



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION I
2100 RENAISSANCE BLVD., SUITE 100
KING OF PRUSSIA, PA 19406-2713

February 4, 2016

Mr. David Heacock
President and Chief Nuclear Officer
Dominion Resources
5000 Dominion Boulevard
Glen Allen, VA 23060-6711

SUBJECT: MILLSTONE POWER STATION – INTEGRATED INSPECTION REPORT
05000336/2015004 AND 05000423/2015004

Dear Mr. Heacock:

On December 31, 2015, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Millstone Power Station (Millstone), Units 2 and 3. The enclosed inspection report documents the inspection results, which were discussed on January 19, 2016, with Mr. John Daugherty, Site Vice President, and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

This report documents two violations of NRC requirements, all of which were of very low safety significance (Green). Additionally, a licensee-identified violation, which was determined to be of very low safety significance, is listed in this report. However, because of the very low safety significance, and because they are entered into your corrective action program, the NRC is treating these findings as non-cited violations, consistent with Section 2.3.2.a of the NRC Enforcement Policy. If you contest the non-cited violations in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region I; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at Millstone. In addition, if you disagree with the cross-cutting aspect assigned to any finding, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region I, and the NRC Resident Inspector at Millstone.

D. Heacock

-2-

In accordance with Title 10 of the *Code of Federal Regulations* (CFR) 2.390 of the NRCs "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC's Public Document Room or from the Publicly Available Records component of the NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS is accessible from the NRC website at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Glenn T. Dentel, 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 05000336/2015004 and 05000423/2015004
w/Attachment: Supplementary Information

cc w/encl: Distribution via ListServ

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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. 05000336/2015004 and 05000423/2015004

Licensee: Dominion Nuclear Connecticut, Inc. (Dominion)

Facility: Millstone Power Station, Units 2 and 3

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

Dates: October 1 through December 31, 2015

Inspectors: J. Ambrosini, Sr. Resident Inspector, Division of Reactor Projects (DRP)
B. Haagensen, Resident Inspector, DRP
L. McKown, Resident Inspector, DRP
C. Highley, Resident Inspector, DRP
K. Reid, Reactor Engineer, DRP
H. Anagnostopoulos, Health Physicist, Division of Reactor Safety (DRS)
M. Modes, Sr. Reactor Inspector, DRS
J. DeBoer, Emergency Preparedness Inspector, DRS

Approved By: Glenn T. Dentel, Chief
Reactor Projects Branch 2
Division of Reactor Projects

Enclosure

TABLE OF CONTENTS

SUMMARY	3
REPORT DETAILS	5
1. REACTOR SAFETY	5
1R01 Adverse Weather Protection	5
1R04 Equipment Alignment	6
1R05 Fire Protection	7
1R06 Flood Protection Measures	8
1R08 In-service Inspection Activities	8
1R11 Licensed Operator Requalification Program & Licensed Operator Performance	11
1R12 Maintenance Effectiveness	12
1R13 Maintenance Risk Assessments and Emergent Work Control	13
1R15 Operability Determinations and Functionality Assessments	14
1R18 Plant Modifications	16
1R19 Post-Maintenance Testing	17
1R20 Refueling and Other Outage Activities	17
1R22 Surveillance Testing	18
1EP4 Emergency Action Level and Emergency Plan Changes	19
1EP6 Drill Evaluation	19
2. RADIATION SAFETY	20
2RS1 Radiological Hazard Assessment and Exposure Controls	20
2RS4 Occupational Dose Assessment	21
4. OTHER ACTIVITIES	22
4OA1 Performance Indicator Verification	22
4OA2 Problem Identification and Resolution	23
4OA3 Follow-Up of Events and Notices of Enforcement Discretion	29
4OA6 Meetings, Including Exit	31
4OA7 Licensee-Identified Violations	31
ATTACHMENT: SUPPLEMENTARY INFORMATION	32
SUPPLEMENTARY INFORMATION	A-1
KEY POINTS OF CONTACT	A-1
LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED	A-1
LIST OF DOCUMENTS REVIEWED	A-2
LIST OF ACRONYMS	A-15

SUMMARY

Inspection Report 05000336/2015004, 05000423/2015004; 10/01/2015 – 12/31/2015; Millstone Power Station (Millstone), Units 2 and 3; Operability Determinations and Functionality Assessments and Follow-up of Events and Notices of Enforcement Discretion.

This report covered a three-month period of inspection by resident inspectors and announced baseline inspections performed by regional inspectors. The inspectors identified two non-cited violations (NCVs), both of which were 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 February 4, 2015. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 5.

Cornerstone: Mitigating Systems

- Green. The inspectors identified a Green NCV of Title 10 of the *Code of Federal Regulations* (10 CFR) 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," associated with Dominion's failure to include in the Unit 2 charging pump operating procedure appropriate acceptance criteria for determining operability of the Unit 2 charging pumps upon the loss of the associated charging flushing/lubrication pump. Specifically, Dominion implemented a procedure change which stated that the condition of the charging flushing/lubrication pumps does not affect charging pump operability or mission time without supporting technical information and contrary to guidance provided in the charging pump vendor technical manual, impacting an operability determination on December 13, 2015. Dominion has entered the concern associated with the charging pump operability acceptance criteria into their corrective action program (CAP) under condition report (CR)1021512.

This finding was determined to be more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 7, 2012, because it was associated with the equipment performance attribute of the Mitigating Systems cornerstone and adversely affected its objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Further, this finding was found to be consistent with more than minor examples 3.j and 3.k of IMC 0612, Appendix E, "Examples of Minor Issues," dated August 11, 2009. This finding was evaluated in accordance with IMC 0609, "Significance Determination Process," Attachment 4, "Initial Characterization of Findings," and IMC 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions", Section A, "Mitigating Systems, Structures or Components and Functionality," and screened as very low safety significance (Green) since it was not a qualification or design deficiency, did not represent a loss of system or function, and did not exceed its technical specification (TS) allowed outage time. Inspectors identified a cross-cutting aspect in Human Performance, Documentation, in that Dominion lacked technical documentation to support the operability assertion in the charging pump operating procedure to address contrary guidance provided in the charging pump vendor manual. [H.7] (Section 1R15)

Green. The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," for Dominion's failure to take corrective action to prevent repetition for a significant condition adverse to quality according to the definition in PI-AA-200, "Corrective Action." Specifically, PI-AA-200 lists "unplanned entry into a TS action that results in taking a unit off-line" as an example of a significant condition adverse to quality. On July 26, 2014, Dominion performed a TS required shutdown of Unit 2 due to the inoperability of the turbine driven auxiliary feedwater (TDAFW) pump. Dominion cancelled the root cause evaluation (RCE) assigned to investigate the cause of the plant shutdown, stating that the direct cause of the shutdown was foreign material in the flow orifice in a recirculation line for the TDAFW pump. No corrective actions to prevent recurrence (CAPRs) were assigned after the direct cause was determined. Dominion entered this issue into their CAP as CR1019514.

This performance deficiency was determined to be more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 7, 2012, because it was associated with the equipment performance attribute of the Mitigating Systems cornerstone and adversely affected its objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, taking CAPRs will help to ensure the availability and reliability of the TDAFW pump. This finding was evaluated in accordance with IMC 0609, "Significance Determination Process," Attachment 4, "Initial Characterization of Findings," and IMC 0609, Appendix A, Exhibit 2, and screened as very low safety significance (Green) since it was not a qualification or design deficiency, did not represent a loss of system or function, and did not exceed its TS allowed outage time. The inspectors determined this issue had a cross cutting aspect in Human Performance, Consistent Process, where individuals use a consistent, systematic approach to make decisions. Specifically, Dominion inappropriately used the corrective action procedure to change the causal evaluation category without properly balancing the risk of the decision, and therefore did not develop CAPRs for a significant condition adverse to quality. [H.13] (Section 4OA3)

Other Findings

A violation of very low safety significance that was identified by Dominion was reviewed by the inspectors. Corrective actions taken or planned by Dominion have been entered into Dominion's CAP. This violation and corrective action tracking number are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Unit 2 began the inspection period at 95 percent power, in coastdown operation in preparation for a refueling outage, 2R23, which began on October 3 and concluded on November 7. On October 4, operators declared a Notice of Unusual Event for a reactor coolant system leak on the 2-SI-468 shutdown cooling relief valve. On November 8, during power ascension from 2R23, operators received an alarm for low oil level in the 'C' reactor coolant pump (RCP). Operators reduced power from 55 percent to 19 percent and tripped the reactor before repairing the oil leak and restarting the reactor later that day. On November 9, during power ascension, operators noted a repeat of conditions that led to the low oil alarm for the 'C' RCP. Dominion decided to shut the reactor down a second time to make repairs and operators reduced power from 93 percent to 19 percent before tripping the reactor. After completion of the repairs to the 'C' RCP, operators restarted the reactor on November 12. Unit 2 returned to 100 percent power on November 14 and remained there for the duration of the inspection period.

