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

November 8, 2013

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

SUBJECT: MILLSTONE POWER STATION – NRC INTEGRATED INSPECTION REPORT 05000336/2013004 AND 05000423/2013004 AND NOTICE OF VIOLATION AND INDEPENDENT SPENT FUEL STORAGE INSTALLATION REPORT NO. 07200047/2013001

Dear Mr. Heacock:

On September 30, 2013, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Millstone Power Station, Units 2 and 3. The enclosed inspection report documents the inspection results, which were discussed on October 17, 2013, with Mr. Stephen E. Scace, 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.

One violation of very low safety significance (Green) is cited in the enclosed Notice of Violation (Notice) and the circumstances surrounding it are described in the enclosed inspection report. The violation was evaluated in accordance with the NRC Enforcement Policy. The current Enforcement Policy is included on the NRC's website at http://www.nrc.gov/about-nrc/regulatory/enforcement/enforcement-pol.html. This violation is being cited in the Notice because not all of the criteria specified in Section 2.3.2.a of the NRC Enforcement Policy for a non-cited violation (NCV) were satisfied. Specifically, Dominion Nuclear Connecticut, Inc., failed to restore compliance within a reasonable amount of time after the issue was first identified in 2007 and again when the violation was documented in August 2012.

You are required to respond to this letter and should follow the instructions specified in the enclosed Notice when preparing your response. If you have additional information that you believe the NRC should consider, you may provide it in your response to the Notice. The NRC review of your response to the Notice will also determine whether enforcement action is necessary to ensure compliance with regulatory requirements.

Also, one NRC-identified finding of very low safety significance (Green) was identified during this inspection. This finding was also determined to involve violations of NRC requirements. Additionally, three licensee-identified violations, which were determined to be of very low safety significance, are listed in this report. The NRC is treating these violations as NCVs, consistent with Section 2.3.2 of the Enforcement Policy.

If you contest the violations or significance of these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the 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.

If you disagree with the cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region I, and the NRC Resident Inspector at Millstone.

In accordance with 10 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 Public Document Room or from the Publicly Available Records (PARS) 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/

Raymond R. McKinley, Chief
Reactor Projects Branch 5
Division of Reactor Projects

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

Enclosures:
1. Notice of Violation
2. Inspection Report 05000336/2013004 and 05000423/2013004
w/Attachment: Supplementary Information

cc w/encls: Distribution via ListServ

If you contest the violations or significance of these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the 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.

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NAME	JAmbrosini/jk for	SShaffer/ss	MMcLaughlin/cjc for	RMcKinley/rrm	
DATE	11/06/13	11/06/13	11/8/13	11/8/13	

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NOTICE OF VIOLATION

Dominion Nuclear Connecticut, Inc. Docket No. 50-423
Millstone Power Station Unit 3 License No. NPF-49

During an NRC inspection conducted between July 1 and September 30, 2013 a violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the violation is listed below:

> 10 CFR 50 Appendix B, Criterion XVI, "Corrective Action," requires, in part, that measures shall be established to assure that conditions adverse to quality are promptly identified and corrected.
>
> Contrary to the above, from 2007 until the present, Dominion failed to correct the degraded closing capability of the Unit 3 main feedwater isolation valves and has not restored compliance within a reasonable period of time. Specifically, following Dominion's initial documentation of the issue in 2007, and the subsequent inspectors' documentation of the corrective action violation in inspection report 05000423/2012010, Dominion has since deferred repairs until the October 2014 outage.

This violation is associated with a Green SDP finding.

Pursuant to the provisions of 10 CFR 2.201, Dominion is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001 with a copy to the Regional Administrator, Region I, and a copy to the NRC Resident Inspector at the facility that is the subject of this Notice, within 30 days of the date of the letter transmitting this Notice of Violation (Notice). This reply should be clearly marked as a "Reply to a Notice of Violation" and should include for each violation: (1) the reason for the violation, or, if contested, the basis for disputing the violation or severity level, (2) the corrective steps that have been taken and the results achieved, (3) the corrective steps that will be taken, and (4) the date when full compliance will be achieved. Your response may reference or include previous docketed correspondence, if the correspondence adequately addresses the required response. If an adequate reply is not received within the time specified in this Notice, an order or a Demand for Information may be issued as to why the license should not be modified, suspended, or revoked, or why such other action as may be proper should not be taken. Where good cause is shown, consideration will be given to extending the response time.

If you contest this enforcement action, you should also provide a copy of your response, with the basis for your denial, to the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

Because your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html, to the extent possible, it should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the public without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If safeguards information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

In accordance with 10 CFR 19.11, you may be required to post this Notice within two working days of receipt.

Dated this the eighth day of November 2013

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket Nos:	50-336 and 50-423
License Nos:	DPR-65 and NPF-49
Report Nos:	05000336/2013004 and 05000423/2013004
Licensee:	Dominion Nuclear Connecticut, Inc.
Facility:	Millstone Power Station, Units 2 and 3
Location:	P.O. Box 128 Waterford, CT 06385
Dates:	July 1, 2013 through September 30, 2013
Inspectors:	J. Ambrosini, Sr. Resident Inspector, Division of Reactor Projects (DRP) J. Krafty, Resident Inspector, DRP B. Haagensen, Resident Inspector, DRP M. Modes, Senior Reactor Inspector, Division of Reactor Safety (DRS) S. Chaudhary, Senior Reactor Inspector, DRS M. Patel, Operator License Examiner DRS R. Rolph, Health Physicist, DRS T. Hedigan, Operations Engineer, DRS J. Nicholson, Health Physicist, Division of Nuclear Materials Safety (DNMS) D. Lawyer, Health Physicist, DNMS
Approved By:	Raymond R. McKinley, Chief Reactor Projects Branch 5 Division of Reactor Projects

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SUMMARY

IR 05000336/2013004, 05000423/2013004; 07/01/13 - 09/30/13; Millstone Power Station, Units 2 and 3; Operability Determinations and Functionality Assessments.

This report covered a three-month period of inspection by resident inspectors and announced inspections performed by regional inspectors. Inspectors identified one violation and one finding 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 (SDP)," dated June 2, 2011. Cross-cutting aspects are determined using IMC 0310, "Components Within Cross-Cutting Areas," dated October 28, 2011. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy, dated January 28, 2013. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4.

Cornerstone: Mitigating Systems

- Green. The inspectors identified a finding (FIN) for Dominion's failure to complete an adequate and timely operability determination as required by OP-AA-102, "Operability Determination," to assess governor control oscillations following completion of maintenance on the turbine driven auxiliary feedwater (TDAFW) pump 3FWA*P2 on May 17, 2013. The inspectors determined that the failure to adequately evaluate pump operability was a performance deficiency that was within Dominion's ability to foresee and correct. Dominion entered this issue into their corrective action program (CAP) as CR528526 and repaired the TDAFW pump governor on August 12, 2013, prior to return to power following the reactor shutdown on August 9, 2013.

  The inspectors determined the performance deficiency was more than minor because it affected the equipment performance attribute of the Mitigating Systems cornerstone to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Failure to adequately assess operability resulted in a decrease in the reliability of the auxiliary feedwater (AFW) system to mitigate events. In addition, the performance deficiency is similar to examples 1.a and 2.a of IMC 0612, Appendix E, "Examples of Minor Issues." The inspectors determined that the finding was of very low safety significance (Green) because the performance deficiency did not represent a loss of system safety function or a loss of safety function of a single train for greater than its Technical Specification allowed outage time. This finding has a cross-cutting aspect in the area of Human Performance, in that Dominion uses conservative assumptions in decision making and adopts a requirement to demonstrate that the proposed action is safe in order to proceed rather than a requirement to demonstrate that it is unsafe in order to disapprove the action (H.1(b)). (Section 1R15)

Cornerstone: Barrier Integrity

- Green. The inspectors identified a cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," for Dominion's continued failure to take timely and effective corrective actions for conditions adverse to quality involving the degradation of the closing capability of four Unit 3 main feedwater isolation valves. Dominion had deferred correcting this condition over a period of six years (three refueling outages) which the inspectors noted in NCV 05000423/2012010-01, a Green NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective

Action." Dominion has since deferred repairs from the April 2013 refueling outage until the October 2014 outage. The violation is cited because Dominion has failed to restore compliance or demonstrate objective evidence of plans to restore compliance at the first opportunity in a reasonable period of time following initial identification in 2007 and documentation in 2012 NRC inspection reports. Dominion entered the issue into their CAP as CR507299 and plans to modify the valves in the 2014 refueling outage.

The inspectors determined this issue was more than minor because it is similar to the more than minor examples, 4.f and 4.g of IMC 0612, Appendix E, "Examples of Minor Issues." Specifically, Dominion did not correct a condition adverse to quality in a timely manner and resulted in a situation that impacted the operability of the feedwater isolation valves. Additionally, the finding is more than minor because it is associated with the design control attribute of the Barrier Integrity cornerstone, and adversely affected the cornerstone's objective of providing reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events. The inspectors determined that the finding was of very low safety significance (Green) because the issue did not represent an actual open pathway in the physical integrity of the reactor containment. In the event of a ruptured feedwater line, the train 'A' main feedwater regulating valves and bypass valves would remain capable of closing to isolate feedwater flow.

