversight and direction provided by the control room supervisor. Additionally, the inspectors assessed the ability of the crew and training staff to identify and document crew performance problems.

b. Findings

No findings were identified.

.2 Quarterly Review of Licensed Operator Performance in the Main Control Room

a. Inspection Scope

Unit 2

The inspectors observed Unit 2 operator performance during an emergent downpower to support moisture separator reheater drain tank level control valve failure on January 23. The inspectors evaluated operator performance during the actual power maneuvers to

verify the use of normal OPs and AOPs. The inspectors assessed the clarity and effectiveness of communications, implementation of actions in response to alarms and changing plant conditions, as well as the oversight and direction provided by the control room supervisor. Additionally, the inspectors assessed the ability of the crew to identify and document crew performance problems.

Unit 3

The inspectors observed operator logs, general control room operations, protection set testing group 3 by instrumentation and control technicians, 'B' EDG local start, dilution operation, de-boration operation, and shifting the leading edge flow meter calorimetric for program of record from nuclear instruments on September 28, 2017. The inspectors observed crew focus briefings, pre-job briefings, and crew plant interactions during log taking to verify that briefings and interactions met the criteria set for in the Dominion procedure, "Conduct of Operations." Additionally, the inspectors observed performance to verify that procedure use, crew communications, and coordination of activities between work groups similarly met established expectations and standards.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12Q – 2 samples)

a. Inspection Scope

The inspectors reviewed the samples listed below to assess the effectiveness of maintenance activities on structure, system, and component performance and reliability. The inspectors reviewed system health reports, CAP documents, maintenance work orders, and maintenance rule basis documents to ensure that Dominion was identifying and properly evaluating performance problems within the scope of the maintenance rule. For each sample selected, the inspectors verified that the structure, system, or component was properly scoped into the maintenance rule in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 50.65 and verified that the (a)(2) performance criteria established by Dominion staff was reasonable. As applicable, for structures, systems, and components classified as (a)(1), the inspectors assessed the adequacy of goals and corrective actions to return these structures, systems, and components to (a)(2). Additionally, the inspectors ensured that Dominion staff was identifying and addressing common cause failures that occurred within and across maintenance rule system boundaries.

Unit 2

- Low pressure safety injection instrumentation and controls on August 3
- Auxiliary feedwater pumps and valves on August 10

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 5 samples)

a. Inspection Scope

The inspectors reviewed station evaluation and management of plant risk for the maintenance and emergent work activities listed below to verify that Dominion performed the appropriate risk assessments prior to removing equipment for work. The inspectors selected these activities based on potential risk significance relative to the reactor safety cornerstones. As applicable for each activity, the inspectors verified that Dominion personnel performed risk assessments as required by 10 CFR 50.65(a)(4) and that the assessments were accurate and complete. When Dominion performed emergent work, the inspectors verified that operations personnel promptly assessed and managed plant risk. The inspectors reviewed the scope of maintenance work and discussed the results of the assessment with the station's probabilistic risk analyst to verify plant conditions were consistent with the risk assessment. The inspectors also reviewed the TS requirements and inspected portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

Unit 2

- Engineered safety feature actuation system under voltage testing sequenced with 'A' EDG testing on July 17
- Yellow unit risk for engineered safety feature actuation system undervoltage reserve station service transformer sequencer testing on facility 2 on August 14
- Elevated risk with reserve station service transformer out of service and fire drill in upper 4.16kV switchgear room on August 24

Unit 3

- 'A' and 'B' EDG jacket water samples on July 10
- Elevated risk due to north bus relay testing concurrent with main generator exciter brush replacement on August 10

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15 – 8 samples)

a. Inspection Scope

The inspectors reviewed operability determinations for the following degraded or non-conforming conditions based on the risk significance of the associated components and systems:

Unit 2

- CR1073628 emergency core cooling system/containment spray suction header relief valve leakage on July 18

- CR1074970 emergency alternating current loading impact for control room power receptacle on August 7
- CR1076005 auxiliary feedwater regulating valves beyond environmental qualification on August 17
- CR1076382 missed inservice test (IST) surveillance requirement for 2-FIRE-94A/B/C, fire water to auxiliary feedwater isolation valves on August 24
- CR1076280 failed seismic monitor concurrent with Unit 3 seismic monitor maintenance on August 31
- Through wall leakage on the emergency core cooling system recirculation line back to the refueling water storage tank on September 22

Unit 3

- CR1075600 3FWA*HV31D, 'A' train auxiliary feedwater discharge isolation valve to 'D' steam generator controller card failure on August 14
- Rod insertion limit calculation differences between TS, UFSAR, and Technical Requirements Manual Core Operating Limits Report on September 14

The inspectors evaluated the technical adequacy of the operability determinations to assess whether TS operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors compared the operability and design criteria in the appropriate sections of the TSs and UFSAR to Dominion's evaluations to determine whether the components or systems were operable. The inspectors confirmed, where appropriate, compliance with bounding limitations associated with the evaluations. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled by Dominion.

b. Findings

No findings were identified.

1R18 Plant Modifications (71111.18 – 3 samples)

.1 Temporary Modification

a. Inspection Scope

The inspectors reviewed the temporary modification listed below to determine whether the modification affected the safety functions of systems that are important to safety. The inspectors reviewed 10 CFR 50.59 documentation and post-modification testing results, and conducted field walkdowns of the modification to verify that the temporary modification did not degrade the design bases, licensing bases, and performance capability of the affected systems.

- Disabled service water strainer alarm relay on September 18

b. Findings

No findings were identified.

.2 Permanent Modifications

a. Inspection Scope

The inspectors evaluated the modifications listed below to determine whether the modifications affected the safety functions of systems that are important to safety. The inspectors verified that the design bases, licensing bases, and performance capability of the affected systems were not degraded by the modification. In addition, the inspectors reviewed modification documents associated with the upgrade and design change, and interviewed engineering and operations personnel to ensure the procedure could be reasonably performed.

Unit 3

- Gammametrics Yokogawa digital recorder upgrade on August 16
- Control building water chiller winding slots sensor modification on August 23

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19 – 5 samples)

a. Inspection Scope

The inspectors reviewed the post-maintenance tests for the maintenance activities listed below to verify that procedures and test activities adequately tested the safety functions that may have been affected by the maintenance activity, that the acceptance criteria in the procedure were consistent with the information in the applicable licensing basis and/or design basis documents, and that the test results were properly reviewed and accepted and problems were appropriately documented. The inspectors also walked down the affected job site, observed the pre-job brief and post-job critique where possible, witnessed the test or reviewed test data to verify quality control hold point were performed and checked, and that results adequately demonstrated restoration of the affected safety functions.

Unit 2

- ‘B’ boric acid pump replacement following identification of through-wall leakage on July 17
- Low pressure safety injection 'B' hand switch due to safety injection actuation signal override failure on July 19

Unit 3

- ‘B’ residual heat removal valve (3RHS*FCV611) operational test on July 19
- 3FWA*HV31D, ‘A’ train auxiliary feedwater discharge isolation valve to ‘D’ steam generator controller card replacement following failure during surveillance testing on August 14
- ‘A’ EDG air start pressure switch calibration and replacement on September 6

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22 – 5 samples)

a. Inspection Scope

The inspectors observed performance of surveillance tests and/or reviewed test data of selected risk-significant structures, systems, and components to assess whether test results satisfied TSs, the UFSAR, and Dominion procedure requirements. The inspectors verified that test acceptance criteria were clear, tests demonstrated operational readiness and were consistent with design documentation, test instrumentation had current calibrations and the range and accuracy for the application, tests were performed as written, and applicable test prerequisites were satisfied. Upon test completion, the inspectors considered whether the test results supported that equipment was capable of performing the required safety functions. The inspectors reviewed the following surveillance tests:

Unit 2

- 'A' service water pump and facility 1 discharge check valve IST on July 14
- Integrated test of facility 2 components on July 25

Unit 3

- Boric acid transfer pump (3CHS*P2A) operational testing on July 12
- TDAFW pump operational testing on July 17
- 'B' residual heat removal pump operational test on September 19

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP2 Alert and Notification System Evaluation (71114.02 - 1 sample)

a. Inspection Scope

An onsite review was conducted to assess the maintenance and testing of the alert and notification system (ANS). During this inspection, the inspectors conducted a review of the Millstone siren testing and maintenance programs. The inspectors reviewed the associated ANS procedures and the Federal Emergency Management Agency approved ANS design report to ensure Dominion's compliance with design report commitments for system maintenance and testing. The inspection was conducted in accordance with NRC Inspection Procedure 71114.02. 10 CFR 50.47(b)(5) and the related requirements of 10 CFR Part 50, Appendix E were used as reference criteria.

b. Findings

No findings were identified.

