



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

August 9, 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  
05000336/2017002 AND 05000423/2017002

Dear Mr. Stoddard:

On June 30, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at Millstone Power Station (Millstone), Units 2 and 3. On July 12, 2017, the 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.

The NRC inspectors did not identify any finding or violations of more than minor significance.

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 05000336/2017002  
and 05000423/2017002 w/Attachment:  
Supplementary Information

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SUBJECT: MILLSTONE POWER STATION – INTEGRATED INSPECTION REPORT  
05000336/2017002 AND 05000423/2017002 dated August 9. 2017

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**U.S. NUCLEAR REGULATORY COMMISSION**

REGION I

Docket Nos. 50-336 and 50-423

License Nos. DPR-65 and NPF-49

Report Nos. 05000336/2017002 and 05000423/2017002

Licensee: Dominion Energy Nuclear Connecticut, Inc. (Dominion)

Facility: Millstone Power Station, Units 2 and 3

Location: P.O. Box 128  
Waterford, CT 06385

Dates: April 1 through June 30, 2017

Inspectors: J. Ambrosini, Sr. Resident Inspector  
L. McKown, Resident Inspector  
C. Highley, Resident Inspector  
H. Anagnostopoulos, Sr. Health Physicist  
M. Modes, Sr. Reactor Inspector

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

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**SUMMARY**

IR 05000336/2017002 and 05000423/2017002; 04/01/2017 – 06/30/2017; Millstone Power Station (Millstone), Units 2 and 3; Routine Integrated Inspection Report.

This report covered a three-month period of inspection by resident inspectors and announced baseline inspections performed by regional inspectors. 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 October 28, 2016. Cross-cutting aspects are determined using IMC 0310, "Aspects Within the 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.

No findings were identified.

## REPORT DETAILS

### Summary of Plant Status

Unit 2 began the inspection period in a refueling outage, 2R24, which completed on May 5. On May 7, Unit 2 returned to 100 percent power, and operated at or near 100 percent power for the remainder of the inspection period.

Unit 3 began the inspection period at 100 percent power and operated at full power until May 15, when operators reduced power to 75 percent in response to the unplanned loss of a second offsite power line due to offsite maintenance activities. Unit 3 returned to 100 percent power on May 16, after the return of the offsite power lines, and operated 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 – 2 samples)

.1 Summer Readiness of Offsite and Alternate Alternating Current (AC) Power Systems

a. Inspection Scope

On June 5, the inspectors performed a review of plant features and procedures for the operation and continued availability of the offsite and alternate AC power systems to evaluate readiness of the systems prior to seasonal high grid loading. The inspectors reviewed Dominion's procedures affecting these areas and the communications protocols between the transmission system operator and Dominion. This review focused on changes to the established program and material condition of the offsite and alternate AC power equipment. The inspectors assessed whether Dominion established and implemented appropriate procedures and protocols to monitor and maintain availability and reliability of both the offsite AC power system and the onsite alternate AC power systems. The inspectors evaluated the material condition of the associated equipment by interviewing the responsible system manager, reviewing condition reports (CRs) and open work orders, and walking down portions of the offsite and AC power systems including the 500 kilovolt (kV) and 220 kV switchyards. Documents reviewed for each section of this inspection report are listed in the Attachment.

b. Findings

No findings were identified.

.2 External Flooding

a. Inspection Scope

During the week of April 17, 2017, the inspectors performed an inspection of the external flood protection measures for Millstone. The inspectors reviewed technical specifications, procedures, design documents, and the Updated Safety Analysis Report (UFSAR), which depicted the design flood levels and protection areas containing safety-

related equipment to identify areas that may be affected by external flooding. The inspectors conducted a general site walkdown of all external areas of the plant, including the emergency diesel generator (EDG) enclosures, turbine building, auxiliary building, and berm to ensure that Dominion erected flood protection measures in accordance with design specifications. Where applicable, the inspectors determined installed flood seal service life and verified that adequate procedures existed for inspecting the installed seals.

b. Findings

No findings were identified.

1R04 Equipment Alignment

.1 Partial System Walkdowns (71111.04 – 2 samples)

a. Inspection Scope

The inspectors performed partial walkdowns of the following systems:

Unit 3

- Auxiliary feed water 'A' train on June 12
- 'A' EDG protected train on June 26

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 operating procedures, system diagrams, the UFSAR, technical specifications, 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 corrective action program for resolution with the appropriate significance characterization.

b. Findings

No findings were identified.

.2 Full System Walkdown (71111.04S – 2 samples)

a. Inspection Scope

On April 12 and 13, the inspectors performed a complete system walkdown of accessible portions of the spent fuel pool cooling system while it was supplemented with shutdown cooling during core offload. The inspectors reviewed emergency operating procedures, 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.

On June 5, the inspectors performed a complete system walkdown of accessible portions of the Units 2 and 3 15G 345 kV switchyard. The inspectors reviewed emergency operating procedures, 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

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

- Containment (Fire Area C-1) on April 10
- 'B' EDG cubicle (Fire Area A-16) on April 17
- 6.9 and 4.16 kV switchgear room (Fire Area T-10) on May 16
- Turbine deck 54'-6" (Fire Area T-1F) on June 8



### Unit 3

- Circulating water intakes (Fire Zones CWS1 and CWS2) on May 11
- Instrument rack room halon system hose discrepancy (Fire Zone CB11) on May 22

#### b. Findings

No findings were identified.

### 1R06 Flood Protection Measures (71111.06 – 1 sample)

#### 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 high pressure turbine leakage condensing and falling upon high voltage cable trays on the 14'-6" elevation of the Unit 2 turbine building on June 13. The inspectors verified the adequacy of equipment seals located below the flood line, floor and water penetration seals, watertight door seals, common drain lines and sumps, sump pumps, level alarms, control circuits, and temporary or removable flood barriers. The inspectors also assessed the adequacy of operator actions that Dominion had identified as necessary to cope with flooding in this area and also reviewed the corrective action program 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.

### 1R08 Inservice Inspection (71111.08P - 1 sample)

##### a. Inspection Scope

During April 3-7 and April 18-20, the inspectors conducted an inspection and review of inservice inspection program activities in order to assess the effectiveness of Dominion's program for monitoring degradation of the reactor coolant system boundary, risk-significant piping system boundaries, and the containment boundary.

#### Nondestructive Examination and Welding Activities (IMC Section 02.01)

The inspectors reviewed the nondestructive evaluation of the overlay repair weld of risk-significant welds BPD-C-001 and BPD-C-1003, by direct observation and record review. For the weld overlay repair, the inspectors compared the observed ultrasonic test against the requirements of American Society of Mechanical Engineers, Boiler and Pressure Vessel Code, Section XI, 2004 Edition without addenda. The inspectors verified indications and defects, if present, were dispositioned in accordance with Dominion's procedures.

The inspectors examined, by direct observation and record review, the supplementary nondestructive evaluation of Loop 1 Hot Leg Drain for thermal fatigue cracking, and determined the component was chosen in conformance with the guidance contained in the Electric Power Research Institute, Materials Reliability Program, "Fatigue Management Handbook," Revision 1 (MRP-235), June 2008. The inspectors verified the supplementary examination, performed as part of a license renewal aging management program requirement, satisfied the guidance contained in Electric Power Research Institute, Materials Reliability Program, "Management of Thermal Fatigue in Normally Stagnant Non-Isolable Reactor Coolant System Branch Lines," Revision 2 (MRP-146). The inspectors verified the activities were performed in accordance with Dominion's augmented inspection program and associated examination procedure, ER-AA-NDE-UT-802, "Ultrasonic Examination of Austenitic Piping Welds in Accordance with ASME Section XI, Appendix VIII," Appendix 1 – Additional Guidance for Performing Thermal Fatigue Examinations, Revision 4, dated February 16, 2017. The inspectors verified indications and defects, if present, were dispositioned in accordance with Dominion's procedures. The inspectors reviewed NRC Bulletin 88-08, "Thermal Stresses in Piping Connected to Reactor Coolant Systems," to determine if the selected sample and examination addressed the reported vulnerabilities in the bulletin.