This finding had a cross-cutting aspect in the Human Performance area, Resources component, because Dominion did not maintain long term plant safety by minimizing long-standing equipment issues and ensuring maintenance and engineering backlogs which are low enough to support safety. Specifically, Dominion deferred the feedwater isolation valve replacement project from 3RFO15 to 3RFO16 because the design change could not be issued to support online work on the project required prior to the outage. Additionally, there were a number of outstanding technical issues for the design change that were not resolved in time despite the condition existing since 2007 (H.2(a)). (Section 1R15)

Other Findings

Three violations of very low safety significance that were identified by Dominion were reviewed by the inspectors. Corrective actions taken or planned by Dominion have been entered into Dominion's CAP. These violations and corrective action tracking numbers are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Millstone Unit 2 operated at or near 100 percent power for the entire inspection period. Unit 3 began the inspection period operating at 100 percent power. On August 9, Unit 3 automatically shut down due to a feedwater transient which caused the steam generator (SG) water level to drop below the automatic reactor trip setpoint. Unit 3 returned to 100 percent power on August 16 and remained at or near 100 percent power for the remainder of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R01 Adverse Weather Protection (71111.01 – 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 the hurricane season. The review focused on the Unit 2 and Unit 3 intakes and the flood protection for the Unit 2 structures and tornado protection for the Unit 3 Engineered Safety Features Building. The inspectors reviewed the Updated Final Safety Analysis Report (UFSAR) and Dominion's CAP to determine the seasonal weather related equipment deficiencies could challenge these systems and to ensure Dominion's personnel had adequately prepared for these challenges. The inspectors reviewed Dominion's seasonal weather preparation procedure and applicable operating procedures to verify that defined operator actions maintained readiness of essential systems and that adequate staffing was specified. The inspectors performed walkdowns of the selected systems to ensure station personnel identified issues that could challenge the operability of the systems during hurricane conditions. Documents reviewed for each section of this inspection report are listed in the Attachment.

b. Findings

No findings were identified.

.2 External Flooding

a. Inspection Scope

During the week of September 9, the inspectors performed an inspection of the external flood protection measures for Millstone Power Station. The inspectors reviewed TSs, procedures, design documents, and UFSARs (Unit 2, Chapter 2.5.4 and Unit 3, Chapter 2.4.2) which depicted the design flood levels and protection areas containing safety- related equipment to identify areas that may be affected by external flooding. The inspectors conducted a general site walkdown of all external areas of the plant, including the Unit 2 turbine building, auxiliary building, and intake structure and Unit 3 emergency safety feature (ESF) building to ensure that Dominion erected flood

protection measures in accordance with design specifications. The inspectors also reviewed operating procedures for mitigating external flooding during severe weather to determine if Dominion planned or established adequate measures to protect against external flooding events.

b. Findings

No findings were identified.

1R04 Equipment Alignment

Partial System Walkdowns (71111.04 – 4 samples)

a. Inspection Scope

The inspectors performed partial walkdowns of the following systems:

Unit 2

- 'B' Emergency Diesel Generator (EDG) while the 'A' EDG was out of service (OOS) for surveillance testing on August 28
- Facility 2 Service Water (SW) while the Facility 1 train was OOS for surveillance testing on September 3
- Facility 1 low pressure safety injection following surveillance testing on September 5

Unit 3

- TDAFW pump after restoration from testing on August 26

The inspectors selected these systems based on their risk-significance relative to the reactor safety cornerstones at the time they were inspected. The inspectors reviewed applicable operating procedures, system diagrams, the UFSAR, TS, work orders, Condition Reports (CR), and the impact of ongoing work activities on redundant trains of equipment in order to identify conditions that could have impacted system performance of their 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.

1R05 Fire Protection

Resident Inspector Quarterly Walkdowns (71111.05Q – 5 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 OOS, degraded or inoperable fire protection equipment, as applicable, in accordance with procedures.

Unit 2

- DC Equipment Room 'A' (East), Fire Area A-20 on July 5
- High Pressure Safety Injection Pump Room, Fire Area A-4 on August 9
- Coolant Tank Area, Fire Area A-5 on August 9
- Intake Structure, Fire Area I-1 on September 20

Unit 3

- Normal Switchgear Room, Fire Area SB-1 on August 22

b. Findings

No findings were identified.

1R06 Flood Protection Measures (71111.06 – 1 sample)

Annual Review of Cables Located in Underground Bunkers/Manholes

a. Inspection Scope

The inspectors conducted an inspection of underground bunkers/manholes subject to flooding that contain cables whose failure could affect risk-significant equipment. The inspectors performed walkdowns of risk-significant areas, including manhole M33EMH*3B cable vault on July 10 and M33EMH*4 and Cable Vault 5 containing safety related power cables on July 17, to verify that the cables were not submerged in water, that cables and/or splices appeared intact, and to observe the condition of cable support structures. When applicable, the inspectors verified proper sump pump operation and verified level alarm circuits were set in accordance with station procedures and calculations to ensure that the cables will not be submerged. The inspectors also ensured that drainage was provided and functioning properly in areas where dewatering devices were not installed. For those cables found submerged in water, the inspectors verified that Dominion had conducted an operability evaluation for the cables and were implementing appropriate corrective actions.

b. Findings

No findings were identified.

1R07 Heat Sink Performance

Triennial Heat Sink Performance (71111.07T – 6 samples)

a. Inspection Scope

Triennial Heat Sink and Heat Exchanger Sample Selection

Based on the "Risk-Informed Inspection Notebook For Millstone Nuclear Power Station Unit 2 (Revision 2.1a)," the "Risk-Informed Inspection Notebook For Millstone Nuclear Power Station Unit 3 (Revision 2.1a)," past inspection results, recent operational experience, and resident inspector input, the inspectors selected three Unit 2 Reactor Building Closed Cooling Water (RBCCW) Heat Exchangers, per 71111.07, Section 02.02 (b)(6); and the three, Unit 3 Reactor Plant Closed Cooling Water (RPCCW) Heat Exchangers, per 71111.07, Section 02.02 (b)(6). The inspectors reviewed Unit 2 RBCCW and Unit 3 RPCCW system designs to evaluate the adequacy of system monitoring, testing, and maintenance.

Heat Exchangers Directly Cooled by Service Water

The Unit 2 RBCCW system consists of two independent headers, each including one motor-driven RBCCW pump, one RBCCW heat exchanger and associated piping, valves, instrumentation, controls and a down-comer from the RBCCW surge tank. A third RBCCW pump and heat exchanger is provided as a spare for the system.

The Unit 3 RPCCW system consists of three half-capacity motor-driven cooling water pumps, three half-capacity heat exchangers, a surge tank, a chemical addition tank, associated piping, valves, instrumentation, controls and auxiliary electrical equipment.

The inspectors reviewed Dominion's test and inspection, maintenance, and performance monitoring methods and frequency for the systems, to determine whether potential deficiencies could mask degraded performance, and to assess the capability of the systems to perform their design functions. In addition, the inspectors evaluated whether any potential common cause heat sink performance problems could affect multiple heat exchangers or heat removal paths in mitigating systems or could result in an initiating event.

The inspectors reviewed system health reports, SW, RBCCW, and RPCCW pipe inspection records, performance and surveillance test results, and design specifications and calculations. The inspectors compared as-found test and inspection results, and performance and surveillance test results to established acceptance criteria to determine whether the as-found conditions were acceptable and conformed to design basis assumptions for heat transfer capability. The inspectors evaluated performance trends to assess whether the inspection and test frequencies were adequate to identify degradation prior to loss of heat removal capabilities below their design requirements. In addition, the inspectors assessed Dominion's methods to monitor and control bio-fouling,

corrosion, erosion, and silting to verify whether Dominion's methodology and acceptance criteria, as implemented, were adequate.

The inspectors performed field walk downs of selected portions of the RPCCW and RBCCW system piping, valves, heat exchangers, surge tank, surge tank piping, and flow, temperature, and pressure measurement points. The inspectors assessed the material condition of these systems and components. The inspectors also reviewed work order history, and discussed system health with the respective system and design engineers.

Review of Corrective Action Reports

The inspectors verified that Dominion has entered significant heat exchanger/sink performance problems into their CAP. The inspectors reviewed a sample of RBCCW and RPCCW related corrective actions with a focus on events or conditions that could cause the loss of a heat exchanger/sink due to events such as heat transfer problems, improper cleaning, ice buildup, grass intrusion, or blockage of pipes and components. The inspectors reviewed a number of root cause reports to determine if Dominion has appropriately considered common-cause failures.

b. Findings

No findings were identified.

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

.1 Quarterly Review of Licensed Operator Requalification Testing and Training

a. Inspection Scope

The inspectors observed Unit 3 licensed operator simulator training on July 30, which included a loss of heat sink, bleed and feed and recovery of SG level using condensate pumps. The inspectors also observed Unit 2 licensed operator simulator training on August 6 which included an excess steam demand accident with a dropped control element assembly and on August 8 which included and excess steam demand with a SG tube rupture on the other SG. The inspectors evaluated operator performance during the simulated event and verified completion of risk significant operator actions, including the use of 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

a. Inspection Scope

On August 2, the inspectors observed and reviewed response to a loss of the Waterford offsite service line and implementation of abnormal operating procedure (AOP) 2508, "Loss of 23 kV Off Site Power;" response to a fire in the Unit 1 Trayer Switch and implementation of AOP 2559, "Fire;" dilution for control of reactor power and termination and restoration of SG blow down using operating procedure 2316A, "Main Steam," conducted on Unit 2 on August 2. The inspectors observed a reactor and steam plant start up on Unit 3 on August 13 and 14 following a forced outage. The inspectors observed operator performance to verify that procedure use, crew communications, and coordination of activities between work groups similarly met established expectations and standards.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness (71111.12Q – 2 samples)

a. Inspection Scope

The inspectors reviewed the samples listed below to assess the effectiveness of maintenance activities on structure, system or 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

- Chilled Water System on August 27
- Fire Doors, Barriers, and Buildings on September 18

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessments and Emergent Work Control (71111.13 – 8 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

- Emergent risk while investigating leakage in rectifier bank #4 on July 2
- Emergent risk for removing the 'B' EDG from service while the station blackout (SBO) is OOS on July 27
- Emergent risk for Spent Fuel Pool Cooling Purification System Outage on August 21
- High risk for crane activity associated with normal station service transformer (NSST) Replacement Project on September 18

Unit 3

- Emergent risk for 'B' EDG Degraded voltage relays on July 23
- Emergent risk for 3SWP*P2A SW booster pump repairs on August 29
- Emergent risk for freeze seal on SW header constant vent header to 3SWP*V729 on September 3
- Emergent risk for RPCCW heat exchanger tube leak on September 17