1EP3 Emergency Response Organization Staffing and Augmentation System (71114.03 – 1 sample)

a. Inspection Scope

The inspectors conducted a review of the Millstone Emergency Response Organization (ERO) augmentation staffing requirements and the process for notifying and augmenting the ERO. The review was performed to verify the readiness of key Dominion staff to respond to an emergency event and to verify Dominion's ability to activate their emergency response facilities (ERFs) in a timely manner. The inspectors reviewed: the Millstone Power Station Emergency Plan for ERF activation and ERO staffing requirements; the ERO duty roster; applicable station procedures; augmentation test reports; the most recent drive-in drill reports; and corrective action reports related to this inspection area. The inspectors also reviewed a sample of ERO responder training records to verify training and qualifications were up to date. The inspection was conducted in accordance with NRC Inspection Procedure 71114.03. 10 CFR 50.47(b)(2) and related requirements of 10 CFR Part 50, Appendix E were used as reference criteria.

b. Findings

No findings were identified.

1EP5 Maintaining Emergency Preparedness (71114.05 - 1 sample)

a. Inspection Scope

The inspectors reviewed a number of activities to evaluate the efficacy of Dominion's efforts to maintain the Millstone emergency preparedness (EP) programs. The inspectors reviewed memorandums of agreement with offsite agencies; the 10 CFR 50.54(q) Emergency Plan change process and practice; Millstone's maintenance of equipment important to EP; records of evacuation time estimate population evaluation; and provisions for, and implementation of, primary, backup, and alternative ERF maintenance. The inspectors also verified Dominion's compliance at Millstone with NRC EP regulations regarding: emergency action levels for hostile action events, protective actions for on-site personnel during events, emergency declaration timeliness, ERO augmentation and alternate facility capability, evacuation time estimate updates, on-shift ERO staffing analysis, and ANS back-up means.

The inspectors further evaluated Dominion's ability to maintain the Millstone EP programs through their identification and correction of EP weaknesses, by reviewing a sample of drill reports, self-assessments, and 10 CFR 50.54(t) reviews. Also, the inspectors reviewed a sample of EP-related CRs initiated at Millstone from August 2015 through July 2017. The inspection was conducted in accordance with NRC Inspection Procedure 71114.05. 10 CFR 50.47(b) and the related requirements of 10 CFR Part 50, Appendix E were used as reference criteria.

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06 – 1 sample)

Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors evaluated the conduct of a routine Dominion EP drill on August 2 to identify any weaknesses and deficiencies in the classification and notification recommendation development activities. This training drill involved operators classifying events on Unit 3 related to a fuel cladding failure followed by a loss of coolant inventory accident without loss of the containment barrier. The inspectors observed emergency response operations in the Technical Support Center to determine whether Dominion performed ERO actions in accordance with procedures. The inspectors also attended the station drill critique to compare inspector observations with those identified by Dominion staff in order to evaluate Dominion's critique and to verify whether Dominion staff was properly identifying weaknesses and entering them into the CAP.

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstone: Occupational and Public Radiation Safety

2RS5 Radiation Monitoring Instrumentation (71124.05 - 3 samples)

a. Inspection Scope

The inspectors reviewed performance in assuring the accuracy and operability of radiation monitoring instruments used to protect occupational workers during plant operations and from postulated accidents. The inspectors used the requirements in 10 CFR Part 20; regulatory guides; American National Standards Institute 323A, N323D, and N42.14; and procedures required by TSs as criteria for determining compliance.

Inspection Planning

The inspectors reviewed Millstone's UFSAR, radiation protection audits, records of in-service survey instrumentation, and procedures for instrument source checks and calibrations.

Walkdowns and Observations (1 sample)

The inspectors conducted walkdowns of plant area radiation monitors and continuous air monitors. The inspectors assessed material condition of these instruments and that the monitor configurations aligned with the UFSAR. The inspectors checked the calibration

and source check status of various portable radiation survey instruments and contamination detection monitors for personnel and equipment.

Calibration and Testing Program (1 sample)

For the following radiation detection instrumentation, the inspectors reviewed the current detector and electronic channel calibration, functional testing results, alarm setpoints, and the use of scaling factors: laboratory analytical instruments, whole body counter, containment high-range monitors, portal monitors, personnel contamination monitors, small article monitors, portable survey instruments, area radiation monitors, electronic dosimetry, air samplers, and continuous air monitors. The inspectors reviewed the calibration standards used for portable instrument calibrations and response checks to verify that instruments were calibrated by a facility that used National Institute of Science and Technology traceable sources.

Problem Identification and Resolution (1 sample)

The inspectors verified that problems associated with radiation monitoring instrumentation (including failed calibrations) were identified at an appropriate threshold and properly addressed in the CAP.

b. Findings

No findings were identified.

2RS6 Radioactive Gaseous and Liquid Effluent Treatment (71124.06 - 6 samples)

a. Inspection Scope

The inspectors reviewed the treatment, monitoring, and control of radioactive gaseous and liquid effluents. The inspectors used the requirements in 10 CFR Part 20; 10 CFR Part 50, Appendix I; TSs; the Offsite Dose Calculation Manual (ODCM); applicable industry standards; and procedures required by TSs as criteria for determining compliance.

Inspection Planning

The inspectors conducted in-office reviews of the Millstone 2015 and 2016 annual radioactive effluent and environmental reports, radioactive effluent program documents, UFSAR, ODCM, and applicable event reports.

Walkdowns and Observations (1 sample)

The inspectors walked down the gaseous and liquid radioactive effluent monitoring and filtered ventilation systems to assess the material condition and verify proper alignment according to plant design. The inspectors also observed potential unmonitored release points and reviewed radiation monitoring system surveillance records and the routine processing and discharge of gaseous and liquid radioactive wastes.

Calibration and Testing Program (1 sample)

The inspectors reviewed gaseous and liquid effluent monitor instrument calibration, functional test results, and alarm setpoints based on National Institute of Standards and Technology calibration traceability and ODCM specifications.

Sampling and Analyses (1 sample)

The inspectors reviewed radioactive effluent sampling activities, representative sampling requirements, compensatory measures taken during effluent discharges with inoperable effluent radiation monitoring instrumentation, the use of compensatory radioactive effluent sampling, and the results of the inter-laboratory and intra-laboratory comparison program including scaling of hard-to-detect isotopes.

Instrumentation and Equipment (1 sample)

The inspectors reviewed the methodology used to determine the radioactive effluent stack and vent flow rates to verify that the flow rates were consistent with TS/ODCM and UFSAR values. The inspectors reviewed radioactive effluent discharge system surveillance test results based on TS acceptance criteria. The inspectors verified that high-range effluent monitors used in emergency OPs are calibrated and operable and have post-accident effluent sampling capability.

Dose Calculations (1 sample)

The inspectors reviewed changes in reported dose values from the previous annual radioactive effluent release reports, several liquid and gaseous radioactive waste discharge permits, the scaling method for hard-to-detect radionuclides, ODCM changes, land use census changes, public dose calculations (monthly, quarterly, annual), and records of abnormal gaseous or liquid radioactive releases.

Problem Identification and Resolution (1 sample)

The inspectors evaluated whether problems associated with the radioactive effluent monitoring and control program were identified at an appropriate threshold and properly addressed in Dominion's CAP.

b. Findings

No findings were identified.

2RS7 Radiological Environmental Monitoring Program (71124.07 - 3 samples)

a. Inspection Scope

The inspectors reviewed the Radiological Environmental Monitoring Program (REMP) to validate the effectiveness of the radioactive gaseous and liquid effluent release program and implementation of the Groundwater Protection Initiative (GPI). The inspectors used the requirements in 10 CFR Part 20; 40 CFR Part 190; 10 CFR Part 50, Appendix I; TSs; the ODCM; Nuclear Energy Institute (NEI) Document 07-07; and procedures required by TSs as criteria for determining compliance.

Inspection Planning

The inspectors reviewed Dominion's 2016 annual radiological environmental and effluent monitoring report, REMP program audits, ODCM changes, land use census, UFSAR, and inter-laboratory comparison program results.

Site Inspection (1 sample)

The inspectors walked down various thermoluminescent dosimeter and air and water sampling locations and reviewed associated calibration and maintenance records. The inspectors observed the sampling of various environmental media as specified in the ODCM and reviewed any anomalous environmental sampling events including assessment of any positive radioactivity results. The inspectors reviewed any changes to the ODCM. The inspectors verified the operability and calibration of the meteorological tower instruments and meteorological data readouts. The inspectors reviewed environmental sample laboratory analysis results, laboratory instrument measurement detection sensitivities, results of the laboratory quality control program audit, and the inter- and intra-laboratory comparison program results. The inspectors reviewed the groundwater monitoring program as it applies to selected potential leaking structures, systems, and components and 10 CFR 50.75(g) records of leaks, spills, and remediation since the previous inspection.