The inspectors verified the nondestructive testing met the requirements contained in the American Society of Mechanical Engineers, Boiler and Pressure Vessel Code, Section XI, Mandatory Appendix VIII, Article VIII-2000 and the examination personnel were qualified in accordance with American Society of Mechanical Engineers, Boiler and Pressure Vessel Code Section XI, Mandatory Appendix VII. The inspectors verified that indications and defects, if present, were dispositioned in accordance with the American Society of Mechanical Engineers, Boiler and Pressure Vessel Code and verified that relevant indications, if present, would be compared to previous examinations to determine if any changes had occurred. The inspectors also verified that risk-significant welds in the Inservice Inspection program were chosen by Dominion staff based on Electric Power Research Institute TR-112657, "Revised Risk-Informed Inservice Inspection Evaluation Procedure," Revision B-A with Code Case N-578-1 or Code Case N-716-1.

#### Welding on Pressure Boundary Systems

The inspectors reviewed pressure boundary risk significant welding activity of a modification of Penetration 84 and the welding of 18" EBD(A)-8 to 2-FW-5A. The inspectors verified that the welding, nondestructive evaluation, and acceptance were in accordance with the American Society of Mechanical Engineers, Boiler and Pressure Vessel Code, Section IX requirements. The inspectors verified the following features of the welding evolution:

- The Welding Procedure Specification contained the essential, and where applicable, the supplemental essential variables, in conformance with American Society of Mechanical Engineers, Boiler and Pressure Vessel Code, Section IX, QW-200.
- The Welding Procedure Specification essential and supplemental essential weld variables were within the range qualified by the supporting Procedure Qualification Record as required by American Society of Mechanical Engineers, Boiler and Pressure Vessel Code, Section IX, QW-250.

- The welding was performed with the base and weld filler materials listed in the Welding Procedure Specification by reviewing welding material dispensing logs.

The inspectors did not observe or review records of the final acceptance Nondestructive Evaluation because the welding was in-progress and had not reached the final acceptance stage. The inspectors determined the original construction Code, American Society of Mechanical Engineers, Boiler and Pressure Vessel Code, 1971 Edition without addenda, and the American Society of Mechanical Engineers Section XI repair and replacement program in conformance with 2004 Edition without addenda, were applied.

#### Vessel Upper Head Penetration Inspection Activities (IMC 02.02).

The inspectors reviewed the examination procedure, observed portions of the examination, and reviewed post examination records. The inspectors reviewed Dominion's criteria for confirming visual examination quality and instructions for resolving interference or masking issues to confirm they were consistent with Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(g)(6)(ii)(D).

The inspectors reviewed the records recording the extent of inspection for each penetration nozzle including documents, if applicable, which resolved interference or masking issues to confirm that the extent of examination meets 10 CFR 50.55a(g)(6)(ii)(D). The inspectors observed the inspection of and reviewed the records for vessel penetrations 26, 38, and 72 to:

- confirm the coverage had been achieved and that limitations in coverage were properly recorded,
- verify that the activities are performed in accordance with the requirements of 10 CFR 50.55a(g)(6)(ii)(D), and
- verify that indications and defects, if detected, were dispositioned in accordance with 10 CFR 50.55a(g)(6)(ii)(D).

The inspectors verified the relevant indications associated with Penetrations 26, 38, and 72 were accepted by Dominion staff for continued service in accordance with 10 CFR 50.55a(g)(6)(ii)(D). The inspectors verified related corrective actions CR1065275, CR1065281, and CR1065498 resolved the relevant indications in conformance with Code Case N-729-1 prior to Unit 2 entry into operational Mode 5.

#### Boric Acid Corrosion Control Inspection Activities (IMC 02.03)

In addition to the three engineering evaluations performed for boric acid and suspect leakage indications found on the upper head penetrations, the inspectors reviewed the resolution of LOOP 1 PZR Pressurizer surge line header sample valve 2-RC-043, corrective action CR1063974. The inspectors compared the resolution of the indication of boric acid leakage against Dominion Procedure ER-AP-BAC-10, Revision 12, "Boric Acid Corrosion Control Program," and evaluated the program management against ER-MP-BAC-101, Revision 2, "Millstone Boric Acid Corrosion Control Planned Inspections."

The inspectors determined if Dominion staff properly applied applicable corrosion rates to the affected components and properly assessed the effects of corrosion induced wastage, if present, on structural or pressure boundary integrity.

The inspectors confirmed that the corrective actions were consistent with requirements of the American Society of Mechanical Engineers Code and 10 CFR Part 50, Appendix B, Criterion XVI.

### Steam Generator Tube Inspection Activities (IMC 02.04)

#### Pressure Testing

Because pressure testing of steam generator tubes was not implemented the inspectors did not review the in-situ screening criteria used by the utility.

#### Degradation Management

The inspectors reviewed ETE-MP-2014-1102, "Millstone Unit 2 Steam Generator Integrity Condition Monitoring and Operational Assessment Refueling Outage 2R22," Revision 0 and ETE-MP-2015-1154, "Millstone Unit 2 Steam Generator Integrity Condition Monitoring and Operational Assessment Refueling Outage (2R23)," Revision 0, noting differences that may have occurred over time in the steam generators. The inspectors compared the current number of tubes affected by wear indications and limiting flaw sizes, with that predicted by the previous outage operational assessment, to evaluate the utilities relative accuracy in predicting degradation. The inspectors reviewed the results of the current examinations to determine how well Dominion staff was able to predict future tube performance by comparing the current results with the values predicted in the previous outage operational assessment. The inspectors then evaluated the scope of eddy current testing to determine if areas of potential degradation were inspected, noting if areas known to represent eddy current challenges were included. Lastly, the inspectors compared the steam generator tube eddy current examination scope and expansion criteria with technical specification requirements to determine if Dominion was in compliance with these requirements.

The inspectors reviewed the level of tube degradation and repair attributable to secondary side structures, such as foreign object abrasion. The inspectors observed the eddy current data used for the second pass resolution of wear indications on tubes R28L5, R29L4, and R10L4 of Steam Generator 26, caused by foreign objects on the secondary side, and compared the actions taken with the guidance contained in the Steam Generator Management Program: Steam Generator Integrity Assessment Guidelines, Part 10. The inspectors reviewed Dominion's corrective actions taken in response to any observed degradation.

#### Tube Repairs

The generators contained no tube repairs.

#### Generator Leakage

The generators had no leakage during the prior operational period.

### Eddy Current Technique Qualification

The inspectors reviewed a sample of Dominion's Electric Power Research Institute, PWR Steam Generator Examination Guidelines, Appendices H and I, "Examination Technique Specification Sheets (ETSS)," to determine if the eddy current probes and equipment were qualified for detection or sizing of the expected types of tube degradation. The inspectors reviewed the following Dominion ETSS documents which accommodated the site-specific factors potentially effecting the qualification of one or more techniques (e.g., equipment, data quality/noise issues, degradation mode) for the Millstone Unit 2 steam generators:

- ETSSS 1CRPC R0, RC1 Coil Ubend, SI, Restricted;
- ETSS4 3CRPC R0, RPC3-Coil-TTS/SI; and
- ETSS1/2 BOB, R0, Bobbin ASME Code Inspection.