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments (71111.15 – 9 samples)

a. Inspection Scope

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

Unit 2

- RAS000222, Degraded Condition of MP3 Fire Pump House Results in Inability to Protect Fire Pumps During Design Basis Flood on July 2

- RAS000235, Conduit Penetrations at Turbine Building Cable Pit 5 are not sealed on July 17

Unit 3

- RAS CR515319, 3HVK*TV76A Temperature Control Valve for 3HVC*ACU4A failed its stroke time test on July 11
- CR520253, Inaccurate ultimate heat sink (UHS) Measurement on July 11
- ETE-MP-2013-1198 Westinghouse 7300 Process Cards repaired with non-QA parts/processes on July 16
- OD000549 for a pinhole leak on the SW constant vent line (downstream of V729) on August 7
- ETE-CME-2013-1018 SW vent header leak structural integrity assessment on August 29
- CR526784, Failure of 3CCP*AOV197A and 3CCP*AOV10B RPCCW header isolation valves on September 24
- OD000237, Revision 4, 3FWS*CTV41 Inadequate Valve Closing Capability on September 30

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 TS and UFSAR to Dominion's evaluations to determine whether the components or systems were operable. Where compensatory measures were required to maintain operability, the inspectors determined whether the measures in place would function as intended and were properly controlled by Dominion. The inspectors determined, where appropriate, compliance with bounding limitations associated with the evaluations.

b. Findings

1. Failure to Restore Feedwater Isolation Valves to Full Compliance

Introduction. The inspectors identified a Green cited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," for Dominion's continued failure to take timely and effective corrective actions for conditions adverse to quality involving the degradation of the closing capability of four Unit 3 main feedwater isolation valves. Dominion had deferred correcting this condition over a period of six years (three refueling outages) which the inspectors noted in NCV 05000423/2012010-01, a Green NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action." Dominion has since deferred repairs from the April 2013 refueling outage until the October 2014 outage. The violation is cited because Dominion has failed to restore compliance or demonstrate objective evidence of plans to restore compliance at the first opportunity in a reasonable period of time following initial identification in 2007 and documentation in 2012 NRC inspection reports.

Description. On June 27, 2007, Dominion identified that the Unit 3 feedwater isolation valve hydraulic actuators for 3FWS*CTV41A, B, C and D were not adequately sized to fully close against main feedwater pump discharge pressure to isolate feedwater flow

into containment in the event of a main feedwater line rupture. Further analysis concluded that the feedwater isolation would likely occur when the feedwater pumps were subsequently stopped by either a non-safety grade trip signal or manual operator action. The feedwater isolation valves are safety-related valves that comprise train 'B' of the main feedwater isolation function as described in the Millstone UFSAR. Dominion determined that the hydraulic actuators for these valves were inadequately sized based on operating experience as described in Electric Power Research Institute Technical Report TR-103232. The valves were initially scheduled to be restored to full qualification during refueling outage (RFO), 3RFO12, in October 2008, but the repairs were deferred to 3RFO13 due to maintenance schedule conflicts. Subsequently, repairs were not completed in 3RFO13, 3RFO14, or 3RFO15 due to scheduling, engineering, and funding challenges. Once again, Dominion has rescheduled repairs to the upcoming refueling outage 3RFO16 in October 2014, seven years after the problem was first identified.

The main feedwater isolation valves are safety-related containment isolation valves that rapidly close in response to a phase 'B' feedwater isolation ESF signal. These valves are relied upon to ensure that the flow of hot feedwater is rapidly isolated for a variety of analyzed events including the rupture of a feedwater header inside containment. If feedwater flow is not isolated to the break, the additional energy transported into containment may challenge containment pressure and temperature limits, as well as the equipment qualification of various instruments and equipment inside containment.

Dominion determined (in CR-7-07160 and Operability Determination (OD) MP3-014-07) the valves would not go fully closed until after the feedwater pumps had tripped and therefore, the feedwater isolation (FWI) function was operable with a degraded margin. A subsequent review (OD000237 completed in 2009) reaffirmed this conclusion. The justification for continued operability was based on the conclusion that the feedwater line break (FLB) event remained bounded by the main steam line break (MSLB) event and that operator actions could be relied upon to manually trip the motor-driven main feedwater pump in time to reduce the differential pressure across the feedwater isolation valve allowing the valve to go fully closed before containment limits were exceeded.

On May 10, 2012, the inspectors reviewed this active OD and determined that the justification for continued operations did not meet the requirements of OP-AA-102-1001, "Development of Technical Guidance Basis to Support Operability Determinations," Revision 6. Specifically, Dominion had concluded that the FWI function was operable because the MSLB accident bounded the FLB accident because the main steam break event had a greater energy release rate and no further analysis was necessary to demonstrate safety. This analysis did not fully consider the impact of continued high temperature feedwater flow from full power conditions into containment and the subsequent challenge to the electrical equipment qualification temperature limits inside containment. The inspectors documented this issue as FIN 05000423/2012003-01.

Based on the inspectors documented findings, Dominion issued CR483637 on August 1, 2012, and placed the motordriven feedwater pump in pull-to-lock to prevent it from automatically starting if a drop in feed header pressure occurred from a feed header rupture. Dominion subsequently completed an immediate operability determination, which concluded that the feedwater isolation function was degraded but operable based upon the conclusion that the main feedwater pumps would likely trip within a short period of time. The non-safety grade main feedwater pump trip signal that would likely stop the

pumps and operator actions would also manually stop the main feedwater pump while implementing emergency operating procedure E-0, “Reactor Trip or Safety Injection.”

The inspectors noted the deferral of repairs to 3FWS*CTV41A, B, C, and D from 3RFO15 to 3RFO16 and questioned the continued validity of the operability determination which relied upon an untested, non-safety grade main feedwater pump trip signal for another operating cycle. Dominion developed a procedure, SP 3621.5, “Overlap Testing of Main Feedwater Pump Trips,” Revision 000, which operators used to test the feedwater pump trip signal. This successfully completed test allows Dominion to continue to consider the feedwater isolation function degraded but operable until full compliance is restored in 3RFO16.

Analysis. The inspectors determined that the failure to take timely and effective corrective action in accordance with 10 CFR 50, Appendix B, Criterion XVI, following identification of a degraded condition of the Unit 3 main feedwater isolation valves was a performance deficiency that was reasonably within Dominion’s ability to foresee and correct.

The inspectors determined this issue was more than minor because it is similar to the more than minor examples, 4.f and 4.g of IMC 0612, Appendix E, “Examples of Minor Issues.” Specifically, Dominion did not correct a condition adverse to quality in a timely manner and resulted in a situation that impacted the operability of the feedwater isolation valves. Additionally, the finding is more than minor because it is associated with the Design Control attribute of the Barrier Integrity cornerstone, and adversely affected the cornerstone’s objective of providing reasonable assurance that physical design barriers (fuel cladding, reactor coolant system, and containment) protect the public from radionuclide releases caused by accidents or events.

In accordance with IMC 0609, Appendix A, “The Significance Determination Process for Findings At-Power,” the inspectors performed a Phase 1 SDP screening and determined the finding was of very low safety significance (Green) because the issue did not represent an actual open pathway in the physical integrity of the reactor containment. In the event of a ruptured feedwater line, the train ‘A’ main feedwater regulating valves and bypass valves would remain capable of closing to isolate feedwater flow.

The inspectors determined this finding had a cross-cutting aspect in the Human Performance cross-cutting area, Resources component, because Dominion did not maintain long term plant safety by minimizing long-standing equipment issues and ensuring maintenance and engineering backlogs which are low enough to support safety. Specifically, Dominion deferred the feedwater isolation valve replacement project from 3RFO15 to 3RFO16 because the design change could not be issued to support online work on the project required prior to the outage. Additionally, there were a number of outstanding technical issues for the design change that were not resolved in time despite the condition existing since 2007 (H.2.a).

Enforcement. 10 CFR 50 Appendix B, Criterion XVI, “Corrective Action,” requires, in part, that measures shall be established to assure that conditions adverse to quality are promptly identified and corrected. Contrary to the above, from 2007 until repairs are completed in October 2014, Dominion failed to take timely correction action to correct the degraded condition of the Unit 3 main feedwater isolation valves. Dominion entered this issue into their CAP as CR507299. The NRC identified a performance deficiency

with these valves on August 31, 2012, which is documented as a Green NCV of 10 CFR 50 Appendix B, Criterion XVI, "Corrective Action," (NCV 05000423/2012010-01). The inspectors determined that Dominion had failed to restore compliance at the first opportunity within a reasonable time following the issuance of the finding and NCV. Dominion has since deferred repairs from the April 2013 refueling outage until the October 2014 refueling outage. Therefore, this violation is being cited, consistent with NRC Enforcement Policy, Section 2.3.2. A Notice of Violation is enclosed (Enclosure 1). **(VIO 05000423/2013004-01, Inadequate Corrective Actions to Restore Degraded Unit 3 Main Feedwater Isolation Valves)**.

2. Inadequate Operability Determination for the Turbine Drive Auxiliary Feedwater Pump

Introduction. The inspectors identified a Green finding (FIN) for Dominion's failure to complete an adequate and timely operability determination as required by OP-AA-102, "Operability Determination," to assess governor control oscillations following completion of maintenance on the TDAFW pump 3FWA*P2 on May 17, 2013. Subsequently, on August 9, 2013, following a reactor trip, the TDAFW pump was declared inoperable because the speed oscillations were challenging the relief valve setpoint and the over-speed trip setpoint.