Unit 3 began the inspection period at 100 percent power. On November 4, operators declared an Alert due to a fire in the 'A' emergency diesel generator (EDG) enclosure. On November 13, operators reduced power to 85 percent to facilitate a main feedwater pump swap in order to repair a leaking seal on the 'A' turbine driven main feedwater pump and returned to 100 percent power later the same day and remained there for the duration of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01 – 2 samples)

.1 Readiness for Seasonal Extreme Weather Conditions

a. Inspection Scope

The inspectors performed a review of Dominion's readiness for the onset of seasonal cold temperatures at Unit 2 and Unit 3. The review focused on protection for the safety-related equipment including condensate storage tanks, refueling water storage tanks, diesel generator fuel oil storage, as well as heating for the buildings. The inspectors reviewed the Updated Final Safety Analysis Report (UFSAR), TS, control room logs, and the CAP to determine what temperatures or other seasonal weather could challenge these systems, and to ensure Dominion's personnel had adequately prepared for these challenges. The inspectors reviewed station procedures, including Dominion's seasonal weather preparation procedure and applicable operating procedures. The inspectors performed walkdowns of the selected systems to ensure station personnel identified issues that could challenge the operability of the systems during cold weather conditions. 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 – 6 samples)

a. Inspection Scope

The inspectors performed partial walkdowns of the following systems:

Unit 2

- 4kV Bus 24D when 24C was out of service for planned maintenance on October 13
- Spent fuel pool cooling during refueling outage on October 13
- Charging pump 'A' and 'C' trains following pump swap for surveillance testing on November 11
- Reactor building closed loop cooling (RBCCW) pump and heat exchanger configuration during 'A' pump suction header crosstie valve post-maintenance testing on December 15

Unit 3

- 'B' charging pump (protected train during an A train work week) on December 16
- 'B' EDG (protected train during an A train work week) on December 16

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, 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 Full System Walkdown (71111.04S – 1 sample)

a. Inspection Scope

On October 20 and 29, the inspectors performed a complete system walkdown of accessible portions of the Unit 2 shutdown cooling system to verify the existing equipment lineup was correct. The inspectors reviewed operating procedures, drawings, equipment line-up check-off lists, and the UFSAR to verify 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, and that system components and support equipment remained operable. The inspectors confirmed that systems and components were aligned correctly, free from interference from temporary services or isolation boundaries, environmentally qualified, and protected from 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

- Containment, Fire Area C-1 on October 13
- Turbine building, Fire Areas T-3, T-4, T-1A, T-1C, T-7 and T-1F on October 20
- Auxiliary building, 'A' safeguards pump room, Fire Area A-8A on December 29

Unit 3

- East switchgear room, Fire Area CB-2 on December 18
- Turbine building, Elevation 38' 6", Fire Area TB-3 on December 23
- South containment recirculation cooler, Fire Area ESF-1, on December 31

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06 – 2 samples)

.1 Internal Flooding Review

a. Inspection Scope

The inspectors reviewed the UFSAR, the site flooding analysis, and plant procedures to assess susceptibilities involving internal flooding. The inspectors also reviewed the CAP to determine if Dominion identified and corrected flooding problems and whether operator actions for coping with flooding were adequate. The inspectors also focused on the Unit 3 'A' and 'B' containment recirculation system cubicles on December 4 to verify 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.

b. Findings

No findings were identified.

1R08 In-service Inspection Activities (71111.08P – 1 sample)

a. Inspection Scope

From October 13 to 21, inspectors conducted an inspection of Dominion in-service inspection activities during the Millstone Unit 2 refueling outage. Inspection samples were chosen based on the procedure objectives and likelihood that degradation would result in a significant increase in risk. The inspectors reviewed documentation and interviewed Dominion personnel to verify that the nondestructive examination activities, performed as part of the Millstone Unit 2 In-service Inspection program, were conducted in accordance with the requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI.

Nondestructive Examination Activities and Welding Activities (IMC Section 02.01)

The inspectors reviewed Nondestructive Examination Procedure ER-AA-NDE-802-NPQR, Revision 3, "Ultrasonic Examination of Austenitic Piping Welds in accordance with ASME Section XI, Appendix VIII," dated August 26, 2015. The inspectors compared this procedure to the Performance Demonstration generic procedure PDI-UT-2, Revision F which has been demonstrated in accordance with the requirements of mandatory Appendix VIII of the ASME Boiler and Pressure Vessel Code, Section XI.

The inspectors reviewed Dominion Nondestructive Examination Procedure ER-MP-NDE-UT-816-NPQR, "Manual Phased Array Procedure for Weld Overlay Similar and Dissimilar Metal Welds," Revision 1, dated August 24, 2015. This procedure subsumes ASME Boiler and Pressure Vessel Code, Section XI, Appendix VIII, Supplement 11 qualified procedure EPRI-WOL-PA-1, "Procedure for Manual Phased Array of Weld Overlay Similar and Dissimilar Metal Welds." The inspectors verified the essential elements contained in the Dominion procedure matched those in the qualified procedure. The inspectors reviewed Phased Array Ultrasonic Instrument Calibration

Report M2RF23-2015-CAL-006 and Linearity Report M2RF23-2015-LIN-001, comparing the reported parameters against the essential variable requirements in ER-MP-NDE-UT-816-NPQR.

The inspectors reviewed the results of the phased array ultrasonic examination of the full structural weld overlay of welds BPD-C-1001 and 1003 in the hot leg drain line, as reported in Examination Data Sheet M2-UTV-15-001/BDC-C-1001, M2-UTV-15-002/BPD-C-1003, to determine whether the essential variable parameters were used in the examination. The "Safety Evaluation by the Office of Nuclear Reactor Regulation, Alternative Request RR-04-20, Use of Weld Overlays as an Alternate Repair and Mitigation Technique, Millstone Power Station Unit 2", dated April 24, 2015, (Agencywide Documents Access and Management System Accession No. ML14365A024) was reviewed to determine if the overlay was appropriate for the weld examined. The inspectors reviewed the welding documentation including Welding Qualification Specification and Welding Procedure Qualification and compared it against the requirements of the relief request.

The inspectors implemented a similar review and comparison for the full structural weld overlay ultrasonic examination of welds BPD-C-4000 and 4002 in the reactor coolant system cold leg letdown line.

The inspectors reviewed the final overlay weld liquid penetrant examination report of M22-CCA-14, under WO53102659134, signed by the Authorized Nuclear Inspector on October 18, 2015, and verified the dwell time for the developer was in conformance with Dominion procedure ER-AA-NDE-PT-301, Revision 7, which complies with ASME Section V, Article 6. The inspectors reviewed ASME Section V, Article 6 to determine whether the dwell time required by the procedure, and used in the examination, conformed to Article 6 requirements of not less than 10 minutes for the penetrant type used. The inspectors compared the photographic evidence of liquid penetrant indications discovered during the initial examination, and the liquid penetrant examination of the remediated weld.

Indication disposition

The inspectors reviewed the results of the above ultrasonic inspections in order to determine if reported indications were dispositioned properly.

Review of Previous Indications Accepted by Evaluation

No previously identified indications were examined during this refueling outage.

Pressurized Water Reactor Vessel Upper Head Penetration Inspection Activities (IMC Section 02.02)

No pressurized water reactor vessel upper head penetration inspection activities were implemented during this inspection.

Boric Acid Corrosion Control Inspection Activities (IMC Section 02.03)

During initial containment entry, the inspectors observed the boric acid leakage identification process. The inspectors subsequently reviewed the results of the boric

acid program randomly selecting two samples for detailed review. The first was CR1012236, which was closed on October 10, 2015, and recorded the discovery, and subsequent resolution, of a leak in M22-RC-036B, Loop 1A to pressurizer. The second was CR1012909, which recorded the boric acid residue on the clean waste 'B' primary demineralizer inlet header isolation valve.

Steam Generator Tube Inspection Activities (IMC Section 02.04)

In-Situ Pressure Testing

The inspectors determined no in-situ pressure testing was performed during the refueling outage.

Degradation Assessment, Eddy Current Examination Scope, Newly Identified Degradation, Inspection Resource Assessment, Tube Repairs

The inspectors reviewed the steam generator tube eddy current examination scope and expansion criteria contained in S000151.01-WKP-000001, Revision 001, "Millstone 2R23 – RSG ECT Inspection Plan", dated September 30, 2015, prior to the outage to determine if these meet TS requirements. The inspection plan was evaluated against ETE-MP-2011-072, Revision 0, "Millstone Unit 2 Steam Generator Integrity Condition Monitoring and Operational Assessment Refueling Outage (2R20)," to determine if the eddy current scope included areas of potential degradation, based on site-specific experience and industry experience. The inspectors evaluated the plan to determine if areas which are known to represent potential eddy current challenges were considered.

Because Dominion staff did not identify new degradation mechanisms there were no changes to the inspection plan. No tubes were repaired during this outage. There was no steam generator leakage prior to the outage. No loose parts were identified during this outage.

Identification and Resolution of Problems (IMC Section 02.05)

The inspectors verified that selected in-service inspection related problems and non-conforming conditions were properly identified, characterized, and evaluated for disposition within the CAP.

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 November 19 for just-in-time training prior to Cycle 24 isothermal temperature coefficient and moderator temperature coefficient testing. 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 on October 15 for just-in-time training prior to turbine valve testing including unit down power and planned condensate and feed pump swaps. The inspectors evaluated operator performance during the simulated evolution 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 classification made by the shift manager and the TS action statements entered by the shift technical advisor. 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 startup and low power physics testing at the conclusion of refueling outage 2R23 on November 6. 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 9. 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.

Unit 3

The inspectors observed and reviewed a main feed water pump swap on Unit 3 conducted on November 11. The inspectors observed pre-shift briefings and 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 – 6 samples)

a. Inspection Scope

The inspectors reviewed the samples listed below to assess the effectiveness of maintenance activities on structure, system, and component (SSC) 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 SSC 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 SSCs classified as (a)(1), the inspectors assessed the adequacy of goals and corrective actions to return these SSCs 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

- Service water system on December 14
- Fire and high energy line break doors on December 14
- Control element drive system on December 29

Unit 3

- ‘A’ and ‘B’ EDGs on November 19
- Fire and high energy line break doors on December 16
- Reactor protection system on December 30

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 7 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

- 2R23 overall outage risk planning on October 1
- Risk assessment for orange shut down risk in decreased inventory in Unit 2 on October 28
- Elevated risk during 'B' high pressure safety injection pump surveillance testing on Facility 1 concurrent with offsite line outage on November 24
- Elevated risk during 'A' and 'B' RBCCW pump in-service testing and 'A' pump suction header cross-tie post maintenance testing on December 15
- High risk plan associated with volume control tank high level divert valve troubleshooting on December 22

Unit 3

- Elevated risk during 'C' feedwater regulating valves online packing adjustment on December 11
- Risk assessment of EDG availability with planned service water outage on December 15

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15 – 3 samples)

a. Inspection Scope

The inspectors reviewed operability determinations for the following degraded or non-conforming conditions:

- Unit 3 'A' EDG kilowatt and amperage oscillations on Oct 27
- Unit 3 EDG ventilation dampers on December 7 (operator workaround (OWA) sample)
- Unit 2 'C' charging pump operability following failure of 'C' charging pump flushing pump on December 13

The inspectors selected these issues based on the risk significance of the associated components and systems. 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, such as in the case of OWAs, the inspectors determined whether the measures in place would function as intended and were properly controlled by Dominion. Based on the review of the selected OWAs listed above, the inspectors verified that Dominion identified OWAs at an appropriate threshold and addressed them in a manner that effectively managed OWA-related adverse effects on operators and SSCs.

b. Findings

Introduction. The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," associated with Dominion's failure to include in the Unit 2 charging pump operating procedure appropriate acceptance criteria for determining operability of the Unit 2 charging pumps upon the loss of the associated charging flushing/lubrication pump. Specifically, Dominion implemented a procedure change which stated that the condition of the charging flushing/lubrication pumps does not affect charging pump operability or mission time without supporting technical information and contrary to guidance provided in the charging pump vendor technical manual, impacting an operability determination on December 13, 2015.