GPI Implementation (1 sample)

The inspectors reviewed groundwater monitoring results, changes to the GPI program since the last inspection, anomalous results or missed groundwater samples, leakage or spill events including entries made into the decommissioning files (10 CFR 50.75(g)), evaluations of surface water discharges, and Dominion's evaluation of any positive groundwater sample results including appropriate stakeholder notifications and effluent reporting requirements.

Problem Identification and Resolution (1 sample)

The inspectors evaluated whether problems associated with the REMP were identified at an appropriate threshold and properly addressed in Dominion's CAP.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151- 3 samples)

a. Inspection Scope

The inspectors reviewed data for the following three EP performance indicators: (1) drill and exercise performance, (2) ERO drill participation, and (3) ANS reliability. The last NRC EP inspection at Millstone was conducted in the third calendar quarter of 2016. Therefore, the inspectors reviewed supporting documentation from EP drills and equipment tests from the third calendar quarter of 2016 through the second calendar

quarter of 2017 to verify the accuracy of the reported performance indicator data. The review of the performance indicators was conducted in accordance with NRC Inspection Procedure 71151. The acceptance criteria documented in NEI 99-02, "Regulatory Assessment Performance Indicator Guidelines," Revision 7, was used as reference criteria.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152 - 3 samples)

.1 Routine Review of Problem Identification and Resolution Activities

a. Inspection Scope

As required by Inspection Procedure 71152, "Problem Identification and Resolution," the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify Dominion entered issues into the CAP at an appropriate threshold, gave adequate attention to timely corrective actions, and identified and addressed adverse trends. In order to assist with the identification of repetitive equipment failures and specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the CAP and periodically attended CR screening meetings.

b. Findings

No findings were identified.

.2 Semi-Annual Trend Review

a. Inspection Scope

The inspectors performed a semi-annual review of site issues, as required by Inspection Procedure 71152, "Problem Identification and Resolution," to identify trends that might indicate the existence of more significant safety issues. In this review, the inspectors included repetitive or closely-related issues that may have been documented by Dominion outside of the CAP, such as trend reports, performance indicators, major equipment problem lists, system health reports, maintenance rule assessments, and maintenance or CAP backlogs. The inspectors also reviewed Dominion's control room shift turnover reports for Units 2 and 3. Inspectors randomly selected a total of 16 turnover reports from Units 2 and 3 between July 1 and September 30, 2017, to determine if Dominion has established a problem resolution process outside of the CAP which could adversely impact the capability of the station to correct identified conditions adverse to quality.

b. Findings and Observations

No findings were identified.

.3 Annual Sample: Unit 3 Rod Insertion Limit LO-LO Actuated During a Rapid Down Power to Support the Loss of Two Offsite Power Lines on August 14

a. Inspection Scope

The inspectors performed an in-depth review of Dominion's cause evaluation and corrective actions associated with CR1068836 for an unplanned rapid power reduction on May 15, 2017. Specifically, the loss of two 345kV offsite power lines caused Unit 3 operators to rapidly reduce power from 1127 MWe to 900 MWe as required by Technical Requirements Manual 3.8.1, "Electrical Power Systems," to prevent grid instability.

The inspectors assessed Dominion's problem identification threshold, cause analyses, extent of condition reviews, compensatory actions, and the prioritization and timeliness of corrective actions to determine whether Dominion was appropriately identifying, characterizing, and correcting problems associated with this issue and whether the planned or completed corrective actions were appropriate.

b. Findings and Observations

No findings were identified.

On May 15, 2017, Millstone station experienced the loss of two 345kV offsite feeder lines and was directed by the grid operator to rapidly reduce station output power to 1725 MWe within 25 minutes. Millstone Unit 3 entered TRM under requirement 3.8.1, action B, which required reducing total station output to 1650 MWe within 30 minutes. Both units entered C OP-200.8, "Response to ISO New England / CONVEX Notifications and Alerts," and coordinated the load reduction to achieve the required downpower. Unit 3 entered AOP 3575, "Rapid Power Reduction," and commenced a power reduction at 3 percent/min from 1267 MWe to 900 MWe.

Despite the fact that one offsite 345kV line was already out of service, Unit 2 and Unit 3 had not predetermined how much of the total power reduction would be shared by each unit if a second line was lost. Coordination of this effort took 10 minutes to complete which caused a delay in starting the power reduction which could have been performed concurrently, and resulted in a shorter time (20 minutes) to reach the rapid power reduction target.

Upon entry into AOP 3575, the operators calculated and added an initial amount of boric acid that should be sufficient to complete the power reduction. However, a recent change to AOP 3575 directed the operators to use a value for boric acid reactivity effectiveness of 15 (gallons of boric acid)/(percent power) which was appropriate for beginning of life, but was non-conservative for end of life reactivity conditions. The correct value for end of life is approximately 18 gal/percent. The operators correctly followed AOP 3575 and computed the amount of boric acid to be added based on the 15 gal/percent as directed and thus under-estimated the amount of boric acid to be added to maintain the shutdown margin by approximately 20 percent.

During the rapid power reduction, the control rods continuously inserted in automatic as designed. The operators slowed the power reduction rate from 3percent/min to 1 percent/min at 1650 but did not increase the boration rate or add more boric acid despite the fact that the control rods were approaching the rod insertion limit (RIL). Step 6.h of AOP-3575 requires the operators to monitor the rapid downpower parameters and

adjust (decrease) loading rate, boration time and flow rate, or rod position as necessary. Although the operators reduced the power reduction rate, this change would have little effect on the final control rod position and approach to RIL as the RCS temperature deviation ($T_{ave} – T_{ref}$) was +4°F and control rods were stepping in rapidly. As the control rods approached RIL, additional boric acid was required to be added to prevent exceeding the rod insertion limit which was a warning alarm for a pending loss of adequate shutdown margin.

At 1658, Unit 3 reached the required target of 900 MWe and the “RIL LO” alarm annunciated. The required action in AOP 3575, step 7.m, for this event is to “increase the boration flow rate”. Although the initial rapid boration had been completed and should have been sufficient, the procedure directs the operators to immediately restart the boration to prevent the RIL LO-LO alarm. At 1659, the RIL LO-LO annunciator alarmed. The operators responded at 1703 by rapidly borating until sufficient additional negative reactivity was added so the control rods could be withdrawn to clear the RIL alarm, which occurred at 1705.

TS 3.1.3.6 requires the rods to be maintained above the RIL. The action statement is to either restore rods above the RIL setpoint or reduce power to clear the RIL setpoint within two hours. The operators entered TS 3.1.3.6 and restored the control rods above RIL within six minutes.

Two minor performance deficiencies were noted during this inspection. The first involved procedure AOP 3575, which directed the operators to calculate a boric acid addition that should have been sufficient to complete the rapid downpower without control rods inserting below RIL alarms. However, the procedure assumed beginning of life conditions in the core. The core was operating at the end of life when the reactivity coefficients and power defect were different. These differences resulted in an insufficient amount of boric acid being calculated and added to the RCS. This procedural inadequacy was identified by the licensee in the apparent cause evaluation and was promptly corrected by a revision to AOP 3575.

A second minor performance deficiency was identified by the inspectors. The inspectors noted that operators did not adequately control the reactivity balance during the power reduction. AOP 3575, step 6.h requires the operators to monitor the rapid downpower parameters and adjust (decrease) loading rate, boration time and flow rate, or rod position as necessary. The operators reduced the power reduction rate but did not add additional boric acid as the control rods approached RIL alarm. Furthermore, steps 7.k, l and m, provided specific direction to immediately increase boration flow if the RIL LO alarm occurs during a power reduction that was requested by the grid operator. Contrary to this direction, the operators did not address the need to add additional boric acid to the RCS to properly control the reactivity balance during the rapid downpower until after the RIL LO-LO annunciator had alarmed. After the event, operators discussed this issue during the 4.0 crew debrief; however, the inspectors identified that this issue was not appropriately captured in the CAP and corrective actions associated with the event failed to address the operator performance issues concerning reactivity management. However, the inspectors noted that appropriate corrective actions were taken to address this issue through changes to AOP 3575 and through changes made to operator training, which were addressed with a systematic approach to training, during training cycle 17-03, June 20 through August 11, 2017.

.4 Annual Sample: Unit 2 Unexpected Lowering of Spent Fuel Pool Level

a. Inspection Scope

The inspectors performed an in-depth review of Dominion's evaluation and corrective actions associated with an unexpected lowering of spent fuel pool level on April 5, 2017. Specifically, operators were beginning the valve line up to transfer water from the 'A' coolant waste receiving tank to the spent fuel pool and inadvertently created a drain path from the spent fuel pool to the 'B' coolant waste receiving tank.