The inspectors reviewed the equipment and probes used for the examination to determine if the test configuration (i.e., frequency, coil selection, probe drive, and physical limitations) were appropriate to detect the type of flaw that might be expected. The inspectors verified that the equipment was calibrated in accordance with the ETSS procedure(s) and American Society of Mechanical Engineers Code.

### Secondary Side Degradation

The inspectors reviewed Dominion corrective actions for loose parts or foreign material in the secondary side of the steam generator. The inspectors determined if the utility planned repairs or was performing an engineering evaluation of affected steam generator tubes. For foreign objects that were inaccessible and not removed, the inspectors determined if the utility performed an evaluation that considered the potential effects of object migration and tube fretting damage.

### Identification and Resolution of Problems (IMC 02.05)

The inspectors verified that Dominion staff were identifying inservice inspection and steam generator problems at an appropriate threshold and entering them in their corrective action program. The inspectors selected a sample of problems associated with inservice inspection and steam generator inspection documented by Dominion and verified the appropriateness of the corrective actions. The inspectors used the guidance in NRC Inspection Procedure 71152, "Identification and Resolution of Problems," to evaluate the corrective actions. The inspectors also determined if Dominion staff were assessing the applicability of operating experience to their plant.

#### b. Findings

No findings were identified.

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

.1 Quarterly Review of Licensed Operator Regualification Testing and Training (2 samples)

a. Inspection Scope

Unit 2

The inspectors observed Unit 2 licensed operator simulator training on May 2 for just-in-time training prior to starting the plant up from refueling outage 2R24. The inspectors evaluated operator performance during the testing and verified completion of risk significant operator actions, including the use of abnormal operating and alarm response procedures that operators reviewed to prepare for contingency actions. The inspectors assessed the clarity and effectiveness of communications, implementation of actions in response to alarms and plant conditions, and the oversight and direction provided by the shift manager. 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 a licensed operator requalification exam on June 20, which included a loss of power range instrument, loss of offsite power, rapid down power, small break loss of coolant accident, reactor trip, and emergency action level determination for alert. The inspectors evaluated operator performance during the simulated event and verified completion of risk significant operator actions, including the use of abnormal and emergency operating procedures. 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 technical specifications 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.

b. Findings

No findings were identified.

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

a. Inspection Scope

Unit 2

The inspectors observed reactor shutdown at the beginning of refueling outage 2R24 on April 1, and reactor startup and low power physics testing at the conclusion of the refueling outage on May 4. The inspectors observed infrequently performed test or evolution briefings, pre-shift briefings, and reactivity control briefings to verify that the briefings met the criteria specified in Dominion's Operations Section Expectations

Handbook and Dominion Administrative Procedure OP-AA-106, "Infrequently Conducted or Complex Evolutions," Revision 10. Additionally, the inspectors observed test 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 – 3 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, corrective action program 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 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

- Main condenser steam dump valves on May 24
- Reactor coolant pump seals preventive maintenance frequency change on May 31

Unit 3

- Battery M3301C-1 ICV's below average on April 17

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 technical specification requirements and inspected portions of redundant safety systems, when applicable, to verify risk analysis assumptions were valid and applicable requirements were met.

### Unit 2

- Emergent change in shutdown risk assessment due to opening of offsite breakers on April 19
- Risk review for lowering reactor vessel level for loop plug removal on April 24
- 'A' charging pump surveillance testing with 'C' charging pump unavailable for maintenance, computer room air conditioning failed, and intermittent ground on vital bus 22E on June 7
- High risk plan for offsite line outage while protecting emergency AC sources on June 27

### Unit 3

- Emergent downpower for unplanned offsite power line outage on May 15

#### b. Findings

No findings were identified.

#### 1R15 Operability Determinations and Functionality Assessments (71111.15 – 6 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

- Failure of containment spray actuation signal manual pushbutton on June 19
- Timer relay for diesel stop circuit found out of range on June 22

### Unit 3

- Auxiliary feed water leak inside containment on April 1
- Pressurizer pressure instrument (RCS\*PT456) unexpected changes on May 23
- 'B' EDG jacket water leak at the banjo bolts on May 24
- Supplementary leak collection and release system (SLCRS) degradation due to failure of a rubber boot on June 5



The inspectors evaluated the technical adequacy of the operability determinations to assess whether technical specification 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 technical specifications 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 – 2 samples)

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 2

- Containment purge valves on April 19
- Emergency core cooling system (ECCS) suction relief valve modification on May 2

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19 – 9 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, confirmed work site cleanliness was maintained, and 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' EDG 3-year maintenance window on April 11
- Reactor coolant pump motor oil leakage on April 20
- 2-MS-464 following maintenance on April 29
- 'A' train ECCS suction relief valve and 'A' train containment spray pump on May 3
- Failure of containment spray actuation signal manual pushbutton on June 19
- 'C' reactor building closed cooling water system heat exchanger leakage following cleaning and piping modification on June 26

### Unit 3

- 'B' EDG supply fan relay replacement on May 24
- Personnel access hatch seals testing on June 13
- SLCRS ventilation boot repair on June 17

#### b. Findings

No findings were identified.

#### 1R20 Refueling and Other Outage Activities (71111.20 – 1 sample)

##### a. Inspection Scope

The inspectors reviewed the station's work schedule and outage risk plan for the Unit 2 maintenance and refueling outage (2R24), conducted April 1 through May 5. The inspectors reviewed Dominion's development and implementation of outage plans and schedules to verify that risk, industry experience, previous site-specific problems, and defense-in-depth were considered. During the outage, the inspectors observed portions of the shutdown and cooldown processes and monitored controls associated with the following outage activities:

- Configuration management, including maintenance of defense-in-depth, commensurate with the outage plan for the key safety functions and compliance with the applicable technical specifications when taking equipment out of service
- Implementation of clearance activities and confirmation that tags were properly hung and that equipment was appropriately configured to safely support the associated work or testing
- Installation and configuration of reactor coolant pressure, level, and temperature instruments to provide accurate indication and instrument error accounting
- Status and configuration of electrical systems and switchyard activities to ensure that technical specifications were met
- Monitoring of decay heat removal operations
- Impact of outage work on the ability of the operators to operate the spent fuel pool cooling system
- Reactor water inventory controls, including flow paths, configurations, alternative means for inventory additions, and controls to prevent inventory loss

- Activities that could affect reactivity
- Maintenance of secondary containment as required by technical specifications
- Refueling activities, including fuel handling and fuel receipt inspections
- Fatigue management
- Tracking of startup prerequisites, walkdown of containment to verify that debris had not been left which could block the ECCS suction strainers, and startup and ascension to full power operation
- Identification and resolution of problems related to refueling outage activities

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22 – 6 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 technical specifications, 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

- 'C' SP 760-002, battery DB2-201B discharge inspection on April 20
- Containment purge valves 2-AC-4 and 2-AC-5 on April 28 (containment isolation valves)

Unit 3

- 'C' charging system pump quarterly in-service test testing to reestablish operability on April 21 (IST)
- Power range nuclear instrument analog channel operational testing on May 22
- Charging system safety injection slave relay testing on May 30
- 'A' quench spray pump quarterly operational test on June 2

b. Findings

No findings were identified.

### **Cornerstone: Emergency Preparedness**

#### 1EP6 Drill Evaluation (71114.06 – 1 sample)

##### Emergency Preparedness Drill Observation

##### a. Inspection Scope

The inspectors evaluated the conduct of a routine Dominion emergency drill on June 21, to identify any weaknesses and deficiencies in the classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the simulator and technical support center to determine whether the event classification, notifications, and protective action recommendations were performed 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 the Dominion staff was properly identifying weaknesses and entering them into the corrective action program.

##### b. Findings

No findings were identified.