Description. On December 13, the Unit 2 'C' charging flushing pump, P97C, also known as the packing lubrication pump, failed. Operators performed an immediate assessment of operability of the 'C' charging pump, P18C, using information provided in the discussion section of Operating Procedure OP 2304E, "Charging Pumps," Revision 019, which states in part, "Although operating charging pumps without seal lubrication could eventually result in a reduction of pump packing life, it will not affect the pump performance during an accident. Availability of this non-safety related system [packing lubrication] does not affect charging pump OPERABILITY/FUNCTIONALITY or mission time." The most limiting mission time of the safety-related Unit 2 charging pumps is 72 hours associated with the 10 CFR 50, Appendix R design basis event. The OP 2304E

statement is based on information from an entry in the Material, Equipment, and Parts List. Operators documented their immediate operability determination in CR1021284.

Per the Unit 2 charging pump vendor manual, 25203-309-001, "Installation, Operation and Maintenance of Gaulin Reciprocating Charging Pumps," Revision 12, the purpose of the packing lubrication system is to lubricate the primary packing in the plunger assemblies. The inspectors identified that the charging pump vendor manual provides the following note: "Loss of packing lubrication is detrimental to packing life; however, depending upon total running time already on the packing, continuous operation for approximately 15 hours without packing lubrication is possible without serious loss of pump capacity." The inspectors questioned the apparent discrepancy between the vendor manual and OP 2304E. Dominion captured these concerns in CR1021512.

On December 15, the 'C' Charging pump was isolated and declared inoperable to support flushing pump maintenance. At the conclusion of the inspection period, Dominion had not yet completed the flushing pump maintenance and continued to consider the 'C' charging pump to be inoperable. In parallel with completing repairs to the flushing pump, Dominion is developing the technical basis to allow charging pump operation without the lubrication provided by the flushing pump through the engineering technical evaluation process. Pending completion of analysis, Unit 2 can maintain one of three charging pumps inoperable indefinitely in accordance with TS 3.1.2.4 and has implemented appropriate compensatory actions in accordance with Technical Requirements Manual 7.1.1 to mitigate the Appendix R design basis event.

Analysis. The inspectors determined that failure to include in the Unit 2 charging pump operating procedure appropriate acceptance criteria for determining operability of the Unit 2 charging pumps upon the loss of the associated charging flushing/lubrication pump was a performance deficiency that was reasonably within the licensee's ability to foresee and correct. Specifically, Dominion implemented OP 2304E, Revision 019, which directed operators that the condition of the charging packing lubrication pumps does not affect charging pump operability or mission time without supporting design information and contrary to guidance provided in the charging pump vendor technical manual, impacting an operability determination performed on December 13, 2015. This finding was more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Screening," dated September 7, 2012, as it represented a challenge to the equipment performance attribute of the Mitigating Systems cornerstone objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Without supporting design information to refute the guidance provided in the charging pump vendor manual, the reliability of the Unit 2 charging pumps to respond to design basis events would be challenged without a functional flushing/lubrication pump. Additionally, more than minor examples 3.j and 3.k of IMC 0612, Appendix E, "Examples of Minor Issues," dated August 11, 2009, apply, in that, in the absence of supporting technical information to address contrary guidance in the charging pump vendor manual, there was reasonable doubt of the operability of the 'C' charging pump lacking a functional charging flushing/lubrication pump.

This finding was evaluated in accordance with IMC 0609, "Significance Determination Process," Attachment 4, "Initial Characterization of Findings," and IMC 0609, Appendix A, Exhibit 2, "Mitigating Systems Screening Questions", Section A, "Mitigating Systems, Structures or Components and Functionality," and screened to Green since it was not a

qualification or design deficiency, did not represent a loss of system or function, and did not exceed its TS allowed outage time.

In accordance with IMC 0310, "Aspects within the Cross-Cutting Areas," dated December 4, 2014, this finding has a cross-cutting aspect in Human Performance, Documentation, in that the organization failed to create and maintain complete, accurate, and up-to-date documentation. Specifically, Dominion lacked technical documentation to support the operability assertion in OP 2304E to address contrary guidance provided in the charging pump vendor manual associated with packing lubrication and pump capacity. [H.7]

Enforcement. 10 CFR 50, Appendix B, Criterion V states, in part, "Instructions, procedures, or drawings shall include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished." Contrary to the above, from October 20, 2015, to present, Dominion failed to include in the Unit 2 charging pump operating procedure appropriate technically supported acceptance criteria for determining operability of the Unit 2 charging pumps upon the loss of the associated charging flushing/lubrication pump, impacting an operability evaluation performed on December 13, 2015. Because this issue is of very low safety significance (Green) and Dominion has entered this issue into their CAP as CR1021512, this finding is being treated as an NCV consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000336/2015004-01, Charging Packing Lubrication Pump Inadequate Operating Procedure Acceptance Criteria)**

1R18 Plant Modifications (71111.18 – 3 samples)

.1 Temporary Modifications

a. Inspection Scope

The inspectors reviewed the temporary modifications listed below to determine whether the modifications 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 modifications to verify that the temporary modifications did not degrade the design bases, licensing bases, and performance capability of the affected systems.

- TCC-MP-2015-017, 'C' wide range source range nuclear instrument single fission chamber operation for refueling on October 19
- Unit 2 MP2-15-01133, shutdown cooling suction piping relief valve 2-SI-468 on October 30
- Interim configuration of Unit 2 charging system in response to the NRC Confirmatory Order related to report 05000336/2015201 on December 2

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19 – 8 samples)a. Inspection Scope

The inspectors reviewed the post-maintenance tests for the maintenance activities listed below to verify that procedures and test activities ensured system operability and functional capability. The inspectors reviewed the test procedure to verify that the procedure 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

- 'C' wide range nuclear instrument following repairs to connections on October 19
- Facility 1 loss of normal power testing following 'A' EDG overhaul on October 23
- Control room air conditioning following exhaust fan maintenance on October 26
- TDAFW pump following overhaul on October 28
- Power operated relief valves 2-RC-402, -404 following parts upgrade on November 3
- 'C' RCP seal following excess flow check valve replacement on November 5
- 'B' shutdown cooling heat exchanger RBCCW outlet stop valve overhaul on December 7

Unit 3

- 'A' EDG after governor replacement on November 5

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 (2R23), which was conducted October 3 through November 7. 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 TSs 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 TSs 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 TSs
- Refueling activities, including fuel handling and fuel receipt inspections
- Fatigue management
- Tracking of startup prerequisites, walkdown of the drywell (primary containment) to verify that debris had not been left which could block the emergency core cooling system 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 – 1 sample)

a. Inspection Scope

The inspectors observed performance of surveillance tests and/or reviewed test data of selected risk-significant SSCs 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:

- 2-SI-651, Unit 2 containment leak test type C on October 15 (containment isolation valve test)

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04 – 1 sample)

a. Inspection Scope

Dominion implemented various changes to the Millstone Emergency Action Levels (EALs), Emergency Plan, and Implementing Procedures. Dominion had determined that, in accordance with 10 CFR 50.54(q)(3), any change made to the EALs, Emergency Plan, and its lower-tier implementing procedures, had not resulted in any reduction in effectiveness of the Plan, and that the revised Plan continued to meet the standards in 50.47(b) and the requirements of 10 CFR 50, Appendix E.

The inspectors performed an in-office review of all EAL and Emergency Plan changes submitted by Dominion as required by 10 CFR 50.54(q)(5), including the changes to lower-tier emergency plan implementing procedures, to evaluate for any potential reductions in effectiveness of the Emergency Plan. This review by the inspectors was not documented in an NRC Safety Evaluation Report and does not constitute formal NRC approval of the changes. Therefore, these changes remain subject to future NRC inspection in their entirety. The requirements in 10 CFR 50.54(q) were used as reference criteria.

b. Findings

No findings were identified.

1EP6 Drill Evaluation (71114.06 – 1 sample)

.1 Emergency Preparedness Drill Observation

a. Inspection Scope

The inspectors evaluated the conduct of a routine Dominion emergency drill on November 18 to identify any weaknesses and deficiencies in the classification and notification recommendation development activities. This training drill involved Unit 2 operators classifying events on both Unit 1 and Unit 2 related to fuel handling activities. The inspectors observed emergency response operations to determine whether the event classification and notifications 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 CAP.

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstone: Occupational and Public Radiation Safety

2RS1 Radiological Hazard Assessment and Exposure Controls (71124.01 - 1 sample)

a. Inspection Scope

During October 4-9, 2015, the inspectors reviewed Dominion's performance in assessing and controlling radiological hazards in the workplace. The inspectors used the requirements contained in 10 CFR 20, TSs, applicable Regulatory Guides (RGs), and the procedures required by TSs as criteria for determining compliance.

Inspection Planning

The inspectors reviewed the performance indicators (PIs) 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

The inspectors reviewed recent plant radiation surveys and any changes to plant operations since the last inspection to identify any new radiological hazards for onsite workers or members of the public.

Instructions to Workers

The inspectors observed several 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 (EPD) alarmed. The inspectors reviewed Dominion's evaluation of the incidents, documentation in the CAP, and whether compensatory dose evaluations were conducted when appropriate.

Contamination and Radioactive Material Control

The inspectors observed the monitoring of potentially contaminated material leaving the radiological control 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.