The inspectors assessed Dominion's problem identification threshold, problem analysis, extent of condition and extent of cause reviews, and the prioritization and timeliness of their corrective actions to determine whether they were appropriately identifying, characterizing, and correcting problems associated with this issue and whether the planned or completed corrective actions were appropriate. The inspectors compared the actions taken to the requirements of Dominion's CAP. The inspectors reviewed associated documents and interviewed station personnel to assess the reasonableness of Dominion's evaluations and of the planned and completed corrective actions.

b. Findings and Observations

The inspectors determined that Dominion's evaluation and extent-of-condition review were thorough, and causes were appropriately identified. The inspectors also determined that the corrective actions were reasonable and would address the need to prevent unanticipated changes in spent fuel pool level.

Dominion determined that the apparent cause was inadequate implementation of the procedure change process while implementing a compensatory measure to provide a larger vent path for the equipment drains sump tank. Specifically, the individuals involved in the procedure change process did not identify the impact of the change on OP 2305, "Spent Fuel Pool Cooling and Purification System," and they did not include directions in OP 2207, "Plant Cooldown," to restore the compensatory vent path after it was no longer needed. Dominion identified two contributing causes as well. The first contributing cause was that operations changed the "reason tagged" section of the tagout hung to control the configuration for the compensatory vent path from having a detailed description of the compensatory measure, to a shorter reference to the controlling procedure. The second contributing cause was that the individuals involved in developing the tagout did not evaluate the effects of the compensatory vent path on OP 2305.

The inspectors noted that Dominion's apparent cause and first contributing cause put an emphasis on the delayed restoration from the compensatory vent path. However, the refueling outage schedule did not provide a link between RCS depressurization activities and the activity to fill the fuel transfer canal, which was the activity that required filling the spent fuel pool from the coolant waste receiver tank. Additionally, the only valve that needed to be open to create the unintended drain path was the primary demineralizer bypass valve, 2-LRR-78.1. This valve has an auto-open function in response to high temperature in the primary demineralizer system. Therefore, the inspectors noted that the same unintended drain path could have been created even in the absence of the compensatory vent path. This possibility was not specifically addressed in the causes identified by Dominion. OP 2305 included a step to ensure the inlet valves to the

primary demineralizers and the secondary demineralizers were closed; however, valve 2-LRR-78.1 was not listed. After the event, Dominion added valve 2-LRR-78.1, the primary demineralizer bypass valve, to OP 2305. Because OP 2305 was revised, the inspectors concluded that Dominion's completed and planned corrective actions would address the need to prevent unanticipated changes in spent fuel pool level while lining up to transfer water.

Introduction: A self-revealing NCV of very low safety significance (Green) of TS 6.8, "Procedures," was identified because Dominion did not adequately establish procedure OP 2305, "Spent Fuel Pool Cooling and Purification System." The procedure did not direct operators to verify the primary demineralizer bypass valve, 2-LRR-78.1, was closed while lining up to fill the spent fuel pool from the coolant waste receiver tanks, resulting in an unexpected loss of spent fuel pool inventory on April 5, 2017.

Description: On October 4, 2015, Millstone Unit 2 experienced an unexpected loss of RCS inventory due to a shutdown cooling system relief valve lifting (see Inspection Report 05000336/2015012, Agencywide Documents Access and Management System Accession Number ML16005A343). During the follow-up to that event, Dominion identified that the equipment drains sump tank, which collects the outflow of that relief valve, did not have sufficient overpressure protection. Dominion changed procedure OP 2207, "Plant Cooldown," to include lining up a sufficiently large vent path from the equipment drains sump tank to the coolant waste receiver tanks. One of the valves opened to provide this path was the primary demineralizer bypass valve, 2-LRR-78.1. In accordance with their procedure change process, Dominion reviewed other procedures to determine if opening 2-LRR-78.1 would negatively impact the processes prescribed in those procedures. In order to identify affected procedures, Dominion performed a text search for "2-LRR-78.1", instead of performing a more thorough review for activities that would be affected by bypassing the primary demineralizers.

OP 2305, "Spent Fuel Pool Cooling and Purification System," Revision 30, did not direct operators to ensure the primary demineralizer bypass valve, 2-LRR-78.1, was closed prior to lining up the system to fill the spent fuel pool from the coolant waste receiver tanks. This is a normally closed valve, which will automatically open in response to a high temperature condition on the inlet of the primary demineralizers. It is the only valve in the line that prevents flow from the fuel pool to the coolant waste receiver tanks.

On April 5, 2017, operators began lining up to fill the spent fuel pool from the coolant waste receiver tanks and unintentionally created a flow path through the open 2-LRR-78.1 valve, which resulted in the unplanned loss of inventory from the spent fuel pool into the 'B' coolant waste receiver tank over a period of 1.5 hours. This inventory loss (from 36'8" to 36') brought in the alarm for spent fuel pool cooling pump suction low flow due to decreased net positive suction head for the spent fuel pool cooling pumps. However, spent fuel pool level did not drop low enough to cause a total loss of pump suction or challenge the TS limit of 34'9". There was no increase in spent fuel pool temperature. In response to the alarm, operators entered AOP 2578, "Loss of Spent Fuel Pool Level." Dominion immediately added water to the spent fuel pool using OP 2305. Once they identified that 2-LRR-78.1 was the cause of the diversion, they closed it. Dominion added valve 2-LRR-78.1 to the list of valves to ensure closed while lining up to transfer water from the coolant waste receiver tank to the spent fuel pool via the feedback incorporation process. Dominion also wrote CR1064323 and performed an apparent cause evaluation.

Analysis: The inspectors determined that not providing direction to ensure 2-LRR-78.1 was closed while lining up to fill the spent fuel pool from the coolant waste receiver tanks was a performance deficiency. This performance deficiency was more than minor because it was associated with the procedure quality attribute of the Barrier Integrity cornerstone and adversely affected its objective to provide reasonable assurance that physical design barriers, such as fuel cladding, protect the public from radionuclide releases caused by accidents or events. Specifically, spent fuel pool level was inadvertently lowered when operators aligned the system in accordance with OP 2305, which resulted in a reduced net positive suction head for the spent fuel pool cooling pumps. In accordance with IMC 0609.04, "Initial Characterization of Findings," and Exhibit 3 of IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power," issued June 19, 2012, the inspectors determined that the finding was of very low safety significance (Green) because it did not result in a loss of spent fuel pool water inventory below the minimum analyzed level limit, and did not cause the spent fuel pool temperature to exceed the maximum analyzed temperature limit.

This finding had a cross-cutting aspect in the area of Human Performance, Avoid Complacency, because Dominion did not recognize and plan for the possibility of a latent deficiency in procedure OP 2305 when used while the primary demineralizers were bypassed. Dominion performed a text search looking for reference to the primary demineralizer bypass by valve number vice a thorough review of procedure content and context of the intended system alignment. [H.12]

Enforcement: TS 6.8, "Procedures," requires, in part, that written procedures be established covering activities in Regulatory Guide 1.33, Revision 2, Appendix A. Section 3.h of Regulatory Guide 1.33, Appendix A, includes procedures covering filling of fuel storage pool cooling systems. OP 2305, "Spent Fuel Pool Cooling and Purification System," falls under Regulatory Guide 1.33, Appendix A, Section 3.h. Contrary to the above, until June 20, 2017, Dominion failed to adequately establish procedures covering the filling of fuel storage pool cooling system at Millstone Unit 2 so as to include sufficient guidance to prevent inadvertent lowering of fuel pool level. Because the violation was of very low safety significance (Green) and it was entered into Dominion's CAP as CR1064323, this violation is being treated as an NCV, consistent with Section 2.3.2.a of the NRC Enforcement Policy. **(NCV 05000336/2017003-01, Inadequate Procedure Results in Inadvertent Lowering of Spent Fuel Pool Level)**

4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153 – 1 sample)

Plant Events

a. Inspection Scope

For the plant events listed below, the inspectors reviewed and/or observed plant parameters, reviewed personnel performance, and evaluated performance of mitigating systems. The inspectors communicated the plant events to appropriate regional personnel, and compared the event details with criteria contained in IMC 0309, "Reactive Inspection Decision Basis for Reactors," for consideration of potential reactive inspection activities. As applicable, the inspectors verified that Dominion made appropriate emergency classification assessments and properly reported the event in accordance with 10 CFR Parts 50.72 and 50.73. The inspectors reviewed Dominion's follow-up

actions related to the events to assure that Dominion implemented appropriate corrective actions commensurate with their safety significance.

- Unit 2 Notice of Unusual Event (GU1-1) for fire in a safe shutdown area, containment on August 15

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

On October 5, 2017, the inspectors presented the inspection results to Mr. John Daugherty, Site Vice President, and other members of the Dominion staff. The inspectors verified that no proprietary information was retained by the inspectors or documented in this report.