## **2. RADIATION SAFETY**

### **Cornerstone: Occupational and Public Radiation Safety**

#### 2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01 – 3 samples)

##### a. Inspection Scope

The inspectors reviewed Dominion's performance in assessing and controlling radiological hazards in the workplace. The inspectors used the requirements contained in 10 CFR Part 20, technical specifications, Regulatory Guide 8.38, and the procedures required by technical specifications as criteria for determining compliance.

##### Inspection Planning

The inspectors reviewed the performance indicators for the occupational exposure cornerstone, radiation protection program audits, and reports of operational occurrences in occupational radiation safety since the last inspection.

##### Radiological Hazard Assessment (1 sample)

The inspectors conducted independent radiation measurements during walk-downs of the facility and reviewed the radiological survey program, air sampling and analysis, continuous air monitor use, recent plant radiation surveys for radiological work activities, and any changes to plant operations since the last inspection to verify survey adequacy of any new radiological hazards for onsite workers or members of the public.

Instructions to Workers (1 sample)

The inspectors reviewed high radiation area work permit controls and use, and observed containers of radioactive materials and assessed whether the containers were labeled and controlled in accordance with requirements.

The inspectors reviewed several occurrences where a worker's electronic personal dosimeter alarmed. The inspectors reviewed Dominion's evaluation of the incidents, documentation in the corrective action program, and whether compensatory dose evaluations were conducted when appropriate. The inspectors verified follow-up investigations of actual radiological conditions for unexpected radiological hazards were performed.

Contamination and Radioactive Material Control (1 sample)

The inspectors observed the monitoring of potentially contaminated material leaving the radiological controlled area and inspected the methods and radiation monitoring instrumentation used for control, survey, and release of that material. The inspectors selected several sealed sources from inventory records and assessed whether the sources were accounted for and were tested for loose surface contamination. The inspectors evaluated whether any recent transactions involving nationally tracked sources were reported in accordance with requirements.

b. Findings

No findings were identified.

**4. OTHER ACTIVITIES**4OA1 Performance Indicator Verification (71151)Unplanned Scrams, Unplanned Power Changes, and Unplanned Scrams with Complications (6 samples)a. Inspection Scope

The inspectors reviewed Dominion's submittals for the following Initiating Events cornerstone performance indicators for the period of April 1, 2016, through March 31, 2017:

Unit 2

- Unplanned scrams per 7000 critical hours
- Unplanned scrams with complications
- Unplanned power changes per 7000 critical hours

Unit 3

- Unplanned scrams per 7000 critical hours
- Unplanned scrams with complications

- Unplanned power changes per 7000 critical hours

To determine the accuracy of the performance indicator data reported during those periods, inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7. The inspectors reviewed Dominion's operator narrative logs, maintenance planning schedules, CRs, event reports, and NRC integrated inspection reports to validate the accuracy of the submittals.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152 – 2 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 corrective action program 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 corrective action program 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 corrective action program, such as trend reports, performance indicators, major equipment problem lists, system health reports, maintenance rule assessments, and maintenance or corrective action program backlogs. The inspectors also reviewed Dominion's corrective action program database for 2015 through 2017 to assess CRs written in various subject areas (equipment problems, human performance issues, etc.), as well as individual issues identified during the NRCs daily CR review (Section 4OA2.1). Inspectors selected a series of corrective and degraded maintenance work activities associated with CRs identified as conditions adverse to quality to determine if Dominion has established a problem resolution process outside of the corrective action program which could adversely impact the capability of the station to correct identified conditions adverse to quality.

b. Findings and Observations

No findings were identified.

The corrective action program permits the closure of CRs associated with routine conditions adverse to quality, significance level 3, to the work control process. For conditions adverse to quality, this would result in the creation of a priority 1, 2, or 3 work activity. Upon closure of the CR, barring creation of a new CR, the work activity or work order becomes the process by which mitigation and restoration of the condition adverse to quality is tracked. In some cases, additional information can be discovered between planning, development, and field activities that may render the work order to which the CR was closed unnecessary. The work management process incorporates steps to permit the cancellation of a work order to another active work order or to station log entries with documentation of where those trackable actions can be found.

The inspectors observed in their review of more than 60 cancelled corrective and degraded maintenance work orders, 8 work orders with perceived gaps to the expectations of the work management process for work order cancellation. The majority of these gaps were in traceability of actions taken to restore the initiating condition adverse to quality such that the work activity, which affected repair, or the log entry, which provided further evaluation, were not captured. The inspectors found that based upon previous self-assessments Dominion identified similar results and established further training to align station staff to standards. Based upon the conditions reviewed and corrective actions taken the inspectors have identified no more than minor concerns associated with the cancellation of work orders generated for the population of safety-related CRs sampled nor has Dominion established a problem resolution process outside of the corrective action program which could adversely impact the capability of the station to correct identified conditions adverse to quality.

.3 Annual Sample: Unit 2 Anchor Darling Double Disc Gate Valves

a. Inspection Scope

The inspectors performed an in-depth review of Dominion's response to the February 25, 2013, Part 21 Notification titled "Wedge Pin Failure of an Anchor/Darling Double- Disc Gate Valve at Browns Ferry Nuclear Plant Unit 1." Dominion entered this issue into their corrective action program as CR504097 to evaluate the issue and develop corrective actions.

The inspectors reviewed the evaluations and the prioritization and timeliness of Dominion's 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. The inspectors compared the actions taken to the requirements of Dominion's corrective action program and 10 CFR Part 50, Appendix B.

b. Findings and Observations

Introduction. The inspectors identified that Dominion has not implemented corrective actions to address potential substantial safety hazards associated with several safety significant valves at Millstone Unit 2 that was reported in a 10 CFR Part 21 notification

letter dated February 25, 2013. Specifically, after establishing a corrective action plan, to date Dominion has not implemented actions to either evaluate or inspect susceptible valves. However, inspectors need to compare actions taken to Dominion's CAP requirements and review industry recommendations to address the Part 21 letter to determine if this represents a performance deficiency or violation of NRC requirements. As a result, the NRC has opened an unresolved item (URI) related to this issue of concern.

Description. In 2012, Browns Ferry Nuclear Plant Unit 1 experienced a failure of an isolation valve due to a failure of the valve stem to wedge anti-rotation 'wedge pin' as noted in a 10 CFR Part 21 Notification Letter dated January 4, 2013. Subsequent analysis by Flowserve, owner of Anchor/Darling, determined the cause was a manufacturing defect, wherein the wedge pin installation torque was insufficient to meet the design needs of the valve. Flowserve further concluded that other valves of this type, Anchor Darling double disc gate valves in motor operated valve (MOV) applications with Limitorque or Rotork actuators, could be susceptible to similar failures. As documented in the associated 10 CFR Part 21 Notification Letter from Flowserve dated February 25, 2013, Millstone was susceptible to a potential substantial safety hazard due to this potential failure mechanism. Dominion captured this condition in CR504097 and determined that the following Millstone Unit 2 valves were susceptible:

- CS-4.1A, Containment Spray Header Isolation
- CS-4.1B, Containment Spray Header Isolation
- CS-13.1A, RWST Outlet Isolation
- CS-13.1B, RWST Outlet Isolation
- CS-16.1A, Containment Sump Outlet Header Isolation
- CS-16.1B, Containment Sump Outlet Header Isolation

The Dominion fleet MOV Program owner accepted the action (CA284339) to establish a corrective action plan on November 21, 2014, approximately 21 months after 10 CFR Part 21 notification by Flowserve. The corrective action plan for the susceptible valves included valve performance monitoring consistent with current MOV program requirements as well as stem position monitoring during travel every cycle which would indicate potential degradation of the wedge pin. Ultimate resolution for each location incorporates valve disassembly, intrusive inspection, and re-torque of the stem/wedge connection to mitigate the notified potential substantial safety hazard.