Radiological Hazards Control and Work Coverage

The inspectors evaluated in-plant radiological conditions and performed independent radiation measurements during facility walk-downs and observation of radiological work activities. The inspectors assessed whether posted surveys, radiation work permits, worker radiological briefings, the use of continuous air monitoring, and dosimetry

monitoring were consistent with the present conditions. The inspectors examined the control of highly activated or contaminated materials stored within the spent fuel pools and the posting and physical controls for selected high radiation areas (HRAs), locked high radiation areas (LHRAs) and very high radiation areas (VHRAs) to verify conformance with the occupational PI.

Risk-Significant HRA and VHRA Controls

The inspectors reviewed the controls and procedures for HRAs, VHRAs, and radiological transient areas in the plant.

Problem Identification and Resolution

The inspectors evaluated whether problems associated with radiation monitoring and exposure control were identified at an appropriate threshold and properly addressed in the CAP.

b. Findings

No findings were identified.

2RS4 Occupational Dose Assessment (71124.04 – 1 sample)

a. Inspection Scope

The inspectors reviewed the monitoring, assessment, and reporting of occupational dose. The inspectors used the requirements in 10 CFR 20, RGs, TSs, and procedures required by TSs as criteria for determining compliance.

Inspection Planning

The inspectors reviewed: radiation protection program audits; National Voluntary Laboratory Accreditation Program (NVLAP) dosimetry testing reports; and procedures associated with dosimetry operations.

External Dosimetry

The inspectors reviewed: dosimetry NVLAP accreditation; onsite storage of dosimeters; the use of “correction factors” to align EPD results with NVLAP dosimetry results; dosimetry occurrence reports; and CAP documents for adverse trends related to external dosimetry.

Internal Dosimetry

The inspectors reviewed: internal dosimetry procedures; whole body counter measurement sensitivity and use; adequacy of the program for whole body count monitoring of plant radionuclides; adequacy of the program for dose assessments based on air sample monitoring and the use of respiratory protection; and internal dose assessments for any recorded internal exposures.

Special Dosimetric Situations

The inspectors reviewed: Dominion's worker notification of the risks of radiation exposure to the embryo/fetus; the dosimetry monitoring program for declared pregnant workers; external dose monitoring of workers in large dose rate gradient environments; and dose assessments performed since the last inspection that used multi-badging, skin dose or neutron dose assessments.

Problem Identification and Resolution

The inspectors evaluated whether problems associated with occupational dose assessment were identified at an appropriate threshold and properly addressed in the CAP.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

.1 Safety System Functional Failures (2 samples)

a. Inspection Scope

The inspectors sampled Dominion's submittals for the Safety System Functional Failures PI for both Unit 2 and Unit 3 for the period of October 1, 2014, through September 30, 2015. To determine the accuracy of the PI 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, and NUREG-1022, "Event Reporting Guidelines 10 CFR 50.72 and 10 CFR 50.73." The inspectors reviewed Dominion's operator narrative logs, operability assessments, maintenance rule records, maintenance work orders, CRs, event reports and NRC integrated inspection reports to validate the accuracy of the submittals.

b. Findings

No findings were identified.

.2 Occupational Exposure Control Effectiveness (1 sample)

a. Inspection Scope

The inspectors reviewed Dominion's submittals for the occupational radiological occurrences PI for the 4th quarter 2014 through the 3rd quarter 2015. The inspectors used PI definitions and guidance contained in the Nuclear Energy Institute Document 99-02, Revision 7, to determine the accuracy of the PI data reported. The inspectors reviewed EPD accumulated dose alarms, dose reports, and dose assignments for any intakes that occurred during the time period reviewed to determine if there were

potentially unrecognized PI occurrences. The inspectors conducted walk-downs of various LHRA and VHRA entrances to determine the adequacy of the controls in place for these areas.

b. Findings

No findings were identified.

.3 Radiological Effluent TS/Offsite Dose Calculation Manual (ODCM) Radiological Effluent Occurrences (1 sample)

a. Inspection Scope

The inspectors reviewed Dominion's submittals for the radiological effluent TS/ODCM radiological effluent occurrences PI for the 4th quarter 2014 through the 3rd quarter 2015. The inspectors used PI definitions and guidance contained in the Nuclear Energy Institute Document 99-02, Revision 7, to determine if the PI data was reported properly. The inspectors reviewed the public dose assessments for the PI for public radiation safety to determine if related data was accurately calculated and reported.

The inspectors reviewed the CAP database to identify any potential occurrences such as unmonitored, uncontrolled, or improperly calculated effluent releases that may have impacted offsite dose. The inspectors reviewed gaseous and liquid effluent summary data and the results of associated offsite dose calculations to determine if PI results were accurately reported.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152 – 1 semi-annual trend review, 3 annual 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 that 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, PIs, major equipment problem lists, system health reports, maintenance rule assessments, and maintenance or CAP backlogs. The inspectors also reviewed Dominion's CAP database for the third and fourth quarters of 2015 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).

b. Findings and Observations

No findings were identified.

In 2015, Dominion changed their CR tracking software and incorporated the "condition not adverse to quality" (NCAQ) code to track issues that did not meet the threshold as conditions adverse to quality (CAQ). The inspectors reviewed the NCAQ CRs generated since June 1, 2015, to verify that Dominion properly classified the CRs in accordance with PI-AA-200, "Corrective Action Program," Revision 29. Since June 1, Dominion generated approximately 6000 CRs, with approximately 1200 classified as NCAQ. In general, the inspectors noted that Dominion met the criteria set in PI-AA-200 and appropriately characterized the CRs as NCAQ because they represented minor issues, enhancements, improvements, or tracking items. However, the inspectors did identify one instance where they disagreed on the NCAQ classification, for a feedwater system piping transient (CR1020458). The inspectors discussed these issues with the CAP manager, who documented the inspectors' concerns in CR1024206.

The inspectors did not find any more than minor performance deficiencies during their review. Despite the misclassification as NCAQ instead of CAQ for CR1020458, this CR had sufficient corrective action assignments to ensure that the CAQ would be corrected as required by PI-AA-200.

.3 Annual Sample: Review of Licensee Actions to Recover Reliability in the Main Station Stack Radiation Monitor (RM-8169)

a. Inspection Scope

The inspectors performed an in-depth review of Dominion's response to several problems with the reliable operation of the Main Station Stack Radiation Monitor (RM-8169). These problems are documented in multiple Dominion CRs, which include apparent cause evaluation (ACE) reports (019873 and 3003301).

The inspectors assessed Dominion's documentation of RM-8169 monitor issues to determine whether Dominion was appropriately identifying, characterizing, and correcting problems associated with this issue. The inspectors determined whether the planned or completed corrective actions were appropriate, and compared the actions

taken to the requirements of Dominion's CAP and 10 CFR 50, Appendix B. The inspectors' CAP review included: evaluation of the reportability of the issues; extent of condition reviews; prioritization and timeliness of Dominion's corrective actions; cause analysis; and the compensatory actions taken.

To accomplish the inspection objectives, the inspectors reviewed all Millstone CRs related to effluent radiation monitors for a two-year period, and conducted follow-up reviews on a sample of these CRs.

The inspectors interviewed the system engineer for the radiation monitoring system (RMS), reviewed the system health reports for Unit 2 and Unit 3, and reviewed the current listing of "Radiation Monitor Work Control Schedule Priorities".

The inspectors interviewed the instrumentation and controls (I&C) RMS supervisor regarding current initiatives to improve the overall reliability of the RMS, and discussed his interface with the system engineer in these improvement efforts.

The inspectors walked down the RM-8169 radiation monitor, the sample-line heat tracing system, the room ventilation dampers, the room heating system, and the general condition of the facility which houses the monitor. The inspectors walked down other selected effluent radiation monitors on Unit 2 and Unit 3, and the RMS test and repair facilities.

The inspectors reviewed ACE report 019873, "RM-8169 Main Station Stack Radiation Monitor Sample Pump Unexpectedly Shut Off" (CR573548) and ACE report 303301, "RM-8169 Determined to be Non-Functional" (CR1004028), along with associated paperwork and work orders.

b. Findings and Observations

No findings were identified.

The inspectors determined that, although a relatively high number of CRs were written for effluent monitor issues, the reporting threshold was low, with many issues exhibiting minimal significance. The number of CRs was not unreasonable when the age of the units is combined with the diversity of monitors used (on two nuclear power systems with different manufacturers).

The inspectors ascertained that the system health reports presented reasonable evaluations, that work was being appropriately prioritized, and that the system engineer was actively engaged in RMS reliability improvements.

The inspectors discussed I&C support, RMS repair plans, and level of senior station manager's involvement in the reliability improvement initiatives with station personnel, with no concerns noted.

The inspectors determined that the repairs to the RM-8169 monitor, its supporting systems, and its housing facility were completed, and were reasonably adequate to correct the current monitor deficiencies.

The inspectors found that Dominion has developed an adequate plan to improve the reliability of effluent radiation monitors. The inspectors also found that Dominion has developed significant and unique electronic testing and repair capabilities at Millstone.

The inspectors ascertained that the ACEs related to the RM-8169 monitor identified reasonable causes and specified appropriate corrective actions. A sampling of work orders were examined and work was verified to be completed.

The inspectors determined that Dominion's overall response to RM-8169 issues (and effluent monitor reliability concerns in general) was commensurate with the safety significance, was timely, and included appropriate corrective actions. The inspectors determined that the actions taken were reasonable to resolve the issues.

.4 Annual Sample: Apparent Cause Evaluations 019954 and 019955 for Unit 3 Service Water Piping Erosion

a. Inspection Scope

The inspectors performed an in-depth review of Dominion's response to the emergent replacement of service water piping at Unit 3 in June 2015. In December 2014, Dominion identified wall thinning at the outlet of the 'B' safety injection pump cooling (CCI) heat exchanger. According to engineering calculations, Dominion would have to replace this section of piping no later than March 15, 2015, based on predicted wear rates that would result in wall thickness below the minimum allowed by the ASME Code. Dominion tracked this piping replacement under priority 3 work order 53102802201, which was scheduled to be worked on June 24. As a result of the discrepancy between the scheduled work date and the predicted date that the piping would reach minimum wall thickness, Dominion engineering requested additional ultrasonic testing examination of the service water piping to monitor wear rates and verify continued operability until the scheduled June 24 work date. On June 16, this additional ultrasonic testing revealed that the section of piping would be below the minimum required wall thickness by June 20. In response to this new information, Dominion moved the piping replacement from planned work on June 24 to emergent work on June 17 in order to maintain system operability.