Description. On May 15, 2013, at the end of the refueling outage, Dominion observed that the Unit 3 TDAFW pump was experiencing speed oscillations of approximately ± 100 rpm (or approximately ±5% of average speed) when operating in low flow conditions following a full-flow surveillance test. The pump speed oscillated within 2.8 percent of the overspeed trip setpoint at 4746 rpm. The speed oscillations caused the swings in discharge pressure of ±105 psig (approximately ±10 percent of average discharge pressure) which approached within 1.1 percent of the relief valve setpoint. These oscillations are both within the 3 percent setpoint tolerances for the respective devices. After troubleshooting and several governor adjustments, the pump did not achieve the required differential pressure during a second full flow test on May 17. Dominion subsequently determined that the oscillations did not reduce pump reliability and attributed the low full-flow differential pressure to the instability of the governor. Dominion concluded that TDAFW pump differential pressure remained above the design requirements from the accident analysis for the full flow condition and determined the pump was operable.

Contrary to OP-AA-102, section 3.1, Dominion did not adequately assess the operability of the TDAFW pump and restored the pump to an operable status without completing an operability determination. On May 18, the inspectors questioned the rationale for this decision. Dominion referred to an entry in the Engineering Log to justify continued operation. This entry stated (in part) "while it is a good engineering practice to operate at least 10 percent below the [RV45] relief setpoint (in part to accommodate the 3 percent setpoint tolerance) there is no requirement for this." The inspectors noted that the discharge pressure spikes were within 2.6 percent or the relief valve setpoint during the last test on May 17. The log entry further concluded, "When the pump is called upon to perform its safety function, the flow control valves are wide open, there is ample margin to the relief setpoint." However, the inspectors noted that the flow control valves are manually positioned in response to SG levels and steam / feed flows during an event. The pump may be running at minimum flow for sustained periods of time to control SG level or to prevent SG overfill when the capability for full flow injection is still required by the event mitigation strategy. The inspectors also noted that the comparison

of the pump surveillance test data to the accident analysis requirement did not explicitly consider instrument errors associated with the surveillance test metrology.

On July 2, 2013, the inspectors met with members of the Dominion Engineering Staff and expressed concern that the governor had not been adjusted correctly at the end of the refueling outage. Previous experience had demonstrated that repeatedly lifting the relief valve 3FWA*RV45 would result in the valve failing open and causing significant bypass flow to the demineralized water storage tank thereby challenging the reliability of the TDAFW pump from being able to provide full flow to the SGs when required. Dominion stated they would prepare an evaluation to assess the impact of the oscillations and justify continued operation if appropriate.

Prior to completion of the Engineering Technical Evaluation (ETE), a reactor trip occurred at 9:17 PM on August 9. The TDAFW pump governor linkage was observed to be misaligned and the pump was noted to be oscillating when operating at low flow rates. Discharge pressure exceeded 3FWA*RV45 lift setpoint (1850 psig) and fluctuated between 1869 psig and 1609 psig. Speed fluctuated between 4656 and 4350 rpm with the overspeed trip set point set at 4746 ±142 rpm. The system engineer requested that the pump be shut down when it was no longer required (after approximately four hours of operation) to facilitate troubleshooting. The shift manager stopped the TDAFW pump, declared the pump to be inoperable and entered TS 3.7.2.1 at 00:55 AM on August 10. Troubleshooting revealed that the governor control linkage was out of adjustment (cam plate misaligned to the cam follower) and the governor compensator was not set correctly. Operation of the TDAFW pump in low flow conditions with an unstable governor challenges the lift setpoint of the discharge relief valve, 3FWA*RV45. If RV45 repeatedly lifts, the valve could fail open and allow AFW flow to bypass the SG. Excessive TDAFW pump speed oscillations challenges the overspeed trip feature of the TDAFW pump and could result in tripping the TDAFW pump when it is required to mitigate an event.

On August 12 at 10:11 AM, Dominion approved ETE-MP-2013-1207, “Unit 3 TDAFW Pump Speed Oscillations Experienced during 3R15 Testing and Basis of Operation” (three days following the reactor trip on August 9). Dominion concluded that “The TDAFW pump remains fully capable of meeting its required functions as designed. There is no impact on operability.” The inspectors questioned the basis for this conclusion, given what was known at the time of the ETE approval. On August 12, at 3:15 PM, Dominion adjusted the governor linkage and adjusted the governor compensator to damp out the speed and pressure oscillations. Dominion subsequently exited TS 3.7.1.2 at 1:04 AM on August 13 based on a judgment that the measured flow exceeded the design requirement, even though the measured flow did not pass the in-service surveillance test.

The inspectors concluded that Dominion restored the TDAFW pump to an operable status at the end of refueling outage 3RFO15 without having properly assessed the ability of the pump to perform its safety function with a misaligned linkage and misadjusted governor. Although the pump performed its safety function when required, the speed oscillations actually exceeded the setpoint of the discharge relief valve and challenged the overspeed trip setpoint within the margin of uncertainty.

Analysis. The inspectors determined that the failure to adequately evaluate pump operability as is required by OP-AA-102, was a performance deficiency that was

reasonably within Dominion's ability to foresee and correct. Traditional enforcement does not apply because the issue did not have any actual safety consequences or potential for impacting the NRC's regulatory function, and was not the result of any willful violation of NRC requirements.

The inspectors determined the performance deficiency was more than minor because it affected the equipment performance attribute of the Mitigating Systems cornerstone to ensure the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences (i.e., core damage). Failure to adequately assess operability resulted in a decrease in the reliability of the AFW system to mitigate events. In addition, the performance deficiency is similar to examples 1.a and 2.a of IMC 0612, Appendix E, "Examples of Minor Issues." In these examples, testing revealed information that called into question operability. Specifically, the governor speed oscillations and discharge pressure fluctuations documented at the end of the full flow test on May 17, 2013, called into question the ability of the TDAFW pump to reliably perform its safety function. This degraded condition was never adequately assessed as required by OP-AA-102 using the operability determination process. The inspectors performed a Phase 1 SDP screening in accordance with IMC 0609, Appendix A, "The Significance Determination Process for Findings At-Power." The inspectors determined that the finding was of very low safety significance (Green) because the performance deficiency did not represent a loss of system safety function or a loss of safety function of a single train for greater than its Technical Specification allowed outage time.

This finding has a cross-cutting aspect in the area of human performance in that the licensee uses conservative assumptions in decision making and adopts a requirement to demonstrate that the proposed action is safe in order to proceed rather than a requirement to demonstrate that it is unsafe in order to disapprove the action. Specifically, the licensee did not adequately assess the operability of the TDAFW pump at the completion of 3RFO15 in May 2013. Dominion did not complete an initial operability determination nor did they complete a prompt operability determination despite information that a degraded condition existed (H.1(b)).

Enforcement. This finding does not involve enforcement action because no regulatory requirement violation was identified. Dominion entered this issue into their CAP (CR528526). The TDAFW pump governor was properly repaired on August 12, 2013, prior to return to power. Because this finding does not involve a violation of regulatory requirements and has very low safety significance, it is it is identified as a finding. **(FIN 05000423/2013004-02, Inadequate Operability Determination for the Turbine Drive Auxiliary Feedwater (TDAFW) Pump)**

1R18 Plant Modifications (71111.18 – 2 samples)

Permanent Modifications

a. Inspection Scope

The inspectors evaluated modifications listed below for installation of precision temperature monitoring instrumentation to support increasing the ultimate heat sink temperature from 75 degrees to 80 degrees. The inspectors verified that the design bases, licensing bases, and performance capability of the affected systems were not degraded by the modification. In addition, the inspectors reviewed modification

documents associated with the upgrade and design change (DC), including replacement of the analog instruments with high accuracy digital temperature instruments and integrating them into the plant process computer. The inspectors also reviewed applicable work orders to verify that the temperature instruments were properly calibrated and reviewed revisions to the TS bases to ensure the revisions remained consistent with the TS.

Unit 2

- MP2-12-01223, MP2 DC for Temperature Indication Upgrades to Support 80 Degree UHS

Unit 3

- MP3-13-01005, MP3 DC for SW Temperature Indicator Upgrades

b. Findings

No findings were identified.

1R19 Post-Maintenance Testing (71111.19 – 6 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 was consistent with the information in the applicable licensing basis and/or design basis documents, and that the procedure had been properly reviewed and approved. The inspectors also witnessed the test or reviewed test data to verify that the test results adequately demonstrated restoration of the affected safety functions.

Unit 2

- 'C' high pressure safety injection pump breaker maintenance on September 11
- 'B' EDG following fuel rack and fuel pump maintenance on September 16

Unit 3

- SBO Diesel PMT following an overhaul from July 24 to July 28
- TDAFW Pump PMT following governor linkage and compensator adjustment for oscillations on August 12
- 3FWA*HV36A Target Rock Flow Control Valve post-maintenance test on August 14
- 3SWP*P2A SW Booster Pump following rebuilt of pump on August 30 and September 5

b. Findings

No findings were identified.

1R22 Surveillance Testing (71111.22 – 5 samples)

a. Inspection Scope

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

Unit 2

- SP 2613N-001, Periodic DG Operability Test, Facility 2, (SIAS Start), Revision 000-08 on July 17
- SP 2613K, 'A' EDG Slow Start Surveillance Test on July 31
- C SP 605, Reactive Power Capacity Test on August 23

Unit 3

- SP 3646A.1, 'A' EDG Operability Test on July 9
- C SP 605, Reactive Power Capacity Test on August 23

b. Findings

No findings were identified.

Cornerstone: Emergency Preparedness

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 training drill on August 21 to identify any weaknesses and deficiencies in the classification, notification, and protective action recommendation development activities. The inspectors observed emergency response operations in the simulator, technical support center, and emergency operations facility to determine whether the event classification, notifications, and protective action recommendations were performed in accordance with procedures. The inspectors also attended the station drill critique to compare inspector observations with those identified by Dominion staff in order to evaluate Dominion's critique and to verify whether the Dominion staff was properly identifying weaknesses and entering them into their CAP.

b. Findings

No findings were identified.