To date, Dominion has not performed stem position monitoring, contrary to their corrective action plan, thereby limiting their capacity to identify wedge pin degradation without assessment of the change. Furthermore, due to the invasive nature of the ultimate resolution as well as the safety functions of the susceptible locations, final corrective actions for each valve must be performed with the unit offline. Dominion initially established ultimate resolution at each location in spring of either 2016 or 2017 without alignment to an outage schedule or cycle plan. On February 16, 2016, because the 2016 valves would be worked during a refueling outage, the facilities safety review committee met, extending due dates until June 1, 2017. Immediately preceding the spring 2017 refueling outage, Dominion realigned ultimate resolution for the susceptible valves to the fall 2018 and spring 2020 refuel outages due to failure to receive parts required to complete contingency maintenance.



Ultimately, from February 25, 2013, through the present, the inspectors identified that Dominion delayed implementation of corrective actions for multiple potential substantial safety hazards that was communicated in a 10 CFR Part 21 notification letter. However, inspectors need to compare actions taken to Dominion's CAP requirements and review industry recommendations to address the Part 21 letter to determine if this represents a performance deficiency or violation of NRC requirements. **(URI 05000336/2017002-01, Potential Untimely Corrective Action for Anchor Darling Double Disc Gate Valves)**

4OA6 Meetings, Including Exit

On July 12, 2017, the inspectors presented the inspection results to Mr. John Daugherty, Site Vice President, and other members of the Millstone 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 Recovery  
J. Baukus, I&C Technician  
D. Blakeney, Assistant Plant Manager  
R. Borchart, Senior Reactor Engineer  
B. Bowen, Shift Supervisor, Health Physics  
S. Brabec, Assitant Manager Outage and Planning  
M. Bradley, Manager, Radiation Protection and Chemistry  
T. Cleary, Licensing  
D. Delcore, ALARA Supervisor  
D. Dodson, Supervisor - ISI/NDE Engineering  
R. Garver, Director Engineering  
M. Garza, Unit 2 Senior Nuclear Shift Operator  
T. Gleason, Radiation Protection Technician  
M. Goolsby, Unit 2 Operations Manager  
J. Grogan, Unit 3 Operations Manager  
R. Hanson, Manager Protection Services  
M. Lalikos, Nuclear Engineer III  
J. Langan, Licensing Manager  
R. Nee, I&C Technician  
F. Newton, Superintendent Protection Services  
M. O'Connor Manager Nuclear Operations  
S. Smith, Manager Outage and Planning  
S. Stanley, Director Nuclear Safety and Licensing  
M. Stark, Steam Generator Tube and Reactor Vessel Inspection Lead  
G. Stearns, Radiation Protection Technician  
M. Sweet, Superintendent Health Physics Operations  
T. Thull, BACCP Program Lead  
E. Treptow, Manager Systems and Component Engineering  
A. Vargas-Mendez, Regulatory Affairs Engineer  
S. Wiggins, Radiation Protection Technician  
M. Wynn, Supervisor, Radiological Analysis  
R. Zieber, ISI Coordinator

**LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED**

Opened

|                     |     |  |
|---------------------|-----|--|
| 05000336/2017002-01 | URI | Potential Untimely Corrective Action for Anchor Darling Double Disc Gate Valves (Section 4OA2) |
|---------------------|-----|--|

## LIST OF DOCUMENTS REVIEWED

### **Section 1R01: Adverse Weather Protection**

#### Condition Reports

|         |         |         |           |
|---------|---------|---------|-----------|
| 1065503 | 1065647 | 1070867 | CA3056228 |
|---------|---------|---------|-----------|

#### Work Orders

53102743581

53102969777

#### Miscellaneous

Millstone Power Station Unit 3 Final Safety Analysis Report, Figure 8.1-3 345kV Switchyard,  
Revision 28

### **Section 1R04: Equipment Alignment**

#### Procedures

OP 2305, Spent Fuel Pool Cooling and Purification System, Revision 030

OP 2305-001, Spent Fuel Pool Cooling, Revision 012-03

OP 2310B, SDC/SFPC Core Off-Loaded, Revision 002

OP 2310, Shutdown Cooling System Operation, Revision 030

OP 2310A, Supplementing SFPC with SDC, Fuel in Vessel, Revision 003

#### Condition Reports

|        |         |         |          |
|--------|---------|---------|----------|
| 430360 | 1019314 | 1070867 | 1071296* |
|--------|---------|---------|----------|

#### Work Orders

53102743581

#### Miscellaneous

Spent Fuel Pool Cooling System Health Report

LPSI and Shutdown Cooling System Health Report

UFSAR 9.5, Spent Fuel Pool Cooling

ETE-MP-2017-1003, Millstone Unit 2 – SFP Best Estimate Determination of Heat Removal  
Requirements for 2R24 Full (or Partial) Core Offload

P&amp;ID 25212-26930 SH 2, Feed Water System, Revision 48

Millstone Power Station Unit 3 Final Safety Analysis Report, Figure 8.1-3 345kV Switchyard,  
Revision 28

### **Section 1R05: Fire Protection**

#### Procedures

U2-24-FFS, Millstone Unit 2 Fire Fighting Strategies, Revision 0

U3-24-FFS, Millstone Unit 3 Fire Fighting Strategies, Revision 0

Millstone Unit 2 Fire Hazard Analysis, Revision 11

SP 21238, RCS Leak Test, Revision 006

SP 21238-001, RCS Leak Tests, Revision 005-00

#### Miscellaneous

Fire Area CB-10 Zone A &amp; B

Condition Reports

|           |         |         |         |
|-----------|---------|---------|---------|
| 1064587   | 1064592 | 1065020 | 1065503 |
| 1065647   | 1066775 | 1066798 | 1069390 |
| CA3056228 |         |         |         |

Work Orders

|             |             |             |             |
|-------------|-------------|-------------|-------------|
| 53102969777 | 53103067477 | 53103067483 | 53105892431 |
|-------------|-------------|-------------|-------------|

**Section 1R06: Flood Protection Measures**Condition Reports

1067998

Work Order

53103083094

**Section 1R08: Inservice Inspection**Condition Reports

|         |         |         |         |
|---------|---------|---------|---------|
| 1060919 | 1065275 | 1065281 | 1065498 |
| 1065525 |         |         |         |

Miscellaneous

ER-MP-NDE-UT-816, "Manual Phased Array Procedure for Weld Overlaid Similar and Dissimilar Metal Welds", Revision 1, dated August 24, 2015 incorporating EPRI-WOL-PA-1, "Procedure for the Manual Phased Array Ultrasonic Examination of Weld Overlaid Similar and Dissimilar Welds", Revision 3, dated September 12, 2014  
 Ultrasonic Testing Data Packages: M2-UTV-17-003, M2-UTV-17-004, M2-UT-17-008

**Section 1R11: Licensed Operator Regualification Program**Procedures

OP 2204, Load Changes, Revision 034-00  
 EN 21004K, Cycle 25, Low Power Physics Test, Revision 006-00  
 EN 21004F, Control Rod Worth Measurement (ICCE), Revision 007  
 OP 2202A, Reactor Startup by Dilution (ICCE), Revision 004  
 AOP 3571, Instrument Failure Response, Revision 013  
 AOP 3575, Rapid Downpower, Revision 024  
 BKG AOP 3575, Rapid Downpower, Revision 024  
 EOP 35 E-0, Reactor Trip Or Safety Injection, Revision 32  
 AOP 3555, Reactor Coolant System Leak, Revision 019  
 EOP 35 E-1, Loss of Reactor or Secondary Coolant, Revision 026  
 BKG AOP 3571, Instrument Failure Response, Revision 013-00  
 BKG AOP 3581, Immediate Operator Actions, Revision 004  
 AOP 3581, Immediate Operator Actions, Revision 004  
 BKG EOP 35 E-0, Reactor Trip or Safety Injection, Revision 32  
 BKG AOP 3555, Reactor Coolant System Leak, Revision 19-00