In response to the emergent work necessary to maintain system operability, Dominion performed two ACEs (019954 and 019955) to review potential shortfalls in engineering and work management processes and procedures. The inspectors reviewed the ACEs 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 CAP and 10 CFR 50, Appendix B.

b. Findings and Observations

No findings were identified.

Dominion determined the apparent cause for the work management department issues to be over conservative classification of work order priorities that created too many priority 3 work orders, such that it was impossible to meet the standards set forth in WM-

AA-100, "Work Management." In accordance with WM-AA-100, priority 3 work orders such as the CCI piping replacement should be scheduled and started within the current 13 week work schedule. This did not occur, and work order 53102802201 was scheduled for June 24, 2015, nearly six months after the issue was first identified.

For the engineering department issues, Dominion determined the apparent cause to be the failure to raise concerns of a declining trend prior to entry into emergent work, with a contributing cause of improper design basis mission time validation. The inspectors reviewed the causes and corrective actions and determined Dominion's overall response to the issue was timely and commensurate with the safety significance.

Although the inspectors determined the corrective actions were appropriately targeted to the specific failure of the service water piping, the inspectors determined that there could be broader applicability for other systems. Specifically, OP-AA-102, 'Operability Determinations,' states "If not fully qualified, identify the technical specification system, structure, or component (TS SSC) as degraded/non-conforming and track accordingly in the CAP." PI-AA-200, "Corrective Action," allows closure of significance level 3 CRs to work management process, CAP, or to an auditable, trackable process/program. For this event, Dominion did not appropriately consider the OP-AA-102 requirements for the degraded service water piping and closed the actions to a work order. Dominion assigned apparent cause corrective action number ACCA-2 for engineering ACE (019954) to revise the service water procedure (EN 31084, Operating Strategy for Service Water System) to close the gap for this event. The inspectors noted that other TS SSCs could experience similar degradation and without clarification in the PI-AA-200 procedure, Dominion may be susceptible to future problems tracking deficiencies in the CAP. The inspectors determined that this was not a more than minor performance deficiency, as the planned corrective actions are sufficient to correct the initial condition adverse to quality. Dominion entered this issue into the CAP as CR1024448

.5 Annual Sample: Unit 3 Emergency Diesel Generator Inoperable due to Output Oscillations at Full Load

a. Inspection Scope

The inspectors performed an in-depth review of Dominion's corrective actions associated with CRs, evaluations, and corrective actions generated from May 2011 through October 2015 to identify and mitigate oscillations in the Unit 3 'A' EDG output while fully loaded.

The inspectors assessed Dominion's problem identification threshold, causal analyses, extent of condition reviews, compensatory actions, 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 CAP and 10 CFR 50, Appendix B and assessed the effectiveness of the implemented corrective actions.

b. Findings and Observations

No findings were identified.

Inspectors identified that 'A' EDG output oscillations occurring between 2011 and 2015 fell into two distinct ranges; May 2011 through July 2012 and September 2015 through October 2015. Inspectors observed that Dominion did not perform apparent or root cause analyses of the oscillations during 2011 and 2012. Instead, in accordance with their CAP, Dominion's immediate corrective actions identified that some of the oscillation events were caused by observed offsite grid instability, while the remaining oscillation events were closed to corrective actions in an operability determination to implement replacement of the electrical governor (EGA) during the 2013 refueling outage. In 2013, prior to EGA replacement, Dominion performed an engineering technical evaluation of the 'A' EDG operating characteristics during surveillance tests from February 2012 through December 2012 with input from an external control system expert. This evaluation concluded the oscillation conditions observed were the result of minor rack binding vice the EGA, hence, replacement of the EGA was not required. The Facility Safety Review Committee, the body of site senior management charged with review of regulatory affairs, used this engineering technical evaluation as the basis for closing the associated operability determination and canceling actions to replace the EGA. Inspectors found that while the lack of documented causal analyses (root or apparent) was non-conservative based upon the safety significance of a train of emergency AC power, the actions performed under the operability determination and engineering technical evaluation received equivalent assessment and management approval. Further, inspectors found these actions to be reasonable as 'A' EDG output oscillations did not recur until September 29, 2015.

The inspectors reviewed Dominion's immediate response to 'A' EDG output oscillations on September 29, 2015. Dominion's evaluation identified five potential causes of output oscillations and refuted four using the performance monitoring information gathered during the diesel run. The perceived cause of the event was the execution of fuel rack exercising and greasing preventive maintenance activity preceding the surveillance test. To correct the condition, Dominion verified freedom of rack motion prior to confirming proper EDG operation during a subsequent three hour run on September 30. Inspectors found Dominion's troubleshooting and restoration actions to be reasonable and appropriate. Inspectors noted that Dominion did not perform a standalone causal evaluation for the September 29 event, but chose instead to document the condition and actions taken in the causal evaluation for the October 27, 2015, event in accordance with the Dominion CAP.

The inspectors reviewed Dominion's ACE for 'A' EDG output oscillations at full load on October 27, 2015. Dominion determined that the apparent cause for this event was an inadequate preventive maintenance strategy leading to degradation of the mechanical governor (EGB). The 'A' diesel's EGB was last replaced in 2008. The Woodward Governor Company (EGB OEM) recommends replacement on a seven to ten year frequency. The Dominion preventive maintenance replacement frequency was ten years at the time of the event. During the investigation into the cause of the oscillations, Dominion contacted an external control system expert who identified that four to five years is the appropriate replacement frequency for an EGB. The inspectors noted that this replacement frequency is more conservative than other existing industry guidance and concluded that it was not within Dominion's ability to foresee and prevent EDG

oscillations due to inadequate preventive maintenance based on this information. Dominion's extent of condition and extent of cause actions assessed the EGB preventive maintenance strategy impact upon the Unit 3 B train EDG as well as Unit 2's EDGs and the station blackout diesel. Dominion generated additional actions to evaluate the broader preventive maintenance scope beyond the EGBs for Unit 3, Unit 2, and the station blackout diesels. The inspectors found Dominion's analysis and corrective actions associated with the inadequacies identified in the EDG preventive maintenance program and subsequent failure of the 'A' EDG EGB to be reasonable and appropriate.

4OA3 Follow-Up of Events and Notices of Enforcement Discretion (71153 – 3 samples)

.1 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 (NOUE) for reactor coolant system leakage from 2-SI-468 shutdown cooling relief valve on October 4
- Unit 3 Alert for fire in the 'A' EDG enclosure on November 4

b. Findings

No NRC or self-revealing findings were identified for these issues in this inspection report. As a result of the Unit 2 NOUE, the NRC initiated a Special Inspection to evaluate Dominion's performance. The enforcement aspects of that issue are documented in Inspection Report 05000336/2015012 (Agencywide Documents Access and Management System Accession No. ML16005A343). The inspectors documented one licensee-identified finding for the Unit 3 Alert in Section 4OA7.

.2 (Closed) Licensee Event Report (LER) 05000336/2014-007-00: Completion of Plant Shutdown Required by Technical Specifications

a. Inspection Scope

On July 26, 2014, Dominion performed a TS required shutdown for an inoperable Unit 2 TDAFW pump. The TDAFW pump had failed a quarterly surveillance test when it was unable to supply the minimum required flowrate and Dominion was unable to identify the cause of the test failure and restore the pump to operability prior to the expiration of the TS allowed outage time. Dominion continued to troubleshoot the pump failure and recovered a small metallic piece of foreign material from inside the recirculation orifice.

Dominion removed the foreign material and successfully retested the TDAFW pump to restore operability. The enforcement aspects of this issue are discussed below. This LER is closed.

b. Findings

Introduction. The inspectors identified a Green NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," for Dominion's failure to take corrective action to prevent repetition for a significant condition adverse to quality according to the definition in PI-AA-200, "Corrective Action." Specifically, PI-AA-200 lists "unplanned entry into a technical specification (TS) action that results in taking a unit off-line" as an example of a significant condition adverse to quality. On July 26, 2014, Dominion performed a TS required shutdown of Unit 2 due to the inoperability of the TDAFW pump. Dominion cancelled the RCE assigned to investigate the cause of the plant shutdown, stating that the direct cause of the shutdown was foreign material in the flow orifice in a recirculation line for the TDAFW pump. No CAPRs were assigned after the direct cause was determined.

Description. The inspectors reviewed CR554812 which documented the TS required shutdown. Dominion classified this CR as significance 1 (a significant condition adverse to quality as defined in PI-AA-200, "Corrective Action") and assigned an RCE (001124). On August 7, Dominion cancelled RCE 001124, stating the cause of the event was known – foreign material found in the orifice resulted in low TDAFW system flow – and recommended actions to site engineering to (1) analyze the debris and determine if further corrective actions are required and (2) perform a self-assessment to determine additional lessons learned and improvement areas. PI-AA-200 does allow for lower significance and/or less detailed evaluation if the cause of the event is understood if the station has considered risk and uncertainty in accordance with Attachment 7 prior to approving downgrading assignments or significance. Attachment 7 guidance would still lead Dominion to perform a RCE based on the risk and uncertainty criteria.

Dominion performed an analysis that determined that the TDAFW would be able to perform its safety function. This blockage occurred in the recirculation line (used for the testing configuration) and would not have affected the ability of the TDAFW to feed the steam generators in an accident. Additionally, Dominion determined the reduced flow was sufficient for pump cooling.

Dominion completed the additional corrective actions requested by the RCE cancellation. For action (1), Dominion determined the most likely cause of the foreign material was 2-FW-7, the TDAFW pump discharge check valve, and generated a work order to inspect the valve in the upcoming refueling outage (2R23). In 2R23, Dominion performed additional inspection and confirmed that 2-FW-7 was not the source of the foreign material. For action (2), Dominion completed the self-assessment by doing a troubleshooting post-job critique. This critique focused on team composition, communications, troubleshooting methodology, resource management, vendor support, room/environment, and interface with the senior management team. No follow on assignments were generated from either action.

The inspectors questioned how the corrective actions taken met the criteria set forth in 10 CFR 50 Appendix B, Criterion XVI, which states that "[i]n the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition

is determined and corrective action taken to preclude repetition.” Dominion captured the inspectors concerns in CR1019514, with evaluation assignments to engineering and organizational effectiveness to determine additional corrective actions needed.