ATTACHMENT: SUPPLEMENTARY INFORMATION

SUPPLEMENTARY INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel
J. Daugherty, Site Vice President
C. Olsen, Plant Manager
L. Armstrong, Director, Performance
D. Lawrence, Director, Safety and Licensing
R. Garver, Director, Engineering
J. Grogan, Unit 3 Operations Manager
S. Brabec, Assistant Manager Outage and Planning
R. Borchart, Senior Reactor Engineer
M. Bradley, Manager, Radiation Protection and Chemistry
L. Crone, Chemistry Manager
D. Dodson, Manager of Programs
M. Goolsby, Unit 2 Operations Manager
J. Langan, Manager, Nuclear Oversight
M. Marino, Supervisor, Mechanical Engineering Analysis
D. Smith, Site Emergency Preparedness Manager

LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED

Opened/Closed

05000336/2017003-01	NCV	Inadequate Procedure Results in Inadvertent Lowering of Spent Fuel Pool Level

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures
C OP 200.6, Storms and Other Hazardous Phenomena (Preparation and Recovery), Revision 008-00
AOP 3569, Severe Weather Conditions, Revision 024
AOP 2560, Storms, High Winds, and High Tides, Revision 16

Condition Reports
1073475

Section 1R04: Equipment Alignment

Procedures
OP 2326A, Service Water System, Revision 028
OP 2326A-001, Service Water Alignment Verification, Facility 1, Revision 003-00
OP 2305, Spent Fuel Pool Cooling and Purification System, Revision 32
SP 3622.8-001, Auxiliary Feedwater Train ‘A’ Valve Stroke Time Test, Revision 011

C EN 104I, Condition Monitoring of Structures, Revision 011
SP 2610BO, TDAFP and Recirculation Check Valve IST, Revision 002

Condition Reports
1038437 1064323 1074776 1075600
1076005

Drawings
25212-24024 PI&D, Supplemental Leak Collection and Release System Containment Enclosure, Revision 11
25212-24116 PI&D SH2, Ventilation and Air Conditioning Engineered Safety Features Building, Revision 16
25203-26023, Sheet 2, Spent Fuel Pool Cooling & Cleanup Sys, Revision 33
25203-26020, Sheet 1, Clean Liquid Radwaste System, Revision 26
25203-26020, Sheet 2, Clean Liquid Radwaste System, Revision 34
25203-20150, Sheet 150, Spent Fuel Pool Heat Exchangers Outlet Piping, Revision 7
25203-20150, Sheet 146, Spent Fuel Pool Cooling Pump Suction, Revision 10
25212-26930, Piping & Instrument Diagram Feedwater System, Sheet 2, Revision 49
25203-22200, Structural Support Drawing Condensate from Storage Tank to Auxiliary Feedwater Pumps, Sheet 405351A, Revision 3
25203-20146, Isometric Drawing Condensate from Storage Tank to Auxiliary Feedwater Pumps, Sheet 615, Revision 5
25203-26005, Piping and Instrumentation Diagram Condensate Storage & Auxiliary Feed, Sheet 3, Revision 60

Work Orders
53102973844 53103109313

Miscellaneous
SP-M2-ME-030, Specification for Rigorous Piping Stress Analysis and Pipe Support Diagram, Revision 01
Calculation T-02428S2, Turbine Building HELB GOTHIC Transient Analysis, Revision 2
MP2-12-01145, Implementation of the Beyond Design Basis Diverse and Flexible Coping Strategies (FLEX) Program Unit 2
MP2-12-01174, Millstone Unit 2 BDB Flex Mechanical Connections to Auxiliary Feedwater System
Millstone Unit 2 Auxiliary Feedwater System Health Report 1Q2017

Section 1R05: Fire Protection

Condition Reports
1038437 1075285 1075324 1078149

Miscellaneous
U2-24-FFS, Millstone Unit 2 Fire Fighting Strategies, Revision 0
Millstone Unit 2 Fire Hazard Analysis, Revision 11
U3-24-FFS, Millstone Unit 3 Fire Fighting Strategies, Revision 0
Millstone Unit 3 Fire Protection Evaluation Report, Revision 21.3
Calculation T-02428S2, Turbine Building HELB GOTHIC Transient Analysis, Revision 2

Section 1R06: Flood Protection Measures

Procedures
ER-AA-CBL-103, Evaluation and Testing of Medium Voltage Cables, Revision 3
ER-AA-CBL-101, Evaluation and Testing of Low Voltage Cables, Revision 3

Condition Reports
1078149

Section 1R11: Licensed Operator Requalification Program

Procedures
MP2 LORP S17407 course #68616
SP 3646A.2-005, Local Operation Testing of Emergency Diesel Generator B at Local Panel 3EGS*PNLB, Revision 004
SP 3646A.2, Emergency Diesel Generator B Operability Tests, Revision 025
SP 3646A.2-001, Emergency Diesel Generator B Operability Test, Revision 026
OP 3346A-013, EDG – Data Sheet, Revision 009
OP 3346A-015, EDG B – Operating Log, Revision 016-00
MP3 LORP S17401L, Revision 0
OP 3206 Plant Shutdown, Revision 16
OP 3207, Reactor Shutdown, Revision 15
OP 3208, Plant Cooldown, Revision 27
OP 3323A, Main Turbine, Revision 19
OP 3310A, Residual Heat Removal, Revision 18
OP 3304C, Primary Makeup and Chemical Addition, Revision 029
SP 31002, Plant Calorimetric, Revision 018
ARP 2590D-096, HTR DRAIN TK LEVEL HI/LO, Revision 0
AOP 2575, Rapid Downpower, Revision 009-00

Condition Reports
1076860 1076879

Section 1R12: Maintenance Effectiveness

Procedures
ER-AA-MRL, Implementing Maintenance Rule, Revision 11
ER-AA-MRL-10, Maintenance Rule Program, Revision 6
SP 2613H, Integrated Test of Facility 2 Components, Revision 020

Condition Reports
1038437 1064024 1074776 1076005
CA3054510

Work Orders
53102893724 53102893726 53102973844

Miscellaneous
25203-32008, Low Pressure Safety Injection Pump MP42B Motor Control Circuit Diagram, Sheet 5, Revision 18

25203-26005, Piping and Instrumentation Diagram Condensate Storage & Auxiliary Feed, Sheet 3, Revision 60

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures
CP 3804AF, Balance of Plant Sampling, Revision 007-00

Condition Reports
1075065

Work Orders
53103046806

Miscellaneous
EOOS Version 4.1 for Millstone Unit 2 on 7/17/2017
EOOS Version 4.1 for Millstone Unit 2 on 8/14/2017
EOOS Version 4.1 for Millstone Unit 2 on 8/24/2017
EOOS Version 4.1 for Millstone Unit 3 on 8/10/2017
NF-AA-PRA-370, Probable Risk Assessment Procedures and Methods: MRule (a)(4) Risk Monitor Guidance, Revision 16

Section 1R15: Operability Determinations and Functionality Assessments

Procedures
Prompt Operability Determination # CA3066486, Revision 0
LBDCR 16-MP3-011, Technical Requirements Manual section 8 Core Operating Limits Report, Cycle 18
SP 3673.4-004, Auxiliary Shutdown Panel Operability Test, Revision 001

Condition Reports

1073628	1074970	1076005	1076280
1076382	1078830		

Work Orders
53103109313

Miscellaneous
P&ID 25203-26015 SH1, Low Pressure Safety Injection System, Revision 50
P&ID 25203-26015 SH2, High Pressure Safety Injection System, Revision 48
Engineering Technical Evaluation MP-2017-1144, Revision 0
SO-17-018, Daily Monitoring for Containment Spray Recirculation Test Header Line Piping Flaw, dated September, 22 2017
Millstone Unit 2 Technical Specifications
Millstone Unit 3 Technical Specifications

Section 1R18: Plant Modifications

Maintenance Orders/Work Orders
53103111915 53103119745

Miscellaneous
Design Change (DC) Number MP3-17-01077, "Disable Motor Winding Slots Sensor 3HVK*TE65B on Chiller 3HVK*CHL1B," dated August 23, 2017
25203-32013 SH 36, Service Water Strainer Drive Motor ML1A, Revision 12
MP3-16-01075, Replace NIS Recorder 3NME*NR1
PR039132SEI-TR16, Seismic Qualification Test Report for Yokogawa DDX1000N, DX2000, DX3000, and DX364 DXAdvanced Series Recorders, Revision 001

Section 1R19: Post-Maintenance Testing

Procedures
WM-AA-101, Work Order Planning, Revision 11
SP 3712P, Motor Operated Valve Thermal Overload Channel Calibration, Revision 013
SP 2613H, Integrated Test of Facility 2 Components, Revision 020
SP 3673.4-004, Auxiliary Shutdown Panel Operability Test, Revision 001
SP 2601L-002, BA Pump Comprehensive Test and Discharge Check Valve IST, Revision 000-03

Condition Reports

1061230	1064024	1075600	1077063
1077064	1077109	CA3054510	

Maintenance Orders/Work Orders

53102592779	53102699713	53102893724	53102893726
53102936399	53103054077	53103064508	53103109313
53103113597	53103115261	53103117533	

Miscellaneous
25203-32008, Low Pressure Safety Injection Pump MP42B Motor Control Circuit Diagram, Sheet 5, Revision 18