**Section 1R12: Maintenance Effectiveness**Procedures

ER-AA-MRL, Implementing Maintenance Rule, Revision 11  
 ER-AA-MRL-10, Maintenance Rule Program, Revision 6

Condition Reports

|         |         |         |         |
|---------|---------|---------|---------|
| 581016  | 1011879 | 1029716 | 1063817 |
| 1063817 | 1067410 | 1067411 |         |

Miscellaneous

System Health Report – Main Steam System (1Q2017)  
 TR WCAP-16175-NP-A, Pressurized Water Reactor Owners Group (PWROG) Topical Report  
 WCAP-16175-P, Revision 0, (CE NPSD-1199, Revision 1) “Model for Failure of RCP  
 Seals Given Loss of Seal Cooling in CE NSSS Plants”, Revision 0  
 WCAP-16141, RCP Seal Leakage PRA Model Implementation Guidelines for Westinghouse  
 PWRs, August 2003

**Section 1R13: Maintenance Risk Assessments and Emergent Work Control**Procedures

WM-AA-301, Operational Risk Decision Making, Revision 13  
 NF-AA-PRA-370, Probable Risk Assessment Procedures and Methods: MRule (a)(4) Risk  
 Monitor Guidance, Revision 16

Miscellaneous

High Risk Contingency Plan Actions for May 15  
 High Risk Contingency Plan Actions for April 24  
 EOOS Version 4.1 for Millstone Unit 2 on 6/27/2017  
 Millstone Unit 2 Shutdown Safety Assessment Checklist for April 19, 2017  
 EOOS Version 4.1 for Millstone Unit 2 on 6/7/2017

**Section 1R15: Operability Determinations and Functionality Assessments**Procedures

SP 3614I.1, Supplementary Leak Collection and Release System Operability Test, Revision  
 011-07  
 SP 3614I.1-001, SLCRS Operability Test – Train A, Revision 012-02  
 SP 3614I.1-002, SLCRS Operability Test – Train B, Revision 013-02  
 MA-AA-103, SLCRS Troubleshooting plan dated June 11, 2017, Revision 1  
 SP 3646A.1-001, EDG A Operability Test, Revision 019  
 OP 3346A-014, EDG A Operating Logs, Revision 016-00  
 OP 3346A-015, EDG B Operating Logs, Revision 016-00  
 OP 3346A-013, EDG Data Sheet, Revision 009  
 C SP 750-004, Unit 3 – Battery Quarterly Inspection, Revision 002  
 OP-AA-102 – Attachment 5, Prompt Operability Determination Documentation CA3059441,  
 Revision 0  
 NUCENG-17-03, Millstone 3 – AFW system, Spectacle Flange Leakage and Operability, Dated  
 June 9, 2017  
 OP-AA-102, Operability Determination, Revision 15  
 OP-AA-101, Operational Decision Making, Revision 11

OP-AA-101 – Attachment 2, Operational Decision Making Checklist CA3053990, Revision 2  
 OP 3353.LW, Containment Unidentified Leakage Trouble, Revision 004  
 SP 2606F, Containment Spray Actuation Signal (Manual), Revision 005-01

Condition Reports

|          |         |         |         |
|----------|---------|---------|---------|
| 1007047  | 1056892 | 1057044 | 1063278 |
| 1063561  | 1065711 | 1065837 | 1067271 |
| 1069519  | 1069659 | 1069794 | 1070382 |
| 1070388  | 1070892 | 1071377 | 1071785 |
| 1071854* | 1071949 |         |         |

Maintenance Orders/Work Orders

|             |             |             |             |
|-------------|-------------|-------------|-------------|
| 53102902014 | 53102986337 | 53103073766 | 53103074612 |
| 53103086768 | 53103087345 | 53103092160 | 53103092640 |
| ACE 018046  | ACE 018035  | M3 07 01438 |             |

Miscellaneous

TCC-MP-2017-015, Installation of Temporary Connection over degraded SLCRS Common Discharge Ventilation Flexible Connection Located in the Containment Enclosure Building, Revision 01  
 25212-26949 SH 5 of 7, P&ID Reactor Plant Ventilation, Revision 23  
 QA Documentation Transmittal Package for Local Purchase Order 21431, Dated July 10, 1985  
 25212-20025 SH 16, Fabrication Installation Control Drawing for AFW Spectacle Flange, Revision 5  
 25212-26957 SH 2, P&ID Plant Drainage, Revision 10

**Section 1R18: Plant Modifications**

Procedures

CNG-AM-1.01-1023, Maintenance Rule Program, Revision 0  
 CNG-OM-1.01-3000, Issue Response Team, Revision 0  
 CNG-OP-1.01-1001, Operational Decision Making, Revision 100  
 CNG-OP-1.01-1002, Conduct of Operability Determinations/Functionality, Revision 100

Condition Reports

485568

Maintenance Orders/Work Orders

|             |             |             |             |
|-------------|-------------|-------------|-------------|
| 53102732434 | 53102808579 | 53103026806 | 53103028792 |
| 53103077913 |             |             |             |

Drawings

MP-DWG-000-1601085-M-25203-26015, Low Pressure Safety Injection System, Rev 0  
 MP-DWG-000-1601085-M-25203-20126, High Pressure Low Pressure Injection Containment Spray Pump Suction Relief, Rev 8  
 MP-DWG-000-1601085-M-25203-2200, Pipe Support for Drain 1"-MAD-27 on Relief Valve 2-CS-154

Miscellaneous

EPRI Engineering Technical Training Modules for Nuclear Plant Engineers - Relief and Safety Valves, October 1999

TR-105872, Safety and Relief Valve Testing Guide, August 1996  
 MP2-16-01085, Design Change - Unit 2 ECCS Suction Header Relief Valves, Revision 6  
 MP-CALC-ENG-16-ENG-0440C2, Structural Qualification of Catch Container for Relief Valves  
 2-CS-1 53 and 2-CS-1 54, Rev 0  
 MP-CALC-ENG-RWST-02648D2, RWST Back Leakage Calculation, Rev 0  
 MP-CALC-ENG-M2401009-01578C2, Calculation for RWST Pipe Support, Rev 0  
 MP2-14-01139, Modification of Instrument Air Supply Piping to Containment Purge Valves 2-  
 AC-4, 2-AC-5, 2-AC-6, and 2-AC-7

### **Section 1R19: Post-Maintenance Testing**

#### Procedures

MA-AA-108, Station Rework Reduction Program, Revision 4  
 SP 3614I.1, Supplementary Leak Collection and Release System Operability Test, Revision  
 011-07  
 SP 3614I.1-001, SLCRS Operability Test – Train A, Revision 012-02  
 SP 3614I.1-002, SLCRS Operability Test – Train B, Revision 013-02  
 SP 3612B.3-002, Personnel Access Lock (Seals), Revision 014  
 SP 2606F, Containment Spray Actuation Signal (Manual), Revision 005-01