Analysis. The inspectors determined that the failure to take corrective action to preclude repetition of a significant condition adverse to quality was a performance deficiency. This performance deficiency is more than minor because it was associated with the equipment performance attribute of the Mitigating Systems cornerstone and adversely affected its objective to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, taking CAPRs will help to ensure the availability and reliability of the TDAFW pump. This finding screens to Green using IMC 0609, “Significance Determination Process,” Attachment 4, “Initial Characterization of Findings,” and IMC 0609, Appendix A, Exhibit 2, since it was not a qualification or design deficiency, did not represent a loss of system or function, and did not exceed its TS allowed outage time.

The inspectors determined this issue had a cross-cutting aspect in Human Performance, Consistent Process, where individuals use a consistent, systematic approach to make decisions. NUREG-2165, “Safety Culture Common Language,” gives the example under DM.1 of “(1) The organization establishes a well-defined decision making process, with variations allowed for the complexity of the issues being decided.” By inappropriately using the corrective action procedure step that allows management to change the causal evaluation category without proper balancing the risk of the decision, Dominion was unable to develop CAPRs for a significant condition adverse to quality. [H.13]

Enforcement. 10 CFR 50, Appendix B, Criterion XVI, states, in part that “measures shall be established to assure that conditions adverse to quality ... are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition.” Contrary to the above, Dominion did not have any CAPRs of a TS required plant shutdown, an event defined as a significant condition adverse to quality in accordance with PI-AA-200, “Corrective Action.” Because this issue is of very low safety significance (Green) and Dominion has taken corrective action and entered this issue into their CAP as CR 1019514, this finding is being treated as an NCV consistent with Section 2.3.2 of the NRC Enforcement Policy. **(NCV 05000336/2015004-02, Turbine Driven Auxiliary Feedwater Pump Corrective Actions to Prevent Recurrence)**

4OA6 Meetings, Including Exit

On January 19, 2016, 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.

4OA7 Licensee-Identified Violations

The following violation of very low safety significance (Green) was identified by Dominion during their post-event review of the November 4 Unit 3 Alert declaration and is a violation of NRC requirements which meets the criteria of the NRC Enforcement Policy for being dispositioned as an NCV.

- 10 CFR Part 50.54(q), states that power reactor licensees shall follow and maintain in effect emergency plans which meet the standards in 10 CFR Part 50.47(b) and Appendix E to Part 50. 10 CFR Part 50.47(b)(4) requires, in part, that the nuclear facility licensee have a standard emergency classification and action level scheme in use, and state and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial off-site response measures.

Appendix E, Section IV.C.2 states in part that, "nuclear power reactor licensees shall establish and maintain the capability to assess, classify, and declare an emergency condition within 15 minutes after the availability of indications to plant operators that an emergency action level has been exceeded and shall promptly declare the emergency condition as soon as possible following identification of the appropriate emergency classification level." Contrary to the above, on November 4, Unit 3 control room operators received a fire alarm in the 'A' EDG enclosure at 10:56 AM, but did not declare an Unusual Event for a fire in a safe shutdown area until 11:25 AM. The control room received a report from the EDG enclosure at approximately 10:55 AM that there were visible flames on the exhaust line of the 'A' EDG and they entered Emergency Operating Procedure 3509, "Fire Emergency," but the declaration was not made within the required 15 minutes. The control room operators received additional information that there was charring and scorching on the 'A' EDG at 11:33 AM and appropriately upgraded the emergency declaration to an Alert (fire affecting a safe shutdown area and damage to the equipment indicated). The upgraded Alert declaration was made at 11:35 AM, within the required 15 minutes. The inspectors determined that the finding is of very low safety significance (Green) because it was related to the timeliness of an NOUE, in accordance with IMC 0609, Appendix B, "Emergency Preparedness Significance Determination Process," Attachment 1, "Failure to Implement (Actual Event) Significance Logic." Dominion entered the issue into the CAP as CR 1017078.

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
 R. Borchart, Senior Reactor Engineer
 B. Bowen, Shift Supervisor, Health Physics
 J. Burkirk, Outage Control Center Health Physics Representative
 G. Cochran, Supervisor, Nuclear Site Safety
 S. Doboie, Unit 2 Shift Manager
 D. DelCore, Shift Supervisor, Health Physics
 D. Dodson, Manager of Programs
 M. Dunivan, Supervisor, Health Physics Auxiliary Building
 K. Gannon, Supervisor, Health Physics
 W. Gorman, RMS Supervisor
 B. Graber, Supervisor Exposure Control and Instrumentation
 M. Hall, Dominion Corporate Welding Engineer
 K. Hacker, Dominion Corporate Level III K. Miles, Shift Supervisor, Health Physics
 L. Lebaron, System Engineer
 L. Seplak, Regulatory Assurance
 D. Smith, Site Emergency Preparedness Manager
 T. Spakowski, Senior Nuclear Training Instructor
 J. Taylor, Supervisor, Health Physics Outage Containment
 T. Thull, Boric Acid Program Manager
 S. Turowski, Manager, Radiation Protection and Chemistry
 M. Wynn, Supervisor, Radiological Analysis

LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATEDOpened/Closed

05000336/2015004-01	NCV	Charging Packing Lubrication Pump Inadequate Operating Procedure Acceptance Criteria (Section 1R15)
05000336/2015004-02	NCV	Turbine Driven Auxiliary Feedwater Pump Corrective Actions to Prevent Recurrence (Section 4OA3)

Closed

05000336/2014-007-00	LER	Completion of Plant Shutdown Required by Technical Specifications (Section 4OA3)
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LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures

OP 2268, Cold Weather Operation, Revision 005-04
 C OP 200.13, Seasonal Weather Operations, Revision 004-04
 C OP 200.13-002, Unit 2 Cold Weather Preparation Checklist, Revision 002-02
 AOP 3569, Severe Weather Conditions (MPS3), Revision 019
 C OP 200.13-003, Unit 3 Cold Weather Preparation Checklist, Revision 001-01

Condition Reports

477589	511010	531160	533611
538031	544943	560438	566110
566145	568314	572434	1005628
1009451	1010151	1010151	1021918

Work Orders

53102529619	53102617591	53102677985	53102683962
53102698940	53102723669	53102774213	53102797160
53102797732	53102803865	53102821420	53102866350
53102875932	53102878923	53102911239	53102911377
53102913108			

Section 1R04: Equipment Alignment

Procedures

OP 2305, Spent Fuel Pool Cooling and Purification System, Revision 026
 OP 2305-001, Spent Fuel Pool Cooling, Revision 012-03
 OP 2310B, SDC/SFPC Core Off-Loaded, Revision 001-01
 OP 2310, Shutdown Cooling System Operation, Revision 004-01
 OP 2344A, 480 Volt Load Centers, Revision 024
 EP-AA-303, Equipment Important to Emergency Response, Revision 10
 OP 2383A, Process Radiation Monitoring Systems, Revision 23
 AOP 2502C, Loss of Vital 4.16 kV Bus 24C, Revision 004-11
 AOP 2503E, Loss of Vital 480 VAC Bus 22E, Revision 003-17
 OP2304E, Charging Pumps, Revision 19
 SP 2611A, "A" RBCCW Pump IST, Revision 002-01
 SP 2611G, "B" RBCCW Pump IST, Revision 001-01
 OP 2330A, RBCCW System, Revision 025-00

Drawings

25203-30011, Sheet 34G, Emergency MCC (22-1E) B51 Facility Z1 Load Summary Aux Building 14'6"
 25203-30011, Sheet 37F, Emergency MCC (22-2E) B52 Facility Z1 Load Summary Aux Building 36'6"
 25203-30011, Sheet 37E, Emergency MCC (22-2E) B52 Facility Z1 Load Summary Aux Building 36'6"
 25203-30001, Millstone Unit 2 Main Single Line Diagram
 25112-26904, Sheet 1, Millstone Unit 3 Piping and Instrumentation Diagram Chemical and Volume Control

25212-26916, Millstone Unit 3 Piping and Instrumentation Diagram EDG B Lube Oil and Cooling water
 25212-26916, Millstone Unit 3 Piping and Instrumentation Diagram EDG B Starting Air System
 25212-26917, Millstone Unit 3 Piping and Instrumentation Diagram EDG Fuel Oil System
 25203-26017, Sheet 1, P&ID Charging System, Revision 63
 25203-26022, Sheet 1, P&ID RBCCW System, Revision 45

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305135	499554	559727	559728
573934	574605	577499	582420
582911	1009983	3006116	

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53102584520	53102829075	53102853603	53102854990
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Miscellaneous

PM-1701, Millstone 2R23 – Time to Mode 4 Following Refueling, Revision 0
 ETE-NAF-2014-0125, Millstone Unit 2 Cycle 24 Final Fuel Management Plan, Revision 0
 ETE-NAF-2014-0125, Millstone Unit 2 Cycle 24 Final Fuel Management Plan, Revision 1

Section 1R05: Fire ProtectionProcedures

U2-24-FFS, Millstone Unit 2 Nuclear Power Station MP2 Firefighting Strategies, Revision 0
 U2-24-FPP-FHA, Millstone Unit 2 Fire Hazard Analysis, Revision 12
 U3-24-FFS, Millstone Unit 3 Nuclear Power Station MP3 Fire Fighting Strategies, Revision 0
 CM-AA-FPA-100, Fire Protection/Appendix R (Fire Safe Shutdown) Program, Revision 11
 Millstone Unit 2 Updated Final Safety Analysis Report
 CY-AA-CTL-510, Chemical Control Program, Revision 8
 CM-AA-FPA-102, Fire Protection and Fire Safe Shutdown Review and Preparation Process and Design Change Process, Revision 5
 CM-AA-FPA-100, Fire Protection/Appendix R Program, Revision 11

Condition Reports

504487	1011873	1020277	1022428
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Work Orders

53102593572

Miscellaneous

Betco Extreme Floor Stripping Compound Material Safety Data Sheet

Section 1R06: Flood Protection MeasuresProcedures

OP 3353.MB1C, Main Board Annunciator Response, Revision 007
 C OP 200.4, Response to Plant Leaks and Flooding, Revision 010

Condition Reports

554223	560139	560286	582288
582302	1001478	1009799	

Work Orders

53102772936	53102853034	53102853149	53102877767
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Miscellaneous

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MPS3-IF.1, Internal Flooding Analysis, Partitioning and Source Identification and Characterization, Revision 3

MPS3-IF.2, Internal Flooding Analysis, Flood Scenario Development, Revision 5

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WCAP-16896-P, Rev. 1, "Millstone Unit 2, RCS Surge, Spray, Shutdown Cooling, Safety Injection, Charging Inlet, and Letdown/Drain Nozzles Structural Weld Overlay Qualification." ML081140089, Dated April 2008.