Section 1R22: Surveillance Testing

Procedures
SP 3622.3-001, TDAFW Pump Operational Readiness and Quarterly IST Group B Pump Tests, Revision 018
SP 3616A.1-002, Stroke Time and Failure Mode Test of 3MSS*AOV31A, B, D, 3MSS*AOV65; Stroke Time Test of 3MSS*AOV 17A, B, and D, Revision 011
SP 3622.3, Auxiliary Feedwater Pump 3FWA*P2 Operational Readiness Test, Revision 024
SP 3646A.9, Slave Relay Testing- Train B, Revision 032-00
SP 3646A.8, Slave Relay Testing- Train A, Revision 030-00
SP 3622.8, Auxiliary Feedwater Valve Operability Test, Revision 010-06
SP3604C.4, Boric Acid Pump 3CHS*P2A Operational Readiness Testing, Revision 012-02
SP 3604C.4-001, 3CHS*P2A Quarterly IST Pump Test, Revision 010
SP 3646A.9-021, Auxiliary Feedwater Pump Start S941 – Relay K641, Slave Relay Actuation Test – Train B, Revision 003-00
SP 3610B.3-001, SIL Valve Stroke Time Test – Train B, Revision 012-02
SP 3610A.2-001, 3RHS*P1B Quarterly IST Pump Testing in Mode 1, 2, 3, or in Mode 4 (When Aligned for Injection), Revision 013
SP 3610A.8-002, RHR Valve Operability Test – Train B (Quarterly), Revision 010-01

SP 3646A.9-029, Safety Injection S946 – Relay K740, Slave Relay Assisted Test – Train B, Revision 002
SP 2613H, Integrated Test of Facility 2 Components, Revision 020
SP 2612A, 'A' Service Water Pump Tests, Revision 017
SP 2612A-003, 'A' SW Pump and Facility 1 Discharge Check Valve IST, Revision 010
OP 2326A, Service Water System, Revision 028

Condition Reports

1064024	CA3054510

Work Orders

53102893724	53102893726	53103040294	53103040302
53103040318	53103040325	53103040793	53103064508

Miscellaneous
25203-32008, Low Pressure Safety Injection Pump MP42B Motor Control Circuit Diagram, Sheet 5, Revision 18

Section 1EP2: Alert and Notification System Evaluation

Procedures
MP-26-EPI-EPMP, Millstone Power Station Emergency Plan, Revision 55
MP-26-FAP08, Alert Notification System Administration, Revision 006
MP-26-FAP09, Alert Notification System Test and Maintenance, Revision 009

Other Documents
ANS maintenance records, July 2015 – July 2017
ANS test records, July 2015 – July 2017
Dominion Millstone Alert and Notification System Upgrade Project FEMA REP-10 Design Report Addendum, Revision 0
FEMA Memorandum re Dominion Millstone Alert Notification System Upgrade Project FEMA REP-10 Design Report Addendum, dated January 7, 2010

Section 1EP3: Emergency Response Organization Staffing and Augmentation System

Procedures
MP-26-EPA-FAP01, Management Program for Maintaining Emergency Preparedness, Revision 015
MP-26-EPI-EPMP, Millstone Power Station Emergency Plan, Revision 55
MP-26-EPI-FAP07, Notifications and Communications, Revision 025
TR-AA-TPG-2400, ERO Training Program Guide, Revision 2

Condition Reports

1005500	1007368	1019583	1036287
1037466	1065211	1068808	1069763
1071021	1072890	1075374*	1075425*

*Denotes resulted from NRC inspection

Miscellaneous
Station Emergency Response Organization (SERO) roster dated 7/21/2017
SERO 2016-2017 training records
Monthly SERO Unannounced ENRS Call In Summary Reports, July 2015-July 2017

Section 1EP5: Correction of Emergency Preparedness Weaknesses

Procedures
MP-26-EPA-FAP01, Management Program for Maintaining Emergency Preparedness, Revision 015
MP-26-EPI-EPMP, Millstone Power Station Emergency Plan, Revision 55
EP-AA-101, 10 CFR 50.54(q) Change Evaluation, Revision 6
EP-AA-303, Equipment Important to Emergency Response, Revision 16

Condition Reports

1009381	1010544	1011233	1011949
1012771	1013305	1020250	1028296
1028751	1028787	1029349	1032166
1032168	1039356	1040404	1046982
1051539	1052920	1054153	1056404
1061210	1071566	1072684	1072694
1073301			

Miscellaneous
Nuclear Oversight Audit Report Audit 16-02, Emergency Preparedness
Nuclear Oversight Audit Report Audit 17-02, Emergency Preparedness
September 8, 2016, Millstone Power Station Contaminated Patient Exercise (MSEP16ME) Management Critique Report
November 7, 2016, Millstone Power Station Unit 1 Training Drill (MNOV16TD) Management Critique Report
November 17, 2016, Millstone Power Station Contaminated Patient Drill (MNOV16MD) Management Critique Report
December 14, 2016, Millstone Power Station Unit 3 Training Drill (MDEC16TD) Management Critique Report
March 22, 2017, Millstone Power Station Unit 3 Training Drill (MMAR17TD) Management Critique Report
June 21, 2017, Millstone Power Station Unit 2 Training Drill (MJUN17TD) Management Critique Report
KLD TR-598, Millstone Power Station 2015 Population Update Analysis
KLD TR-710, Millstone Power Station 2016 Population Update Analysis

Section 1EP6: Drill Evaluation

Procedures
AOP 3573, Radiation Monitor Alarm Response, Revision 023-00
AOP 3553, High Reactor Coolant System Activity, Revision 006-05
MP-26-EPI-FAP06, Classification and PARS, Revision 010-00

Section 2RS5: Radiation Monitoring Instrumentation

Procedures

C CP 803.6, Gamma Spectroscopy Counting System Maintenance and Operation, Revision 002
EN 21235, Millstone Unit 2 Radiation Monitor High Radiation Setpoints, Revision 004
EN 31153, Millstone Unit 3 Radiation Monitor High Radiation Setpoints, Revision 006
RP-AA-111-1014, Radiological Instrumentation Control Program Review, Revision 0
RP-AA-401, Non-Portable Contamination Monitors, Revision 1
RPM 2.2.6, Continuous Air Monitors, Revision 020
RPM 2.2.7, REM-500 Operation, Revision 008
RPM 2.2.12, Unit 2 Containment Continuous Air Monitors, Revision 009
RPM 4.1.1, Air Sampler Calibration, Revision 009
RPM 4.1.11, AMS-4 Air Monitoring System Calibration, Revision 005
RPM 4.6.12, PCM-1B Contamination Monitor Calibration, Revision 004
RPM 4.7.8, Whole Body Counting System Operation and Review, Revision 013
RPM 4.8.11, Response Checking Whole-Body Contamination Monitors, Revision 014
RPM 1.7.4, Evaluation of Isotopic Mix, Revision 004
SP 2404ALM1, Containment Gaseous and Particulate Process Radiation Monitor RM 8123 Calibration, Revision 004-01
SP 2404ALM2, Containment Gaseous and Particulate Process Radiation Monitor RM 8262 Calibration, Revision 005-01
SP 2404AS, High Range Stack Gas Radiation Monitor RM-8168 Calibration, Revision 003-05
SP 2404AX1, Containment High Range Monitor R8240 Functional Test, Revision 002
SP 2404AX2, Containment High Range Monitor R8241 Functional Test, Revision 002
SP 2404AY, Containment High Range Monitors R 8240 and R 8241 Calibration, Revision 008-00
SP 2404AZ1, CRACS Facility Z1 Area Radiation Monitor RIT-9799A Functional Test, Revision 003
SP 2404AZ2, CRACS Facility Z2 Area Radiation Monitor RIT-9799B Functional Test, Revision 003
SP 2404BH, EBFS Effluent Wide Range Gas Monitor RM-8169 Functional Test, Revision 003
SP 3449E01, Containment Area Purge and Exhaust Isolation Radiation Monitor Calibration (3RMS*RE41), Revision 005-00
SP 3449E02, Containment Area Purge and Exhaust Isolation Radiation Monitor Calibration (3RMS*RE42), Revision 003-00
SP 3449E21, Fuel Storage Pool Area Radiation Monitor Calibration (3RMS-RIY08 and 3RMS-RIY36), Revision 007-00
SP 3449G01, Control Building Inlet Radiation Monitor 3HVC*RE16A Channel Calibration, Revision 009

Instrument Calibration Records

Available Portable Instruments:

Model	Serial#	Recent Calibration	Previous Calibration
AMP-100	5003-015	11/21/2016	02/10/2015
AMP-50	0904-023	10/18/2016	10/12/2015
AMS-4	6087-2	03/12/2017	09/09/2016
ARGOS-4AB	094	09/20/2016	09/10/2015