2. RADIATION SAFETY

Cornerstone: Public Radiation Safety and Occupational Radiation Safety

2RS5 Radiation Monitoring Instrumentation (71124.05)

During July 29 through August 8, 2013, the inspectors verified that Dominion is assuring the accuracy and operability of radiation monitoring instruments that are used to protect occupational workers and to protect the public from nuclear power plant operations. The inspectors used the requirements in 10 CFR Part 20, 10 CFR Part 50 Appendix A - Criterion 60 Control of Release of Radioactivity to the Environment and Criterion 64 Monitoring Radioactive Releases, 10 CFR 50 Appendix I Numerical Guides for Design Objectives and Limiting Conditions for Operation to meet the Criterion “As Low As Reasonably Achievable”(ALARA) for Radioactive Material in Light-Water-Cooled Nuclear Power Reactor Effluents, 40 CFR Part 190 Environmental Radiation Protection Standards for Nuclear Power Operations, NUREG 0737 Clarification of Three Mile Island Corrective Action Requirements, TS/Offsite Dose Calculation Manual (ODCM), applicable industry standards, and Dominion procedures required by TS as criteria for determining compliance.

a. Inspection Scope

Inspection Planning

The inspectors reviewed the Millstone Unit 2 and Unit 3 Updated Final Safety Analysis Report (UFSAR) to identify radiation instruments associated with monitoring area radiation, airborne radioactivity, process streams, effluents, materials/articles, and workers. Additionally, the inspectors reviewed the associated TS requirements for post-accident monitoring instrumentation. The inspectors reviewed a listing of in-service survey instrumentation including: air samplers, small article monitors (SAM), radiation monitoring instruments, personnel contamination monitors, portal monitors, and whole-body counters. The inspectors assessed whether an adequate number and type of instruments were available to support operations.

The inspectors reviewed Dominion and third-party evaluation reports of the radiation monitoring program since the last inspection including evaluations of offsite calibration facilities or services, if applicable.

The inspectors reviewed procedures that govern instrument source checks and calibrations, focusing on instruments used for monitoring transient high radiological conditions, including instruments used for underwater surveys. The inspectors reviewed the area radiation monitor (ARM) alarm set-point values and bases as provided in the TS and the UFSAR.

The inspectors reviewed effluent monitor alarm set-point bases and the calculation methods provided in the ODCM.

Walkdowns and Observations

The inspectors walked down four effluent radiation monitoring systems, including one liquid and one gaseous effluent system. Focus was placed on flow measurement devices and all accessible point-of-discharge liquid and gaseous effluent monitors. The inspectors assessed whether the effluent/process monitor configurations align with what is described in the UFSAR and/or ODCM.

The inspectors selected five portable survey instruments in use or available for issuance and assessed calibration and source check stickers for currency, as well as, instrument material condition and operability.

The inspectors observed Dominion staff performance as the staff demonstrated source checks for three different types of portable survey instruments. The inspectors assessed whether high-range instruments are source checked on all appropriate scales.

The inspectors walked down five ARMs and five continuous air monitors (CAM) to determine whether they are appropriately positioned relative to the radiation sources or areas they were intended to monitor. Selectively, the inspectors compared monitor response (via local readout or remote control room indications) with actual area radiological conditions for consistency.

The inspectors selected three personnel contamination monitors, three portal monitors, and three SAMs and evaluated whether the periodic source checks were performed in accordance with the manufacturer's recommendations and Dominion procedures.

Calibration and Testing Program

Process and Effluent Monitors

The inspectors selected three effluent monitor instruments and evaluated whether channel calibration and functional tests were performed consistent with Millstone TS/ODCM. The inspectors assessed whether; (a) Millstone calibrated its monitors with National Institute of Standards and Technology (NIST) traceable sources; (b) the primary calibrations adequately represented the plant radionuclide mix; (c) when secondary calibration sources were used, the sources were verified by comparison with the primary calibration source; and (d) the Dominion channel calibrations encompassed the instrument's alarm set-point range.

The inspectors assessed whether the effluent monitor alarm set-points are established as provided in the Millstone ODCM and station procedures. For changes to effluent monitor set-points, the inspectors evaluated the basis for changes to ensure that an adequate justification exists.

Laboratory Instrumentation

The inspectors assessed laboratory analytical instruments used for radiological analyses to determine whether daily performance checks and calibration data indicate that the frequency of the calibrations is adequate and there were no indications of degraded performance.

The inspectors assessed whether appropriate corrective actions were implemented in response to indications of degraded performance.

Whole Body Counter (WBC)

The inspectors reviewed calibration records for the WBC and the methods and sources used to perform functional checks on the WBC before daily use and assessed whether calibration and check sources were appropriate and align with the plant's radionuclide mix and that appropriate calibration phantom(s) were used. The inspectors looked for anomalous results or other indications of instrument performance problems.

Post-Accident Monitoring Instrumentation

The inspectors reviewed the calibration documentation for the drywell high-range monitors. The inspectors assessed whether an electronic calibration was completed for all decade ranges and were also calibrated using an appropriate radiation source. The inspectors assessed whether calibration acceptance criteria are reasonable, considering the large measurement range and the intended use of the instrument.

The inspectors selected two effluent/process monitors that are relied on by Dominion in its emergency operating procedures as a basis for initiating emergency action levels and subsequent emergency classifications, or to make protective action recommendations during an accident. The inspectors evaluated the calibration and availability of these instruments.

The inspectors reviewed Dominion capability to collect high-range, post-accident effluent samples.

As available, the inspectors observed electronic and radiation calibration of those instruments associated with the post accident radiation monitoring to verify conformity with Dominion calibration and test protocols.

Portal Monitors, Personnel Contamination Monitors, and SAM

The inspectors selected one of each type of these instruments and verified that the alarm set-point values are reasonable under the circumstances to ensure that licensed material is not released from the site.

The inspectors reviewed calibration documentation for each instrument selected and reviewed the calibration methods to determine consistency with the manufacturer's recommendations.

Portable Survey Instruments, ARMs, Electronic Dosimetry, and Air Samplers/CAM

The inspectors reviewed calibration documentation for at least one of each type of portable instrument in use. For portable survey instruments and ARMs, the inspectors reviewed detector measurement geometry and calibration methods and reviewed the use of its instrument calibrator as applicable.

As available, the inspectors selected one portable survey instrument that did not meet acceptance criteria during calibration or source checks to assess whether Dominion had taken appropriate corrective action for instruments found significantly out of calibration

(greater than 50 percent). The inspectors evaluated whether Dominion had evaluated the possible consequences associated with the use of an instrument that is "out-of calibration" since the last successful calibration or source check.

Instrument Calibrator

The inspectors reviewed the current radiation output values for Dominion's portable survey and ARM instrument calibrator unit(s). The inspectors assessed whether Dominion periodically verifies calibrator output over the range of the exposure rates/dose rates using an ion chamber/electrometer.

The inspectors assessed whether the measuring devices had been calibrated by a facility using NIST traceable sources and whether decay corrective factors for these measuring devices were properly applied by Dominion in its output verification.

Calibration and Check Sources

The inspectors reviewed Dominion's source term or waste stream characterization per 10 CFR Part 61, "Licensing Requirements for Land Disposal of Radioactive Waste," to assess whether calibration sources used were representative of the types and energies of radiation encountered in the plant.

Problem Identification and Resolution

The inspectors evaluated whether problems associated with radiation monitoring instrumentation were being identified by Dominion at an appropriate threshold and were properly addressed for resolution in their CAP. The inspectors assessed the appropriateness of the corrective actions for a selected sample of problems documented by Dominion that involve radiation monitoring instrumentation.

b. Findings

No findings were identified.

2RS6 Radioactive Gaseous and Liquid Effluent Treatment (71124.06)

During July 29 through August 8, 2013, the inspectors verified that gaseous and liquid effluent processing systems are maintained so radiological discharges are properly reduced, monitored, and released. The inspectors also verified the accuracy of the calculations for effluent releases and public doses.

The inspectors used the requirements in 10 CFR Part 20; 10CFR50.35(a) TS; 10 CFR Part 50 Appendix A - Criterion 60 Control of Release of Radioactivity to the Environment and Criterion 64 Monitoring Radioactive Releases; 10 CFR 50 Appendix I Numerical Guides for Design Objectives and Limiting Conditions for Operations to Meet the Criterion "As Low As Reasonably Achievable" for Radioactive Material in Light-Water-Cooled Nuclear Power Reactor Effluents; 10 CFR 50.75(g) Reporting and Recordkeeping for Decommissioning Planning; 40 CFR Part 141 Maximum Contaminant Levels for Radionuclides; 40 CFR Part 190 Environmental Radiation Protection Standards for Nuclear Power Operations; Regulatory Guide (RG) 1.109 Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents; RG 1.21 Measuring, Evaluating, Reporting Radioactive Material in Liquid and Gaseous Effluents and Solid

Waste; RG 4.1 Radiological Environmental Monitoring for Nuclear Power Plants; RG 4.15 Quality Assurance for Radiological Monitoring Programs; NUREG 1301, ODCM Guidance: Standard Radiological Effluent Controls; applicable Industry standards; and with Dominion procedures required by TS/ODCM as criteria for determining compliance.

a. Inspection Scope

Inspection Planning and Program Reviews

Event Report and Effluent Report Reviews

The inspectors reviewed the Millstone Annual Radioactive Effluent Release Reports (ARERR) for 2011 and 2012 to determine if the reports were submitted as required by the ODCM/TS. The inspectors reviewed anomalous results, unexpected trends, and abnormal releases that were identified. The inspectors determined if these effluent results were evaluated, were entered in their CAP, and were adequately resolved.

The inspectors identified radioactive effluent monitor operability issues reported by Dominion as provided in the Millstone ARERR, and reviewed these issues and determined if the issues were entered into their CAP and were adequately resolved.

ODCM and UFSAR Review

The inspectors reviewed Millstone UFSAR descriptions of the radioactive effluent monitoring systems, treatment systems, and effluent flow paths to identify system design features and required functions.