Safety Evaluation by the Office of Nuclear Reactor Regulation, Alternative Request RR-04-20, Use of Weld Overlays as an Alternate Repair and Mitigation Technique, Millstone Power Station Unit 2, MIL14365A024, Dated April 24, 2015

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OP 3204, At Power Operation, Revision 019-02

OP 3321, Main Feedwater, Revision 020

OP 2202A, Reactor Startup by Dilution (ICCE), Revision 003

EN 21004K, Cycle 24, Low Power Physics Test, Revision 005-00

OP-AA-100, Conduct of Operations, Revision 029

SP 21011, Moderator Temperature Coefficient, Revision 012-00

EN 21004E, High Power ITC Measurements, Revision 008-00

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OP 3319A, Condensate System, Revision 020-00

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ER-AA-SYS-1001, System Health Report, Revision 10

ER-AA-MRL-100 Implementing Maintenance Review, Revision 10

MP-VTM-000-215212-241-001, Installation, Operation and Maintenance of Emergency Diesel Engine, Revision 29

MP-VTM-000-215212-241-002, Installation, Operation and Maintenance of Emergency Diesel Engine, Revision 5

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Condition Reports

454374	460806	463624	521358
534475	534711	544419	560441

560610	561412	564833	565207
565936	565961	567117	567369
567744	567759	567761	568102
569084	569556	569995	570001
571829	572169	572277	572292
576754	576800	580339	581130
581984	582314	583150	1001398
1002608	1005296	1005656	1005852
1006182	1006415	1007547	1007676
1010005	1011506	1011952	1012033
1012106	1013534	1014002	1014814
1016032	1016444	1016467	1016537
1016965	1017404	1017992	1018091
1018586	1019778	10054333	

Miscellaneous

MRE 617571

MRE 617572

MRE 014568

MRE 014159

MRE 017649

MRE 016210

MRE 015592

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ACE 019867

MRE 018340

WO 53102819526

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System Health Report, 3Q15, Millstone Unit 3, Emergency Diesel Generator Service Water

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ETE-MP-2015-1018, MP2 Service Water AL6XN Piping Frequency Change From 2R to 4R

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System Health Report, 3Q15, Millstone Unit 2, Control Element Drive and CEA Position

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System Health Report, 3Q15, Millstone Unit 3, Reactor Protection System

Section 1R13: Maintenance Risk Assessments and Emergent Work ControlProcedures

OU-AA-200, Shutdown Risk Management, Revision 9

OU-M2-201, Shutdown Safety Assessment Checklist, Revision 16

WM-AA-301, Attachment 14, High Risk Contingency Plan Actions for WO 53102907818, dated December 9, 2015

CM-AA-ETE-101 Attachment 2, ETE-MP-2015-1181, Revision 0, Engineering Technical Evaluation

SP 2604AO, HPSI Pump Inservice Testing, Revision 002

SP 2611A, "A" RBCCW Pump IST, Revision 002-01

SP 2611G, "B" RBCCW Pump IST, Revision 001-01
OP 2330A, RBCCW System, Revision 025-00

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1016562
1020263

Work Orders

53102898317
53102907818

Miscellaneous

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High Risk Contingency Action Plan Actions, dated October 3, 2015
Risk plan for December 15 Unit 3 service water planned maintenance
2R23 Shutdown Risk Schedule Review Management Presentations, dated September 22, 2015
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EOOS Version 4.1 for Millstone Unit 2 on 11/24/2015
25203-26015, Sheet 2, P&ID High Pressure Safety Injection Pumps, Revision 46
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Section 1R15: Operability Determinations and Functionality Assessments

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SP 3646A.1-001, Emergency diesel generator A operability test, Revision 018-08 dated
02/05/2014
MA-AA-103 Attachment 2, Trouble shooting sheet, Apr 2014
Technical Specification 3/4.8.1 Electrical Power Systems, AC Sources, Operating, 16 March
2006
OP-AA-1700, Operations Aggregate Impact, Revision 6
AOP 3569, Severe Weather Conditions, Revision 021

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557043
1015830

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53102659739

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DC MP3-13-01159, MP3 Diesel Generator Superthrust Ventilation Actuator Upgrade

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OP 2201, Plant Heatup, Revision 038-00

OP 2207, Plant Cooldown, Revision 035

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1006415

1008310

1008815

1015158

Work Orders

53102215326

53102868958

53102896011

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MP2-15-01133, Gagging of the Shutdown Cooling Suction Piping Relief Valve 2-SI-468

P&ID 25203-26015, Sheet 1, Piping and Instrumentation Diagram Low Pressure Safety Injection System, Revision 46

Drawing 25203-29060, Sheet 31, Nozzle Type Relief Valve, Revision 1

ETE-MP-2015-1159, Failure Modes for Relief Valve 2-SI-468 during 10-4-15 RCS Leak Unusual Event

TCC-MP-2015-017, Single Fission Chamber Operations of “C” Wide Range Nuclear Instrument System, Revision 0

CEA 40 High Risk Troubleshooting Plan

Standing Order SO-014-016, Revision 1

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ETE-MP-2015-1109, Evaluation of Operation of the Millstone 2 Charging System without placing a charging pump in “Pull-to-Lock”

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SPROC OPS 15-3-002, EDG A Retest Following Governor Replacement (ICCE), Revision 000

SP 3646A.1-001, Emergency Diesel Generator A Operability Tests, Revision 018-08

SP 3646A.1-006, EDG A 24 Hour Run and Restart, Revision 001-03

SP 2610G, PORV Stroke Time IST, Revision 002-01

SP 2613G, Integrated Test of Facility 1 Components (ICCE), Revision 015

OP 2330A, RBCCW System, Revision 025-00-OTO1 (One Time Use Only Procedure)

SP 2611V, 2-RB-13.1B Manual Cycle Tests, Revision 000-03

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Condition Reports

1013352

1013754

1014448

1014546

1014573

1015830

1016451

1016569

Work Orders

53102572563

53102643198

53102730091

53102730092

53102891100

53102894929

53102898880

53M20403312

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ETE-MP-2015-1146, Exceeding nameplate FLA rating for motors M2F31AM and M2F31BM, A
&B Control Room Exhaust Fans, Revision 1
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AWG Feeder Cable, Revision 0
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Procedures

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MP 2704AA1, Unit 2 Reactor Head Removal and Installation (ICCE), Revision 001-00
OP 2202A, Reactor Startup by Dilution (ICCE), Revision 003
EN 21004K, Cycle 24, Low Power Physics Test, Revision 005-00
OP 2301E, Draining the RCS (ICCE), Revision 026

Miscellaneous

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25203-26014, SH. 1, PID Reactor Coolant System, Revision 41
25203-26014, SH. 2, PID Reactor Coolant System, Revision 44
25203-26015, SH. 3, PID Safety Injection Tanks, Revision 30
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Section 1R22: Surveillance Testing

Procedures

MOV 1220, MOV Testing, Revision 007-02
SP 2605D, Containment Leak Test, Type "C," Revision 020

Condition Reports

1013776

Work Orders

53102295104
53102269513

Section 1EP4: Emergency Action Level and Emergency Plan Changes

Miscellaneous

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MP-26-EPA-FAP01, Management Program for Maintaining Emergency Preparedness, Revision
014

Section 1EP6: Drill Evaluation

Procedures

C OP 200.3, Response to Medical Emergencies, Revision 005
MP-26-EPI-FAP07, Notifications and Communications, Revision 022
MP-26-EPI-FAP15-001, DSEO/ADTS Briefing Sheet, Revision 006

ONP 532, Loss of Spent Fuel Pool Cooling, Revision 001
 OP-AA-100, Conduct of Operations, Revision 029
 MP-26-EPI-FAP06-001, Millstone Unit 1 Emergency Action Levels, Revision 001-01
 MP-26-EPI-FAP06-002, Millstone Unit 2 Emergency Action Levels, Revision 010

Section 2RS1: Access Control to Radiologically Significant Areas

Procedures

RP-AA-124, "Dosimetry Investigation and Processing", Revision 5
 RP-AA-201, "Access Controls for High and Very High Radiation Areas", Revision 8
 RP-AA-203, "Radiological Labeling and Marking", Revision 4
 RP-AA-225, "Unconditional Release of Material", Revision 5
 RPM 2.5.2, "Guidelines for Spent Fuel Pool or Flooded Reactor Cavity Work", Revision 004-01

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Condition Reports

571162	576615	578158	578575
561764	562489	564081	569835
558103	558174	1004317	1005355
1005555	1006399		

Miscellaneous

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 Personal Internal Dosimeter Record, EID 29083, dated 10/6/2015
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 Personal Internal Dosimeter Record, EID 84064, dated 10/7/2015

Personal Internal Dosimeter Record, EID 70718, dated 10/7/2015
 Radiation Work Permit 2150201, Revision 0
 Radiation Work Permit 2150202, Revision 0
 Radiation Work Permit 2150301, Revision 0
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 Radiation Work Permit 2150303, Revision 0
 Radiation Work Permit 2150304, Revision 0
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 RP Outage Turnover Report, day 5
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 dated 3/27/2015
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 TEDE ALARA Review, RWP 302, dated 10/2/2015
 TEDE ALARA Review, RWP 304, dated 10/2/2015
 TEDE ALARA Review, RWP 329, dated 10/2/2015
 TEDE ALARA Review, RWP 337, dated 10/2/2015
 Unit 2 EPRI Survey dated 5/13/2014
 Whole Body Count Log, 1/6/2015 to 9/21/2015