#### Condition Reports

|         |         |         |         |
|---------|---------|---------|---------|
| 1022666 | 1030070 | 1035711 | 1054285 |
| 1058623 | 1063807 | 1064022 | 1064028 |
| 1064808 | 1064809 | 1064811 | 1064820 |
| 1064871 | 1064887 | 1064891 | 1064903 |
| 1064942 | 1064953 | 1065052 | 1065103 |
| 1065136 | 1065335 | 1065348 | 1065425 |
| 1065483 | 1065515 | 1065521 | 1065591 |
| 1065643 | 1065647 | 1065709 | 1065711 |
| 1065712 | 1065718 | 1065837 | 1065864 |
| 1065866 | 1066049 | 1066055 | 1066357 |
| 1066710 | 1066752 | 1066793 | 1069657 |
| 1071785 | 1071949 | 1072005 | 1233985 |

#### Maintenance Orders/Work Orders

|             |             |             |             |
|-------------|-------------|-------------|-------------|
| 53102091112 | 53102379674 | 53102380721 | 53102381088 |
| 53102381297 | 53102485815 | 53102520962 | 53102525961 |
| 53102525999 | 53102526074 | 53102527083 | 53102527225 |
| 53102537051 | 53102590065 | 53102665894 | 53102699587 |
| 53102722614 | 53102725665 | 53102726864 | 53102727580 |
| 53102729016 | 53102729771 | 53102729888 | 53102749091 |
| 53102749092 | 53102749542 | 53102749543 | 53102756850 |
| 53102770607 | 53102771546 | 53102872831 | 53102872843 |
| 53102880973 | 53102891950 | 53102894671 | 53102897154 |
| 53102897160 | 53102897166 | 53102897178 | 53102897184 |
| 53102897190 | 53102897196 | 53102897202 | 53102897832 |
| 53102897838 | 53102897844 | 53102897856 | 53102897874 |
| 53102902014 | 53102913893 | 53102917677 | 53102921018 |
| 53102931131 | 53102931137 | 53102931149 | 53102931202 |
| 53102931208 | 53102931226 | 53102935169 | 53102938102 |
| 53102938114 | 53102951578 | 53102969777 | 53102981179 |

|             |             |             |             |
|-------------|-------------|-------------|-------------|
| 53102981180 | 53102981565 | 53102981585 | 53102986965 |
| 53102986966 | 53102986967 | 53102986972 | 53103009844 |
| 53103009845 | 53103026805 | 53103026806 | 53103028792 |
| 53103037079 | 53103060609 | 53103067709 | 53103067714 |
| 53103070833 | 53103070838 | 53103071715 | 53103073038 |
| 53103077913 | 53103086931 | 53103094373 |             |

Drawings

MP-DWG-000-1601085-M-25203-26015, Low Pressure Safety Injection System, Rev 0  
 MP-DWG-000-1601085-M-25203-20126, High Pressure Low Pressure Injection Containment Spray Pump Suction Relief, Rev 8  
 MP-DWG-000-1601085-M-25203-2200, Pipe Support for Drain 1"-MAD-27 on Relief Valve 2-CS-154  
 TR-105872, Safety and Relief Valve Testing Guide, August 1996  
 MP2-16-01085, Design Change - Unit 2 ECCS Suction Header Relief Valves, Revision 6  
 MP-CALC-ENG-16-ENG-0440C2, Structural Qualification of Catch Container for Relief Valves 2-CS-1 53 and 2-CS-1 54, Rev 0  
 MP-CALC-ENG-RWST-02648D2, RWST Back leakage Calculation, Rev 0  
 MP-CALC-ENG-M2401009-01578C2, Calculation for RWST Pipe Support, Rev 0  
 Operations Narrative Logs

Miscellaneous

EPRI Engineering Technical Training Modules for Nuclear Plant Engineers - Relief and Safety Valves, October 1999  
 TR-105872, Safety and Relief Valve Testing Guide, August 1996  
 MP2-16-01085, Design Change - Unit 2 ECCS Suction Header Relief Valves, Revision 6  
 MP-CALC-ENG-16-ENG-0440C2, Structural Qualification of Catch Container for Relief Valves 2-CS-1 53 and 2-CS-1 54, Rev 0  
 MP-CALC-ENG-RWST-02648D2, RWST Back leakage Calculation, Rev 0  
 MP-CALC-ENG-M2401009-01578C2, Calculation for RWST Pipe Support, Rev 0  
 Operations Narrative Logs  
 Videos of 'A' Containment Spray Vibration – ESOMS  
 TS2-97-530, Memo on Operating Safety Related Pumps at Low Flow Rates  
 DM3-00-0273-01, Removal of Sentinel Relief 3MSS\*RV58  
 ETE-MP-2017-1058, 2-MS-464 Valve Body Drain Plug Replacement  
 MP2-17-01033, Removal of RCP Motor Lube Oil Strainer and Pressure Differential Indicator Associated with P40A, P40B, and P40D, Revision 3

**Section 1R20: Refueling and Other Outage Activities**Procedures

OP 2204, Load Changes, Revision 034-00  
 EN 21004K, Cycle 25, Low Power Physics Test, Revision 006-00  
 EN 21004F, Control Rod Worth Measurement (ICCE), Revision 007  
 OP 2202A, Reactor Startup by Dilution (ICCE), Revision 004  
 LI-AA-700, Fatigue Management and Work Hour Limits for Covered Workers, Revision 13  
 AOP 2572, Loss of Shutdown Cooling, Revision 012-00  
 OP 2310, Shutdown Cooling, Revision 030  
 EOP 2532, Loss of Coolant Accident, Revision 033-00  
 OPS-FH 227, Operation of Hydraulic CEA Extension Shaft Coupling/Uncoupling Tool, Revision 002-00



EN 21008-005, Fuel Assembly and CEA Locations Millstone Unit 2 Cycle 25 Core Map,  
Revision 015

OP 2303E, Refueling Cavity Fill and Drain, Revision 002

OP 2301E, Draining the RCS (ICCE), Revision 029

OP 2209B, RCS Inventory Tracking, Revision 001

OP 2201, Plant Heatup Attachment 11 Mode 4 Change Checklist, Revision 042

OP 2208-13, Shutdown Margin Determination in Modes 3, 4, and 5, Revision 009

OP-AA-106, Infrequently Conducted or Complex Evolutions, Revision 9

#### Condition Reports

|          |         |         |          |
|----------|---------|---------|----------|
| 1063807  | 1063814 | 1063827 | 1063840  |
| 1063844  | 1063853 | 1063855 | 1063858  |
| 1063859  | 1063862 | 1063866 | 1067056* |
| 1066733* | 1067330 | 1067337 |          |

#### Miscellaneous

Facility Safety Review Committee Meeting Materials for April 23

Facility Safety Review Committee Meeting Materials for April 27

Facility Safety Review Committee Meeting Materials for April 28

Facility Safety Review Committee Meeting materials for April 29

2R24 Shutdown Risk Schedule Review March 23, 2017 Memorandum

Radiation Work Permit 2017930

25203-26014, SH. 1, PID Reactor Coolant System, Revision 41

25203-26014, SH. 2, PID Reactor Coolant System, Revision 47

### **Section 1R22: Surveillance Testing**

#### Procedures

3609.1-001, Quench Spray Pump 3QSS\*P3A Quarterly IST pump run, Revision 014

3609.1, Quench Spray Pump 3QSS\*P3A Operational Readiness Test, Revision 012

SP 2605D-039, Containment Leak Test Type "C" Penetration 39, 2-AC-4 and -5, Revision 000-01

SP 3646A.8, Slave Relay Testing – A Train, Revision 030-00

SP 3646A.8-023, Safety Injection S909 – Relay K603, Slave Relay Assisted Test – A Train, Revision 001-01

SP 3646A.8-012, Safety Injection S908 – Relay K602, Slave Relay Assisted Test – A Train, Revision 001