The inspectors reviewed changes to the Millstone ODCM made by Dominion since the last inspection. When differences were identified, the inspectors reviewed the technical basis or evaluations of the change and determined whether they were technically justified and maintained effluent releases ALARA.

The inspectors reviewed Dominion documentation to determine if any non-radioactive systems that have become contaminated were disclosed either through an event report or the ODCM. The inspectors reviewed selected 10 CFR 50.59 evaluations and made a determination if any newly contaminated systems had an unmonitored effluent discharge path to the environment. The inspectors also reviewed whether it required revisions to the ODCM to incorporate these new pathways and whether the associated effluents were reported in accordance with RG 1.21.

Groundwater Protection Initiative (GPI) Program

The inspectors reviewed reported groundwater monitoring results and changes to Dominion‘s written program for identifying and controlling contaminated spills/leaks to groundwater.

Procedures, Special Reports, and Other Documents

The inspectors reviewed Licensee Event Reports, event reports and/or special reports related to the effluent program issued since the previous inspection to identify any additional focus areas for the inspection based on the scope/breadth of problems described in these reports.

The inspectors reviewed effluent program implementing procedures, including those associated with effluent sampling, effluent monitor set-point determinations, and dose calculations.

The inspectors reviewed copies of Dominion and third party (independent) evaluation reports of the effluent monitoring program since the last inspection to gather insights into the effectiveness of the program.

Walkdowns and Observations

The inspectors walked down selected components of the gaseous and liquid discharge systems to verify that equipment configuration and flow paths align with the descriptions in the UFSAR and to assess equipment material condition. Special attention was made to identify potential unmonitored release points, building alterations which could impact airborne, or liquid, effluent controls, and ventilation system leakage that communicate directly with the environment.

The inspectors reviewed effluent system material condition surveillance records, as applicable, for equipment or areas associated with the systems selected for review that were not readily accessible due to radiological conditions.

The inspectors walked down filtered ventilation systems to verify there are no degraded conditions associated with high-efficiency particulate air /charcoal banks, improper alignment, or system installation issues that would impact the performance or the effluent monitoring capability of the effluent system.

As available, the inspectors observed selected portions of the routine processing and discharge of radioactive gaseous effluent to verify that appropriate treatment equipment was used and the processing activities align with discharge permits.

The inspectors determined that Dominion had not made any changes to their effluent release paths.

As available, the inspectors observed selected portions of the routine processing and discharge of liquid waste. The inspectors verified that appropriate effluent treatment equipment is being used and that radioactive liquid waste is being processed and discharged in accordance with procedures.

Sampling and Analyses

The inspectors selected two effluent sampling activities, and assessed whether adequate controls have been implemented to ensure representative samples were obtained.

The inspectors selected three effluent discharges made with inoperable effluent radiation monitors to verify that controls are in place to ensure compensatory sampling is performed consistent with the TS/ODCM and that those controls are adequate to prevent the release of unmonitored liquid and gaseous effluents.

The inspectors determined whether the facility is routinely relying on the use of compensatory sampling in lieu of adequate system maintenance, based on the frequency of compensatory sampling since the last inspection.

The inspectors reviewed the results of the inter-laboratory and intra-laboratory comparison program to verify the quality of the radioactive effluent sample analyses. The inspectors also assessed whether the intra- and inter-laboratory comparison program includes hard-to-detect isotopes, as appropriate.

Instrumentation and Equipment

Effluent Flow Measuring Instruments

The inspectors reviewed the methodology that Dominion uses to determine the effluent stack and vent flow rates to verify that the flow rates are consistent with TS/ODCM and UFSAR values. The inspectors reviewed the differences between assumed and actual stack and vent flow rates to ensure that they do not affect the calculated results of public dose.

Air Cleaning Systems

The inspectors assessed whether surveillance test results for TS-required ventilation effluent discharge systems meet TS acceptance criteria.

Dose Calculations

The inspectors reviewed all significant changes in reported dose values compared to the previous radioactive effluent release report to evaluate the factors which may have resulted in the change.

The inspectors reviewed three radioactive liquid and three gaseous waste discharge permits to verify that the projected doses to members of the public were accurate and based on representative samples of the discharge path.

The inspectors evaluated the methods used to ensure that all radionuclides in the effluent stream source term are included, within detectability standards. The review included the current waste stream analyses to ensure hard-to-detect radionuclides are included in the effluent releases.

The inspectors reviewed changes in Dominion methodology for offsite dose calculations since the last inspection to verify the changes are consistent with the ODCM and RG 1.109. The inspectors reviewed meteorological dispersion and deposition factors used in the ODCM and effluent dose calculations to ensure appropriate dispersion/deposition factors are being used for public dose calculations.

The inspectors reviewed the latest Land Use Census to verify changes that affect public dose pathways have been factored into the dose calculations and environmental sampling / analysis program.

The inspectors evaluated whether the calculated doses are within the 10 CFR Part 50, Appendix I and TS dose criteria.

The inspectors reviewed three records of abnormal gaseous or liquid tank discharges to ensure the abnormal discharge was monitored by the discharge point effluent monitor. Discharges made with inoperable effluent radiation monitors, or unmonitored leakages

were reviewed to ensure that an evaluation was made of the discharge to account for the effluent release and were included in the calculated doses to the public.

GPI Implementation

The inspectors reviewed monitoring results of the voluntary Nuclear Energy Institute GPI to determine if Dominion has implemented the Groundwater Protection Initiative as intended.

For anomalous results or missed samples, the inspectors assessed whether Dominion has identified and addressed deficiencies through their CAP.

The inspectors reviewed identified leakage or spill events and entries made into Dominion‘s decommissioning files. The inspectors reviewed evaluations of leaks or spills, and reviewed the effectiveness of any remediation actions. The inspectors reviewed onsite contamination events involving contamination of ground water and assessed whether the source of the leak or spill was identified and isolated/terminated.

For unmonitored spills, leaks, or unexpected liquid or gaseous discharges, the inspectors assessed whether an evaluation was performed to determine the type and amount of radioactive material that was discharged by: assessing whether sufficient radiological surveys were performed to evaluate the extent of the contamination and assessing whether a survey/evaluation has been performed; and determining whether Dominion completed offsite notifications, as provided in its GPI implementing procedures.

The inspectors reviewed the evaluation of discharges from onsite surface water bodies that contain or potentially contain radioactivity, and the potential for ground water leakage from these onsite surface water bodies. The inspectors assessed whether Dominion is properly accounting for discharges from these surface water bodies as part of their effluent release reports.

The inspectors assessed whether on-site ground water sample results and a description of any significant on-site leaks/spills into ground water for each calendar year are documented in the ARERR.

For significant, new effluent discharge points, such as significant or continuing leakage to ground water that continues to impact the environment, the inspectors evaluated whether Dominion’s ODCM was updated to include the dose calculation method for the new release point and the associated dose calculation methodology.

Problem Identification and Resolution

The inspectors assessed whether problems associated with the effluent monitoring and control program are being identified by Dominion at an appropriate threshold and are properly addressed for resolution in their CAP. In addition, the inspectors evaluated the appropriateness of the corrective actions for a selected sample of problems documented.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

.1 Radiological Effluent TS/ODCM Radiological Effluent Occurrences (1 sample)

a. Inspection Scope

During July 29 through August 8, 2013, the inspectors sampled Dominion submittals for the radiological effluent TS/ODCM radiological effluent occurrences Performance Indicator (PI) for the period from the 1st Quarter 2012 through 4th Quarter 2012. The inspectors used PI definitions and guidance contained in the Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6, dated October 2009, to determine if the PI data was reported properly during this period. 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 Dominion's issue report database and selected individual reports generated since this indicator was last reviewed 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 for selected dates between the 1st Quarter 2012 through 4th Quarter 2012, to determine if indicator results were accurately reported. The inspectors also reviewed Dominion's methods for quantifying gaseous and liquid effluents and determining effluent dose.

b. Findings

No findings were identified.

.2 Mitigating Systems Performance Index (10 samples)

a. Inspection Scope

The inspectors reviewed Dominion's submittal of the Mitigating Systems Performance Index for the following systems for the period of July 1, 2012 through June 30, 2013**:**

Unit 2

- Emergency AC Power System
- High Pressure Injection System
- Heat Removal System
- Residual Heat Removal System
- Cooling Water System

Unit 3

- Emergency AC Power System
- High Pressure Injection System
- Heat Removal System

- Residual Heat Removal System
- Cooling Water System

To determine the accuracy of the PI data reported during those periods, the inspectors used definitions and guidance contained in Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 6. The inspectors also reviewed Dominion's operator narrative logs, CR, mitigating systems performance index basis reports, system health reports, and NRC integrated inspection reports to validate the accuracy of the submittals.

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution (71152 – 4 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 their 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.

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 individual issues identified during the NRCs daily CR review (Section 4OA2.1). The inspectors reviewed the Dominion quarterly trend report for the first quarter of 2013**,** conducted under PI-AA-200-2001, trending to verify that Dominion's personnel were appropriately evaluating and trending adverse conditions in accordance with applicable procedures. This trend review focused on the trend report and work management.

b. Findings and Observations

No findings were identified.

For the trend report, the inspector's observations are very similar to the observations made one year ago. The trend report consists of several graphs of the number of CRs per quarter that have been coded with various trend codes by the station trend coordinator. PI-AA-200-2001 states that the trend report is a high level report and the value of the report is in allowing the organization to focus on salient station issues without the need to sort through large amounts of distracting data. The report does not provide analysis of the trends. It appears that the trend report provides minimal value to managers and above, since it does not provide sufficient information to determine emerging station issues. Trend reports were not published for the 3rd and 4th quarters of 2012 and it was not documented by the licensee until CR513774 was written in April 2013.

Potential negative trends are forwarded to the applicable department for the necessary analysis. The inspectors noted that no negative trends were confirmed for the individual departments in the 2nd Quarter 2012 and 1st Quarter 2013 for potential trends identified by the trend report. The departments have identified negative trends through their department self-assessment meetings. CRs 502969, 516890, and 519618 documented department identified negative trends.