ARGOS-4AB	122	03/15/2017	03/15/2016
ASP-1	0135	05/08/2017	05/02/2016
BC-4	126	03/28/2017	03/08/2016
CM-11	19145	01/12/2017	01/17/2016
E-140N	2167	03/31/2017	09/18/2016
ESCORT	1874	01/08/2017	01/15/2016
FLUKE-51	HP-014	11/06/2016	09/12/2015
GILAIR-5	2034	01/13/2017	03/08/2016
GILAIR-5	701021	01/04/2017	03/08/2016
HD-29A	6464	04/07/2017	07/25/2016
HD-66A	5689	04/01/2017	03/17/2016
H809V	2654	05/08/2017	05/12/2016
ISOLO 300G	30583-1	10/16/2016	10/21/2015
L-177	208763	11/01/2016	10/24/2015
L-177	155822	07/26/2016	(previous unavailable)
L-177	208806	08/30/2016	08/31/2015
L-2241	236527	11/13/2016	11/30/2015
L-2241-2	275158	03/12/2017	03/15/2016
PCM-1B	1047	04/02/2017	10/01/2015
PM7	566	02/03/2017	02/09/2016
PM-12	4450-33	05/14/2017	05/10/2016
RADEYE GX	4476-602	10/26/2016	10/06/2015
RADEYE SX	11457	01/23/2017	01/13/2016
RAP-1	2469-0592	03/13/2017	03/23/2016
RAP-1	0998C	02/16/2017	03/22/2016
REM 500	2366-232	09/07/2016	(previous unavailable)
RM-14	7381	01/23/2017	01/22/2016
RO20	1036	09/04/2016	(previous unavailable)
RO20	0989	05/02/2017	09/26/15
RO20AA	1456	03/21/2017	03/09/2016
RO2A	2817	02/15/2016	(previous unavailable)
RO2A	3348	05/12/2017	05/16/2016
SAC-4	1452	01/01/2017	01/06/2016
SAM-11	494	10/05/2016	10/05/2015
SAM-12	159	01/12/2017	01/26/2016
SAM-12	144	10/05/2017	10/05/2016
Telepole	6601-054	03/29/2017	02/21/2017
Telepole	6611-130	01/24/2017	01/22/2016
TPM-903A	903027	01/24/2017	01/27/2016
VAMP	0816	03/06/2017	03/31/2016

Issued Portable Instruments:

Model	Serial#	Recent Calibration
ARGOS 4AB	94	09/2016
Ludlum Model 177	3760	08/2016
Ludlum Model 177	35988	09/2016
PCM-1B	547	05/2017
RO20	989	05/2018
RO20	1217	12/2016

RO20	1218	03/2017
RO20	1456	03/2017
RO20	1522	09/2016
SAC-4	1452	01/2017
SAM II	185	10/2016
SAM 12	159	01/2017
SIRIUS 5AB	100	01/2017
Telepole	6609-125	11/2016
Telepole	6601-054	03/2017

Counting Instruments and Sources:

JL Shepherd Box Irradiator Model 89, Serial No. 8262
Equipment used for calibration (all calibrated 05/27/2016):
Electrometer/Dosimeter Model 530 SN 212
330 cc ion chamber Serial Number 206
33 cc ion chamber Serial Number 203
3.3 cc ion chamber Serial Number 204
0.3. cc probe assembly Serial Number 203

JL Shepherd Model 28-5 Calibrator, Serial No. 10122 (120 Ci, Cs-137, on 09/19/2011)
Elevation 14.5 ft. Unit 2

MP-HPO-16049, 2016 Annual Validation of Hopewell BX3 Calibrator SH 111-3062, September 27, 2017

Canberra Fast Scan Whole Body Counter Serial No. 2250
Date of Last Calibration 07/06/2017

Canberra Accuscan10 Serial No. CG2018
Date of Last Calibration 03/31/2017

Plant Installed Instruments:

Monitor Description	Work Order #	Calibration Date
Aerated Waste Discharge Monitor	WO 53102989943	1/19/2017
	WO 53102989943	4/22/2017
ALRW Process Rad Monitor	WO 53102802036	2/11/2016
	WO 53102599484	12/17/2014
CLR Discharge Flow Loop	WO 53102989939	1/18/2017
	WO 53103015053	4/22/2017
CLRW Process Radiation	WO 53102653806	4/1/2015
	WO 53102831747	8/18/2016
EBFS Effluent Wide	WO 53102665990	3/25/2015
	WO 53102829904	2/2/2017
ESF Building Gaseous	WO 53102649188	2/19/2015
	WO 53102819554	7/6/2016
CTMT HI Range U3	WO 53102627262	10/26/2014
	WO 53102784781	4/22/2016
HI Range Stack U2	WO 53102679305	2/11/2015
	WO 53102816625	9/22/2016

Liquid Waste Effluent Flow	WO 53102639420	1/20/2015
	WO 53102809980	8/24/2016
Liquid Waste Monitoring	WO 53102645886	5/15/2015
	WO 53102842454	9/8/2016
RBCCW Liquid	WO 53102613037	7/16/2014
	WO 53102753841	1/6/2016
SG Blowdown	WO 53102643806	2/18/2015
	WO 53102771202	11/2/2016
SG Blowdown Liquid	WO 53102639352	3/6/2015
	WO 53102824299	9/15/2016
SLCRS High Range	WO 53102693506	9/1/2015
Turbine Ventilation Vent Flow Rate	WO 53102999248	2/22/2017
	WO 53103024610	5/17/2017
Turbine Floor Drain Monitor	WO 53102684527	1/22/2015
	WO 53102810853	9/29/2016
Vent Stack Normal Range U3	WO 53102696205	9/15/2015
	WO 53102876983	3/9/2017
Ventilation Vent Stack	WO 53102696203	7/1/2015
	WO 53102857245	4/14/2017
Waste Neutralizer Sump U2	WO 53102673794	8/21/2015
Waste Neutralization Sump Flow U2	WO 53103010492	3/30/2017
Waste Neutralizer Sump U3	WO 53102588990	8/14/2014
	WO 53102761237	5/26/2016

Condition Reports

1002024	1003662	1003907	1005963
1012559	1013757	1014548	1023713
1028383	1031375	1033735	1036612
1042493	1045508	1045740	1047185
1056357	1058412	1059393	1059592
1066360	1071861	1071876	1071890

Section 2RS6: Radioactive Gaseous and Liquid Effluent Treatment

Procedures

MP-PROC-000-RP-AA-502, Groundwater Protection Program, Revision 5
MP-PROC-CH-C CP 806.4, Groundwater Protection Program Sampling, Revision 004

Condition Reports

1004036	1011383	1019474	1039318
1048909	1061723		

Miscellaneous

Annual 2016 Quality Assurance Report, January – December 2016, Teledyne Brown Engineering Environmental Services, dated 3/28/2017
Audit 15-10: Offsite Dose Calculation Manual, Radiological Environmental Monitoring Program, Environmental Protection Plan, dated 12/16/2015

AWO 53102314933	AWO 53102406635	AWO 53102516709
AWO 53102533079	AWO 53102533082	AWO 53102533085
AWO 53102533087	AWO 53102605754	AWO 53102605756
AWO 53102605758	AWO 53102606267	AWO 53102654226
AWO 53102654837	AWO 53102656054	AWO 53102656056
AWO 53102688068	AWO 53102702954	AWO 53102761260
AWO 53102761262	AWO 53102761264	AWO 53102761266
AWO 53102795990	AWO 53102795992	AWO 53102795994
AWO 53102795996	AWO 53102825600	AWO 53102825602
AWO 53102827828		

Cross Check Program, Radiochemistry, Millstone Power Station, Eckert & Ziegler, Second Quarter 2016, dated 6/16/2017
Cross Check Program, Radiochemistry, Millstone Power Station, Second Quarter 2016, dated 1/25/17
Dominion Nuclear Connecticut, Inc. Millstone Power Station Units 1, 2, and 3 2015 Annual Radioactive Effluent Release Report, S/N 16-167
Dominion Nuclear Connecticut, Inc. Millstone Power Station Units 1, 2, and 3 2016 Annual Radioactive Effluent Release Report, S/N 17-156
EBFS Filter Testing, Flow and D/P, Facility 2, dated 10/31/2016
RER-16-01, Discharge of MP3 Liquid Radwaste With Minimal Dilution Flow, dated 4/28/2016
RER-17-01, Basis for Changes to the REMODCM Revision 28, dated 2/2/2017
MP-22-REC-BAP01, Radiological Effluent Monitoring and Offsite Dose Calculation Manual (REMODCM), Revision 029
MP-22-REC-REF03, REMODCM Technical Information Document, Revision 006
MP-CHEM-15-13, 2015 Radiological Environmental Monitoring Program – Land Use Census Data
MP-CHEM-16-19, 2016 Radiological Environmental Monitoring Program – Land Use Census Data, dated 9/1/2016
MP-CHEM-17-010, Groundwater Protection Program – 2nd Quarter 2017 Results / Activities, dated 6/28/2017
SLCRS Filter Charcoal Analysis – Train A, dated 12/6/2013
Technical Requirements Manual, Unit-2
Technical Requirements Manual, Unit-3