SP 3441A11, PRN41 Analog Channel Op Test, Revision 015

SP 3441A11-001, PRN 41 Analog Channel Op Test, Revision 012-03

SP 3604A.3 – 003, 3CHS\*P3C IST Pump Test on Train B (Two Charging Pumps Aligned for Service), Revision 000

SP 3604A.3, Charging Pump C Operational Readiness Test, Revision 015

C SP 760-002, Battery DB2-201B Discharge Inspection, Revision 003-00

#### Work Orders

|             |             |             |             |
|-------------|-------------|-------------|-------------|
| 53102302240 | 53102891871 | 53102897262 | 53103031265 |
|-------------|-------------|-------------|-------------|

#### Condition Reports

|         |         |         |           |
|---------|---------|---------|-----------|
| 1066103 | 1069493 | 1072119 | CA3060317 |
|---------|---------|---------|-----------|

Miscellaneous

Magnitude History Report for the Vibrational Data

**Section 1EP6: Drill Evaluation**Condition Reports

1072587                      1072589                      1072590

**Section 2RS1: Access Control to Radiologically Significant Areas**Procedures

MP-PROC-OPS-OP 2304A, Volume Control Portion of CVCS, Revision 025

MP-PROC-OPS-OP 2336A, Station Sumps and Drains, Revision 022

RP-AA-105, External Radiation Exposure Control Program, Revision 2

RP-AA-107, Radioactive Contamination Control Program, Revision 6

RP-AA-109, Radiological Survey Program, Revision 0

RP-AA-223, Contamination Surveys, Revision 4

RP-AA-225, Unrestricted Release of Material, Revision 6

RP-AA-226, Alpha Monitoring, Revision 5

RP-AA-230, Personnel Contamination Monitoring and Decontamination, Revision 11

RP-AA-240, Discrete Radioactive Particle Control, Revision 2

RPM 4.7.9, Whole Body Monitoring Using the PM-12, Revision 001

SA-AA-104, Confined Space Entry, Revision 6

Miscellaneous

2R24 Daily Exposure Reports

2R24 Millstone Shift Update Reports

Air Activity Log, 4/5/17 to 4/6/17

ALARA Plan AP-2-17-01

Briefing Attendance Roster, RP-AA-274 Attachment 5, RWP 2170302-1 dated 4/4/17

TEDE ALARA Review, "Fuel Transfer Tube Flange Removal and Installation", dated 3/24/17

TEDE ALARA Review, "ICI Greylock and Bullethead Activities", dated 3/24/17

Air Sample Reports

Control No. 5010

Control No. 5011

Control No. 5012

Control No. 5013

Control No. 5014

Control No. 5015

Control No. 5016

Control No. 5017

Control No. 5107

Control No. 5118

Control No. 5340

Condition Reports

1058066                      1058068                      1058086                      1058100

1058204                      1060827                      1060924                      1061440

1061480

Radiological Surveys

Figure No. 00, dated 3/1/2017  
 Figure No. 00, dated 4/11/17 at 0330  
 Figure No. 00, dated 4/11/17 at 1130  
 Figure No. 12, dated 2/19/17  
 Figure No. 12, dated 3/19/17  
 Figure No. 21, dated 4/4/17  
 Figure No. 21, dated 4/9/17  
 Figure No. 26, dated 3/10/17  
 Figure No. 26, dated 4/9/17  
 Figure No. 35, dated 4/2/17 at 0900  
 Figure No. 35, dated 4/4/17 at 0147  
 Figure No. 35, dated 4/4/17 at 1330  
 Figure No. 35, dated 4/5/17 at 1600  
 Unit-2 Containment Initial Entry, dated 4/1/17

**Section 40A1: Performance Indicator Verification**

Condition Reports

|         |         |         |         |
|---------|---------|---------|---------|
| 1035792 | 1037586 | 1037601 | 1037818 |
| 1038363 | 1039762 | 1039766 | 1042287 |
| 1044529 | 1046026 |         |         |

**Section 40A2: Problem Identification and Resolution**

Procedures

PI-AA-200, Corrective Action, Revision 33

Condition Reports

|         |         |         |         |
|---------|---------|---------|---------|
| 463436  | 501838  | 504097  | 507796  |
| 507797  | 507798  | 567442  | 568787  |
| 568887  | 570420  | 578579  | 579449  |
| 581046  | 1003734 | 1008404 | 1008846 |
| 1008846 | 1012672 | 1013742 | 1014018 |
| 1014582 | 1015419 | 1017939 | 1017939 |
| 1020703 | 1020745 | 1020747 | 1020751 |
| 1020752 | 1020755 | 1023522 | 1023547 |
| 1024043 | 1024790 | 1031592 | 1033145 |
| 1034413 | 1035397 | 1035519 | 1037513 |
| 1038265 | 1038365 | 1038685 | 1038685 |
| 1038918 | 1039421 | 1039656 | 1040437 |
| 1041069 | 1041541 | 1042493 | 1042520 |
| 1042989 | 1043971 | 1044046 | 1044723 |
| 1047503 | 1047810 | 1054466 | 1054737 |
| 1056524 | 1059827 | 1059827 | 1063145 |
| 1063596 | 1064894 | 1069972 |         |

Work Orders

|             |             |             |             |
|-------------|-------------|-------------|-------------|
| 53102258576 | 53102432933 | 53102502268 | 53102677229 |
| 53102727472 | 53102789282 | 53102793983 | 53102800917 |
| 53102806122 | 53102807016 | 53102811686 | 53102820598 |

|             |             |             |             |
|-------------|-------------|-------------|-------------|
| 53102824067 | 53102833444 | 53102835383 | 53102841196 |
| 53102844042 | 53102849242 | 53102858499 | 53102860468 |
| 53102861635 | 53102863083 | 53102873360 | 53102875538 |
| 53102877138 | 53102881233 | 53102884526 | 53102889003 |
| 53102889149 | 53102890863 | 53102893839 | 53102894483 |
| 53102901100 | 53102901101 | 53102901339 | 53102919370 |
| 53102919899 | 53102920420 | 53102924079 | 53102946047 |
| 53102949286 | 53102953861 | 53102959373 | 53102960925 |
| 53102971260 | 53102973115 | 53102973507 | 53102974600 |
| 53102974611 | 53102976591 | 53102977469 | 53102981192 |
| 53102981193 | 53102981207 | 53102981443 | 53102983222 |
| 53102984578 | 53102984579 | 53102988538 | 53102991995 |
| 53102994891 | 53102994980 | 53102996760 | 53102996834 |
| 53103006982 | 53103007892 | 53103027759 | 53103028790 |
| 53103037158 | 53103049198 | 53103049509 | 53103061603 |
| 53103063026 | 53103069817 | 53103080974 | 53103088403 |

Miscellaneous

BWROG-TP-13-006, Recommendations to Resolve Flowserve 10CFR Part 21 Notification  
Affecting Anchor Darling Double Disc Gate Valve Wedge Pin Failures  
Millstone U2 IST Pump and Valve Basis Documents  
Millstone Corrective Action Review Board meeting minutes for April 29, 2017

\*- *NRC-identified*

**LIST OF ACRONYMS**

|       |  |
|-------|--|
| AC    | alternating current                              |
| CFR   | <i>Code of Federal Regulations</i>               |
| CR    | condition report                                 |
| ECCS  | emergency core cooling system                    |
| EDG   | emergency diesel generator                       |
| ETSS  | examination technique specification sheet        |
| IMC   | Inspection Manual Chapter                        |
| kV    | kilovolt   |
| MOV   | motor operated valve                             |
| NRC   | Nuclear Regulatory Commission                    |
| SLCRS | supplementary leak collection and release system |
| UFSAR | Updated Final Safety Analysis Report             |
| URI   | unresolved item                                  |