The inspectors noted that the trend report does not contain a detailed analysis of the trends in accordance with the guidance of PI-AA-200-2001, Attachment 13 template. This was first documented by the inspectors one year ago. This issue is a minor performance deficiency since the requirement was administrative in nature and had no safety impact. Dominion has indicated that there are plans in place to improve the trend report.

For work management, the inspectors noted generally steady trends or improvement since the last review two years ago. Critical preventive maintenance (PMs) performed late in the grace period have improved from 31.6 percent to 17 percent. Deferral of critical and non critical PMs per rolling quarter have improved slightly from 6 and 0 respectively to 3 and 0. Overdue critical PMs have remained at 0. Work week T-6 scope survival for the past 12 months has averaged 86.5 percent which is similar to the 90 percent T-4 scope stability reported two years ago.

.3 Annual Sample: Corrective Actions for Control Room Chiller 'A' Service Water System

a. Inspection Scope

The inspectors performed an in-depth review of Dominion's actions involving repairs of the Unit 3 SW booster pump, 3SWP*P2A, and the repair of the degraded constant vent line to 3SWP*P2A from August 1 to September 7, 2013. During this period of time, Dominion removed the 'A' train SW supply to the 'A' control room chiller for periods of time in order to rebuild the degraded pump and repair a pinhole leak in the constant vent line to the pump. The inspectors verified that the TS and technical requirements were properly entered and exited; operability and functionality were appropriately evaluated.

The inspectors assessed Dominion's problem identification threshold, cause 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. In addition, the inspectors performed field walkdowns and interviewed engineering personnel to assess the effectiveness of the implemented corrective actions.

b. Findings and Observations

No findings were identified.

On August 6, a pinhole leak was located in the constant vent header to the SW supply header to 3SWP*P2A and Dominion entered Technical Requirement (TR) 3.4.10 to characterize the structural integrity of the SW header. Engineering determined that the affected pipe had sufficient strength to justify structural integrity for 90 days and the TRM requirement was exited on August 8. On August 26, prior to repairing the constant vent line, 3SWP*P2A failed its performance test and Dominion entered TR 3.7.7.1(b) (a 7 day shutdown action statement) to rebuild the pump. Subsequently, on August 26, Dominion discovered a reduced wall thickness on the constant vent header and reentered TR 3.4.10 to recharacterize the structural integrity of the line. On August 30, the rebuilt pump failed its performance test. On August 31 at 1:45 PM, Dominion exited TR 3.7.7.1(b) after engineering determined that 3SWP*P2A was functional and reentered TR 3.7.7.1(a) (30 day action statement dated effective August 6). Subsequently, at 3:45 PM, Facility Safety Review Committee (FSRC) determined that the constant vent header to 3SWP*P2A no longer maintained structural integrity based on recent ultrasonic testing (UT) measurements. However, Dominion did not reenter TR 3.7.7.1(b) because they determined that OD000185 (from 2008) justified functionality of 3SWP*P2A even if the constant vent header failed. They directed that Engineering provide an immediate determination of functionality within 24 hours. On September 1 at 11:00 AM, Dominion determined that the SW cross-tie to the 'A' train control room chiller would not remain functional if the constant vent header failed due to air entrainment and reentered TR 3.7.7.1(a) a 7 day shutdown action statement. Dominion repaired the constant vent header and restored functionality of the SW booster pump on September 5 at 4:54 AM.

The inspectors determined that the decisions reached during the multiple events listed above were appropriate based on the information that was available at the time of the decision. The initial recommendations regarding structural integrity from engineering were appropriately challenged by FSRC and ultimately the correct actions were taken. However, the inspectors noted that Dominion engineering had not conservatively considered the UT information showing more rapidly degrading wall thickness conditions on August 26 which delayed the decision to reenter TR 3.4.10 by 2 days. This also resulted in further delays to fully assess the operability of 3SWP*P2A (under the postulated conditions of a failure of the constant vent line).

The inspectors noted that the FSRC members appropriately challenged the initial engineering assessments submitted for structural integrity of the constant vent line and corresponding functionality of 3SWP*P2A, and ultimately arrived at the correct

conclusions and decision to promptly repair the leaking SW constant vent header. The FSRC members showed a strong questioning attitude and a reluctance to accept conclusions without adequate verification and validation.

.4 Annual Sample: Unit 3 'A' EDG Reliability

a. Inspection Scope

The inspectors performed an in-depth review of Dominion's apparent cause analysis and corrective actions associated with CR's 400687, 460214, 460806, and 467034 concerning EDG sequencer alarms, load swings, and relay failure issues associated with the 'A' EDG.

The inspectors assessed Dominion's problem identification threshold, cause 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 the 'A' EDG sequencer alarms, load swings, and relay failure issues and whether the planned or completed corrective actions were appropriate. The inspectors compared the actions taken to the requirements of Dominion's CAP.

b. Findings and Observations

No findings were identified.

The inspectors determined that Dominion appropriately identified, characterized, and implemented corrective actions associated with the 'A' EDG issues. The inspectors noted that related to EDG sequencer alarm issues, a Request for Engineering Assistance was created in January of 2011, and the recommended wiring change, to defeat nuisance alarm input related to Reserve Station Service Transformer (RSST) output breaker, was placed in the modification improvement program. The inspectors noted that when RSST output breakers are closed, the main board nuisance alarm associated with sequencer trouble stays locked in until the RSST output breakers are reopened and the sequencer is reset. In this configuration, the sequencer auto tester function does not see other trouble alarms. The inspectors reviewed and verified that during RSST output breakers closure alignment, a loss of sequencer control power condition, which affects the operability of the EDG sequencer, is not masked, and verified that a redundant control room alarm is received when sequencer control power is lost. The inspectors noted that for the 'A' EDG load swing issues, Dominion did not identify the apparent cause of the condition, and have not observed the condition since July of 2012, during the monthly EDG runs. The inspectors noted that the load swings have disappeared following a maintenance activity associated with adjustment of the EDG governor fuel rack linkage to support EDG endurance surveillance run. The load swings were observed during monthly surveillance testing when the EDG was paralleled to the grid and the governor was placed in parallel mode. Inspectors noted that Dominion has plans to replace the 'A' EDG governor during the upcoming refueling outage.

The inspectors determined Dominion's overall response to the issues were commensurate with the safety significance, were timely, and the actions taken and planned were reasonable to resolve the 'A' EDG issues.

.5 Annual Sample: Review of 95001 Identified Weaknesses

a. Inspection Scope

The inspectors performed an in depth review of corrective actions resulting from a self-revealing Green NCV identified in Inspection Report 05000336/2012004-02, and weaknesses identified during Inspection Procedure (IP) 95001 documented in Inspection Report 05000336/20120011. The inspectors reviewed Dominion's procedures, CRs, corrective actions, effectiveness reviews, and common cause evaluations to ensure that the changes implemented were effective and reasonable. The inspectors reviewed a root cause evaluation of an additional recent issue to ensure that the additional training that Dominion has implemented for personnel performing root cause evaluations was effective.

b. Findings & Observations

No findings were identified.

The inspectors reviewed Dominions corrective actions and determined that they were appropriate to adequately address the identified deficiencies.

Specifically:

1. In the IP 95001 inspection report, the NRC identified that Dominion had not done an extent of condition for activities that are performed without procedural guidance that should have procedural guidance. In response, Dominion staff performed a walk down of Unit 2 and 3 control rooms to ensure that switches with no procedural guidance were identified and properly addressed through the CAP.

2. In the IP 95001 inspection report, the NRC identified that Dominion had not completed, at the time of the inspection, the revisions to Millstone 3 operating procedures to incorporate specific reactivity management guidance. Millstone completed revising the Millstone 3 operating procedures and the inspectors reviewed a sample of the procedures with no issues identified.

3. In the IP 95001 inspection report, the NRC identified a green NCV concerning the adequacy of the corrective actions to prevent reoccurrence. The inspectors reviewed Millstone's additional corrective actions and effectiveness reviews to ensure the station has adequate corrective actions in place to prevent recurrence of a similar event.

4. In the exit meeting for the 95001 inspection, the NRC identified that many of the corrective actions to improve operator performance were incorporated into several different procedures/documents and that there was no overall programmatic guidance. In response Dominion developed a new corporate procedure OP-AA-2100, "Operations Crew Performance Monitoring and Key Performance Indicators," to incorporate all of the corrective actions to improve performance. The inspectors reviewed this procedure and did not identify any issues.

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

- Personnel Fatality in the Condensate Polishing Facility on August 22

Unit 3

- Reactor Trip after a loss of power from the 32L load control center caused a loss of feedwater to Unit 3 on August 9

b. Findings

No findings were identified.

.2 (Closed) Licensee Event Report (LER) 05000336/2012-001-00: Historical Gaps in High Energy Line Break Barrier

and

(Closed) Unresolved Item (URI) 05000336/2012005-00: Gaps in West 480V Switchgear HELB Barrier May Impact Safety Related Equipment

This issue was previously identified in Inspection Reports 05000336/2012005 and 05000423/2012005. On June 7, 2012, with Unit 2 at 100 percent power, Dominion determined that a series of physical gaps in a high energy line break (HELB) barrier rendered the equipment in the west 480V switchgear room inoperable. Dominion entered TS 3.8.2.1, TS 3.8.2.1(a) action C, and TS 3.3.3.5 action A due to 480V bus 22E, inverters 5 and 6, and remote shutdown panel C-21 being located in the room. The openings were sealed and the switchgear room was returned to operable status at 4:05 PM on June 8, 2012, which met the TS action requirements. Dominion determined that this condition may have existed since initial construction. Historical operation with the west 480V switchgear room inoperable in excess of the above TS action statement allowed times is prohibited by the plant's TSs. The enforcement aspects of this finding are discussed in Section 4AO7. This LER is closed.