Section 2RS4: Occupational Dose Assessment

Procedures

RPM 1.3.2 Dosimetry Issue and Return, Revision 019
 RPM 1.3.5, TLD Processing, Revision 002
 RPM 1.3.10, Determining Estimated Neutron Dose, Revision 007
 RPM 1.3.11, Noble Gas Exposure, Revision 001-02
 RPM 1.3.16, Personal Internal Dosimeter (PID) Operation, Revision 002
 RPM 2.10.2 Air Sample Counting and Analysis, Revision 018
 RPM 4.4.6, Electronic Dosimeter Calibration Verification, Revision 008
 RP-AA-104 Internal Radiation Exposure Control Program, Revision 1
 RP-AA-105 External Radiation Exposure Control Program, Revision 1
 RP-AA-111 Monitoring and Improving Radiological Performance, Revision 2
 RP-AA-112 Radiation Safety Performance Indicator Reporting, Revision 4

RP-AA-123, Effective Dose Equivalent from External Exposure, Revision 5
 RP-AA-124, Dosimetry Investigation and Processing, Revision 5
 RP-AA-131 Whole Body Monitoring, Revision 1
 RP-AA-132, Urine and Fecal Sampling and Analysis, Revision 0
 RP-AA-133, Internal Dose Calculation Based on Radionuclide Intake, Revision 0
 RP-AA-134, Radionuclide Intake Determination Based on Bioassay Results, Revision 1
 RP-AA-136 Internal Dose Calculation Based on DAC-Hour, Revision 0
 RP-AA-138 Declared or Expected Pregnant Woman, Revision 2
 RP-AA-224 Airborne Radioactivity Surveys, Revision 2
 RP-AA-226 Alpha Monitoring, Revision 4
 RP-AA-275 Radiological Risk Assessment Process, Revision 2
 TBE-4006, Inter-Laboratory Performance Evaluation Programs, Teledyne Brown Engineering Environmental Services, Revision 6

Documents

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 Apparent Cause Evaluation CA3012627
 Audit 14-06, Radiological Protection/Process Control Program/Chemistry, dated 8/25/2014
 Audit 2013V-16, NUPIC Audit 23484, NUPIC Joint Audit of Teledyne Brown Engineering-Environmental Services, Knoxville, TN, dated 3/10/2014
 CA3005531
 Calibration Certificate, RSCS, MGP Model DMC 2000GN, serial numbers 003703, 002608, and 002426, dated 3/2/2015
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 Certificate of Approval for Laboratory Service, Teledyne Brown Engineering – Environmental, Non Potable Water, issued 4/1/2015
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Condition Reports

535493	545359	545657	1006399
1013071	1013193	1013670	1013778

Miscellaneous

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 Dosimetry Discrepancy Investigation, ID 61711, dated 8/27/2014
 Dosimetry Discrepancy Investigation, ID 87893, dated 9/11/2014
 Dosimetry Discrepancy Investigation, ID 92261, dated 3/20/2015
 Electronic Dosimeter Dose / Dose Rate Alarm Report for ID 66505, dated 10/11/2015
 Electronic Dosimeter Dose / Dose Rate Alarm Report for ID 73761, dated 10/11/2015
 Form No. 733197, WBC Action Levels with WBC Reported % ALI, dated 9/25/2015
 Lesson Plan, RWT-02: Biological Effects, Revision 12/11/2008
 Lesson Plan, RWT-04: Dosimetry, Revision 11/1/2014
 List, Declared Pregnant Workers Report, 11/5/2013 to 11/5/2015

List of RCA Exit Transactions with dose > 100 mrem for Cy2015
 MDA Report, Accuscan whole body counter, 11/7/2015
 MDA report, Fastscan whole body counter, 11/5/2015
 MP-HPO-14056, Unit 3 Neutron Characterization Documentation, dated December 10, 2014
 MP-HPO-14036, DMC 2000GN Electronic Dosimeter Neutron Over-Response in the Presence of High Energy Gamma, dated August 14, 2014
 MP-HPO-15028, Millstone TLD Neutron Correction Factor, dated June 30, 2015
 MP-HPO-15033, Fastscan WBC Action Levels Compared to Minimum Detectable Activity Levels, dated September 25, 2015
 Radionuclide library report, Accuscan whole body counter, 11/7/2015
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 Report, TLD/DRD Discrepancies, 11/9/2013 to 11/9/2015
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 RP-14-06, Worker EID # 61856 DIL Calculation, dated 9/10/2014
 RP-14-16, Technical Basis for the Implementation of DMC 2000 GN Dosimeters, dated 12/18/2014
 RP-14-22, PM-12 Non-Dosimetry Processing Technical Basis and Operating Parameters, dated 11/13/2014
 RP-15-05, Thermo Electronic Dosimeter Applied Bias Evaluation for Use with Genesis Ultra TLDs, dated 4/10/2015
 SAR002778, Implementation of 30020000409 – EPRI Alpha Monitoring and Control Guidelines for Operating Nuclear Power Plants, dated 6/30/2015
 Second Quarter 2015 Quality Assurance Report, Teledyne Brown Engineering Environmental Services, 10/28/2015
 STID#06-008, Neutron Characterization and Measurement Evaluation at the Millstone Unit 2 Containment, dated 2/7/2007
 Technical Basis Document: Genesis Ultra Dosimeter, Mirion Technologies Dosimetry Services Division

Section 4OA1: Performance Indicator Verification

Procedures

RP-AA-111, Monitoring and Improving Radiological Performance, Revision 2
 RP-AA-112, Radiation Safety Performance Indicator Reporting, Revision 4

Condition Reports

582117	582112	567388	567388
567369	572169		

Miscellaneous

LER 2015-002-00, Unit 2 Degraded Emergency Core Cooling System Check Valve
 LER 2014-004-00, Unit 3 Unlatched Dual Train HELB Door Results in Potential Loss of Safety Function
 LER 2015-001-00, Unit 3 Unlatched Dual Train HELB Door Results in Potential Loss of Safety Function

Section 40A2: Problem Identification and ResolutionCondition Reports

Apparent Cause Evaluation 3003301

Apparent Cause Evaluation 019873

56074	72293	72366	460214
460806	460807	537291	537368
537984	538811	542690	543308
548085	549001	549749	550163
550212	554866	556022	558977
560316	560367	563031	563259
568570	570135	570458	570802
570929	571113	571241	572363
572748	573207	573548	575184
578728	580865	1000301	1000760
1002024	1002788	1003662	1003678
1004028	1004036	1005042	1005078
1005289	1005500	1005528	1005711
1005950	1006213	1006347	1006354
1006662	1006664	1007732	1007739
1007742	1007938	1007999	1008119
1008332	1008578	1008630	1008710
1009399	1009485	1009604	1009649
1009660	1009852	1010125	1010325
1010409	1010721	1013161	1013757
1014513	1014758	1015248	1015274
1015401	1015495	1015559	1015563
1015614	1015830	1015833	1016132
1016209	1017179	1017202	1017569
1017570	1017734	1017838	1017857
1017880	1017883	1017890	1018000
1018305	1018433	1019313	1019481
1019655	1019714	1019731	1020013
1020015	1020018	1020211	1020213
1020214	1020215	1020327	1020406
1020458	1020589	1020898	1020957
1021102	1021106	1021151	1021225
1021233	1021243	1021315	1021403
1021413	1021417	1021463	1021474
1021633	1021697	1021746	1021849
1022038	1022039	CA3014185	CA225421
OD000468			

Work Orders

53102756740

53102722080

Miscellaneous

Human Performance Review Board Documentation for CRs 537291 & 537368

Millstone Radiation Monitor Status summary for 11/16/2015

Radiation Monitor Work Control Schedule Priorities (list) for 11/16/2015
 System Health Report, Millstone Unit-2, 2404 – Radiation Monitoring, Q3-2015
 System Health Report, Millstone Unit-3, 3404 – Radiation Monitoring, Q3-2015
 ETE-MP-2013-1158, U3 “A” Diesel Load Oscillation Data Analysis for OD000468, Revision 0
 OD000468 Closure Request
 CA225213 First Extension Request

Section 40A3: Follow-up of Events and Notices of Enforcement Discretion

Procedures

PI-AA-200, Corrective Action, Revision 28

Condition Reports

1011949	1017078	1017050	554812
1019514	554849		

Miscellaneous

MP-26-EPA-REF03, Millstone Unit 3 Emergency Action Level Technical Basis Document,
 Revision 019
 U2 TDAFW Pump Troubleshooting Post Job Critique
 August 7 Memorandum for Cancellation of RCE 001124
 TS2-97-530, Centrifugal Pump Minimum Flow Requirements
 14-ENG-04432M2, MP2 – AFW System, TDAFW Pump (P4), Minimum Flow Requirement

Work Orders

53102795904
 53102756664
 53102427273

Section 40A7: Licensee Identified Violations

Condition Reports

1017078

Miscellaneous

Operator logs for November 3, 2015

LIST OF ACRONYMS

10 CFR	Title 10 of the <i>Code of Federal Regulations</i>
ACE	apparent cause evaluation
ASME	American Society of Mechanical Engineers
CAP	corrective action program
CAPR	corrective action to prevent recurrence
CAQ	condition adverse to quality
CCI	safety injection pump cooling
CR	condition report
EAL	emergency action level
EDG	emergency diesel generator
EGA	electrical governor
EGB	emergency diesel mechanical governor
EPD	electronic personal dosimeter
HRA	high radiation area
I&C	instrumentation & control
IMC	Inspection Manual Chapter
LER	licensee event report
LHRA	locked high radiation area
NCAQ	condition not adverse to quality
NCV	non-cited violation
NOUE	Notice of Unusual Event
NRC	Nuclear Regulatory Commission, U.S.
NVLAP	National Voluntary Laboratory Accreditation Program
ODCM	Offsite Dose Calculation Manual
OWA	operator workaround
PI	performance indicator
RBCCW	reactor building closed loop cooling water
RCE	root cause evaluation
RCP	reactor coolant pump
RG	Regulatory Guide
RMS	radiation monitoring system
SSC	structure, system, or component
TDAFW	turbine driven auxiliary feedwater
TS	technical specification
UFSAR	Updated Final Safety Analysis Report
VHRA	very high radiation area