Section 2RS7: Radiological Environmental Monitoring Program

Procedures
MP-PROC-000-RP-AA-502, Groundwater Protection Program, Revision 5
MP-PROC-000-RP-AA-503, Radiological Decommissioning Records - 10CFR 50.75 (g), Revision 1
MP-PROC-000-RP-AA-504, Remediation Process for the Groundwater Protection Program, Revision 4
MP-PROC-000-RP-AA-524, Performing Source Term Estimates and Dose Calculations for Carbon-14 Effluents, Revision 4
MP-PROC-ENV-ENV 2003, Aquatic Sampling for Radiological Environmental Monitoring Program, Revision 2
MP-PROC-CH-REMP 2.7, Water Sampling, Revision 3
MP-PROC-CH-REMP 2.6, Terrestrial Biota Sampling, Revision 1
MP-PROC-CH-REMP 2.5, Milk Sampling, Revision 2
MP-PROC-CH-REMP 2.4, Soil Sampling, Revision 1

MP-PROC-CH-REMP 2.3, Air Particulate and Iodine Sampling, Revision 5
MP-PROC-CH-REMP 2.2, Environmental thermoluminescent dosimeter Collection and Distribution, Revision 1
MP-PROC-CH-REMP 2.1, Sample Identification and Transmittal to the Contractor, Revision 0
MP-PROC-CH-REMP 1.5, Annual Radiological Environmental Operating Report, Revision 1
MP-PROC-CH-REMP 1.3, Land Use Census, Revision 1
MP-PROC-CH-REMP 1.2, Radiological Environmental Monitoring Program Sampling and Analysis, Revision 0
MP-PROC-CH-REMP 1.1, Environmental Collection Schedule, Revision 0
MP-PROC-CH-C CP 806.4, Groundwater Protection Program, Revision 4

Audits, Self-Assessments, and Surveillances

NUPIC Audit 23484, Teledyne Brown Engineering Environmental Services, October 15, 2013
NOS Audit 15-10 Offsite Dose Calculation Manual, Radiological Environmental Monitoring Program December 16, 2015
Dominion SAR001926, Groundwater Protection Program, November 21, 2012
NEI Peer Assessment NEI 07-07 NEI Groundwater Protection Initiative: August 4, 2015

Condition Reports

1019453	1020691	1025283	1027260
1027639	1028141	1054904	1057136
1061187	1069764	1073301	1073307

Miscellaneous

Dominion Nuclear Connecticut, Millstone 1, 2 and 3 - 2016 Annual Radioactive Effluent Release Report, April 29, 2017
Dominion Nuclear Connecticut, Millstone 1, 2 and 3 - 2016 Annual Radiological Environmental Operating Report, April 29, 2017
Millstone Power Station, Radiological Effluent Monitoring and Offsite Dose Calculation Manual, October 1, 2016
Environmental Dosimetry Company Quality System Manual, August 1, 2012
Quality Assurance Manual for Teledyne Brown Engineering Environmental Services, December 17, 2012
2017 Millstone REMP Sampling Schedule
2016 Radiological Environmental Monitoring Program – Land Use Census Data, September 1, 2016
2015 Radiological Environmental Monitoring Program – Land Use Census Data, August 13, 2015
Five Year Hydrogeologic Assessment and FRAR Review RP-AA-502 Millstone Power Station, December 8, 2014
Millstone Groundwater Protection Program Risk Assessment - 2014, December 16, 2014
MP-CHEM-17-010, Groundwater Protection Program – 2nd Quarter 2017 Results, June 28, 2017
2017 Second Quarter Millstone EDAN Meteorological Data Certification, July 6, 2017
RER-16-01, Discharge of MP3 Liquid Radwaste from Waste Test Tank with Minimal Dilution Flow, April 28, 2016
MP-CHEM-15-17, Assessment of REMP TLDs Field Placement and Packaging, October 12, 2015
Millstone Tritium Recapture Study,
Teledyne Brown Report of Analysis Batch L70530 for Albacore Drive Soil Sample Collected November 2, 2016, February 28, 2017

Aquatic REMP Continuous Seawater Collection System: Operation and Maintenance Manual
Report of Calibration, American Meter Company AC-250 Flow Totalizer, Serial No. 00B227507 A/S # 10, April 20, 2017
Report of Calibration, American Meter Company AC-250 Flow Totalizer, Serial No. 00B227486 A/S # 1, April 21, 2017
Report of Calibration, American Meter Company AC-250 Flow Totalizer, Serial No. 00B227498, A/S # 2, April 21, 2017
Report of Calibration, American Meter Company AC-250 Flow Totalizer, Serial No. 00B227503, A/S #3, April 21, 2017
Report of Calibration, American Meter Company AC-250 Flow Totalizer, Serial No. 00B227501, A/S #4, April 21, 2017
Report of Calibration, American Meter Company AC-250 Flow Totalizer, Serial No. 00B227489, A/S # 11, April 20, 2017
Report of Calibration, American Meter Company AC-250 Flow Totalizer, Serial No. 00B227494, A/S # 15 April 20, 2017,
Report of Calibration, American Meter Company AC-250 Flow Totalizer, Serial No. 00B227487, A/S # 27, April 20, 2017

Work Orders
5310285911 53102910402 53102937523 53102937626

Section 4OA1: Performance Indicator Verification

Procedures
EP-AA-103, Emergency Preparedness Performance Indicators, Revision 4

Miscellaneous
ANS Reliability PI data, July 2016 – June 2017
DEP PI data, July 2016 – June 2017
ERO Drill Participation PI data, July 2016 – June 2017

Section 4OA2: Problem Identification and Resolution

Procedures
AOP 3575, Rapid Downpower, Revision 24
AOP 3575, Rapid Downpower, Revision 26
C OP200.8 Response to ISO New England / CONVEX Notifications and Alerts", Revision 6
TRM 3.8.1 Electrical Power Systems
Tech Specs 3.1.1.1, Shutdown Margin
OP 2207, Plant Cooldown, Revision 38 and Revision 42
OP 2201, Plant Heatup, Revision 39, Revision 40 and Revision 42
OP 2305, Spent Fuel Pool Cooling and Purification System, Revision 30, Revision 31 and Revision 32
OP-AA-200, Equipment Clearance, Revision 26
PI-AA-300-3002, Apparent Cause Evaluation, Revision 15
AOP 2582, Loss of SFP Cooling, Revision 6
AOP 2578, Loss of SFP Level, Revision 8
ARP 2590E-068, SFP Clg Pump Suction Flow LO, Revision 000
ARP 2593C-009, Prim Demin Inlet temp HI/LO, Revision 000-01

Drawings
25203-26023, Sheet 2, Spent Fuel Pool Cooling & Cleanup Sys, Revision 33
25203-26020, Sheet 1, Clean Liquid Radwaste System, Revision 26
25203-26020, Sheet 2, Clean Liquid Radwaste System, Revision 34
25203-20150, Sheet 150, Spent Fuel Pool Heat Exchangers Outlet Piping, Revision 7
25203-20150, Sheet 146, Spent Fuel Pool Cooling Pump Suction, Revision 10

Condition Reports

1003806	1015158	1064323	1068836
CA3058041	CA3058044	CA3058046	CA3058047
CA3061194	CA3061196	CA3062616	CA3067797

Miscellaneous
Control room logs for April 15, 2017
Plant Process Computer parameter data for April 15, 2017 from 1615 to 1815
Event 2017-05-15, 4.0 E Crew Evaluation – AOP 3575 down power to 75% due to loss of 2 offsite lines, dated May 15, 2017
RCE 3033993, Manual Reactor Trip Following Feedwater Isolation, Revision 01
Millstone Power Station Unit 3 LOR/STAC Seg # S17302L, Revision 0
Tagout Clearance 2C24-2336A00-0010
Tagout Clearance 2R24-2207X99-0010

LIST OF ACRONYMS

ALARA	as low as is reasonably achievable
ANS	Alert and Notification System
CAP	corrective action program
CFR	*Code of Federal Regulations*
CR	condition report
EDG	emergency diesel generator
EP	Emergency Preparedness
ERF	Emergency Response Facility
ERO	Emergency Response Organization
GPI	Groundwater Protection Initiative
IMC	Inspection Manual Chapter
IST	inservice test
NCV	non-cited violation
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission, U.S.
ODCM	Offsite Dose Calculation manual
OP	operating procedure
RCS	reactor coolant system
REMP	Radiological Environmental Monitoring Program
RIL	rod insertion limit
TDAFW	turbine driven auxiliary feedwater
TS	technical specifications
UFSAR	Updated Final Safety Analysis Report