.3 (Closed) LER 05000336/2013-002-00: Turbine Driven Auxiliary Feedwater Pump HELB Door Left Open during Surveillance Test

On March 7, when Unit 2 was performing a TDAFW pump surveillance test, the operators left the door to the TDAFW pump room open for approximately 30 minutes. The door is a HELB barrier. With the door open, there is no HELB protection for the motor driven auxiliary feedwater pumps, potentially rendering both trains of AFW inoperable, since the TDAFW pumps were declared inoperable during the surveillance. The enforcement aspects of this issue are discussed in Section 4OA7. The inspectors did not identify any new issues during the review of the LER. This LER is closed.

.4 (Closed) Licensee Event Report (LER) 05000336/2012-003-00: Potential for a Loss of Safety Function due to Postulated Flood Conditions

and

(Closed) Unresolved Item (URI) 05000336/2012005-01: Unsealed Penetrations in Flood Barriers May Impact Safety Related Equipment in a Design Basis Flood

On October 15, 2012, during walkdowns performed in response to the NRC's 10 CFR 50.54(f) letter while Unit 2 was shutdown in Mode 5, Dominion identified several unsealed electrical conduits connecting the service water (SW) pump room in the intake structure to the turbine building. These conduits penetrated the wall above the design basis flood height of 22 feet mean seal level (MSL) but below the maximum standing wave height of 26.5 feet MSL inside the intake structure SW pump room. During a design basis flood, this condition could have resulted in flooding of the turbine building and auxiliary building such that all auxiliary feedwater (AFW) pumps, high pressure safety injection (HPSI) pumps, and power operated relief valves (PORVs), through loss of DC control power, could be rendered inoperable. Dominion took prompt corrective actions to seal the identified penetrations. These deficiencies appear to have existed since initial construction. The enforcement aspects of this finding are discussed in section 4OA7. This LER is closed.

4OA5 Other Activities

Construction of an Independent Spent Fuel Installation (ISFSI) at Operating Plants (60853 - 1 sample and 60856 - 1 sample)

a. Inspection Scope

On September 18 - 19, 2013, the inspectors conducted an on-site review of Dominion and contractor fabrication activities associated with the expansion of the ISFSI pad at Millstone. The inspectors walked down the construction area; examined the rebar installation; and verified that the rebar size, spacing, splice length, and concrete coverage on the top, side, and bottom complied with licensee-approved drawings and specifications. The inspectors also evaluated the concrete formwork installation for depth, straightness, and horizontal bracing and verified the overall dimensions and orientation for compliance to the licensee-approved drawings. The inspectors interviewed Dominion and contract personnel to verify knowledge of the planned work and appropriate oversight of the construction activities. The inspectors reviewed several concrete truck batch tickets to verify that the concrete delivered to the site met code and specification requirements. The inspectors observed concrete placement, vibration, and

finishing for two pad sections, and observed tests for concrete slump, air content, temperature measurements, and the collection and preparation of cylinder samples for compression tests to verify that the work was implemented according to licensee-approved specifications and referenced industry codes and standards. The inspectors also performed an in-office review of records of previously placed concrete including batch tickets, slump test, air entrainment test, and compressive strength test results to assure that the test results met the acceptance criteria as specified in the design requirements.

b. Findings

No findings were identified.

4OA6 Meetings, Including Exit

On October 17, 2013 the inspectors presented the inspection results to Stephen E. Scace, 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 violations of very low safety significance (Green) were identified by Dominion and are violations of NRC requirements which meet the criteria of the NRC Enforcement Policy for being dispositioned as NCVs:

.1 Unit 2 Turbine Driven Auxiliary Feedwater Pump HELB Door Left Open during Surveillance Test

10 CFR 50 Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” states, in part, that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings of a type appropriate to the circumstances and shall be accomplished in accordance with those instructions, procedures, or drawings. Contrary to the above, on March 7, 2013, Dominion failed to maintain a HELB door closed during the TDAFW pump surveillance and rendered both trains of AFW inoperable for approximately 30 minutes. The inspectors determined that the finding was of very low safety significance (Green) in accordance with IMC 0609, Appendix A, “The Significance Determination Process for Findings at Power.” Dominion entered the issue into their CAP (CR507412).

.2 Unit 2 Historical Gaps in High Energy Line Break Barrier

TS 3.8.2.1 requires, in part, that when 480V Emergency Load Center 22E is inoperable, it must be restored to operable status within 8 hours or be in COLD SHUTDOWN within the next 36 hours. Contrary to the above, from initial construction until June 8, 2012, the bus 22E was inoperable due to a gap in the HELB barrier. This gap would allow high energy steam to enter the switchgear rooms, causing the electrical equipment inside to potentially fail.

The inspectors determined that there was a performance deficiency in that Dominion did not recognize the inoperability of the 22E bus as a result of the historical gap and take

the appropriate actions as required by TS. This finding is of very low safety significance as determined by a detailed risk assessment using SAPHIRE 8 and a modified main steam line break outside of containment event tree from the Millstone 2 SPAR model. Specifically, the risk analysis reviewed three possible main steam line break sources in the turbine building near the West 480V Switchgear Room. The assumed one year exposure period was broken down into a period of 66 days when alternate cooling was in effect for the West 480V Switchgear Room and two days when it was in effect for the East 480V Switchgear Room. The frequencies of the associated steam line breaks were determined from a recent EPRI steam line break technical report, given the assumed leak location and the estimated length of associated piping. With the gaps in the HELB barrier and assuming a steam line break, the West 480V switchgear was assumed to fail. When alternate cooling was used for the West 480V Switchgear Room, if the steam line was not isolated, both trains of DC switchgear were also assumed to fail due to high temperature/humidity. When the East Switchgear alternate cooling was used, it was assumed that failure of all safety-related 480V power would have occurred due to high temperature/humidity. Dominion sealed the gap upon discovery in June 2012 and has entered this issue into the CAP (CR478194).

.3 Unsealed Penetrations in Flood Barriers May Impact Safety Related Equipment in a Design Basis Flood

10 CFR 50 Appendix B, Criterion III, Design Control, states, in part, that measures shall be established to assure that applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions. Contrary to this, from initial construction until November 16, 2012, Dominion failed to ensure that Unit 2 safety related equipment would perform their safety function during a 22 foot MSL design basis flood event concurrent with a 26.5 foot MSL standing wave in the intake structure. Specifically, the unsealed electrical conduits and other openings would have allowed water to bypass Dominion's flood protection features and could have affected the functionality of the safety related AFW and HPSI pumps and the PORVs. Dominion entered the issue into their corrective action process as CR491792 and sealed the conduits.

Dominion performed an analysis that modeled the postulated effects of the compromised flood barriers. The evaluation postulated the time based impact of the design basis Probable Maximum Hurricane (PMH) tidal surge, using data (including wave runup above the still water heights) from Table 2.5-1 of the UFSAR, with and without the concurrent +26.5 ft MSL water level in the intake structure. The calculation estimated the height of water in the turbine, control, and auxiliary buildings rooms containing equipment necessary to maintain safe hot shutdown using: physical plant layout (floor areas and elevations, internal access doors and postulated water flow paths); water flow estimates; relative height of the identified leakage points; and critical water levels where equipment could be compromised. The engineering calculations demonstrated no impact to equipment needed to perform during the design basis flood without the concurrent intake structure standing wave. However, there was a potential to affect the functionality of the auxiliary feedwater pumps, the PORVs and the high pressure injection system if the standing wave condition occurred, as assumed, for one hour concurrent with the design basis maximum storm surge.

The inspectors and a Region I senior risk analyst (SRA) reviewed the associated engineering calculations and technical evaluation. The Region I SRAs conducted and

peer reviewed a detailed risk evaluation which they discussed with Office if Nuclear Reactor Regulation, Division of Risk Assessment staff. The SRAs determined that the finding was of very low safety significance with an estimated increase in core damage frequency of less than one in one million reactor years (Green). This was based on available frequency information and on the possibility of some credit for core damage mitigation equipment due to conservative assumptions, as follows:

- Dominion included significant conservatisms in their calculation and evaluation, which tend to overestimate the chance of damage to mitigation equipment, such as: including wave runup above the assumed still water heights; the one hour duration of intake structure water level at + 26.5 ft MSL due to the postulated standing wave; the height at which equipment damage would occur; and the assumed size of the identified flood barrier breaches.
- Dominion took no credit for operator actions to protect the important equipment either prior to or during a predicted extreme weather event. Plant procedures for these types of weather conditions discuss pre-staging equipment (sand bags, portable pumps and generators) and personnel to respond to limit the impact of potential flooding on important equipment.

ATTACHMENT: SUPPLEMENTARY INFORMATION

SUPPLEMENTARY INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

M. Adams	Plant Manager
T. Adams	Unit 3 Balance of Plant Operator
C. Acuna	Unit 3 Unit Supervisor
R. Acquaro	Unit 3 Shift Manager
J. Ashburn	Unit 2 Unit Supervisor
L. Armstrong	Director, Nuclear Station Safety & Licensing
B. Bartron	Supervisor, Licensing
P. Bauman	Manager of Security and Drill ADSEO
R. Beal	Unit 2 Shift Manager
T. Berger	Unit 3 Shift Manager
J. Bookmiller	Unit 3 Unit Supervisor
A. Bonamarte	Unit 2 Balance of Plant Operator (BOP)
R. Bonner	Supervisor Nuclear Engineering
E. Brodeur	Unit 3 Shift Manager
M. Brehler	Senior NDE Inspector
J. Burdick	Senior RP Technician
J. Chadbourne	Nuclear Engineer III
C. Chapman	Unit 3 BOP
W. Chestnut	Supervisor, Nuclear Shift Operations Unit 2
F. Cietek	Nuclear Engineer, PRA
T. Cleary	Licensing Engineer
G. Closius	Licensing Engineer
J. Collier	Unit 2 Reactor Operator (ATC)
A. Conant	Manager Nuclear Maintenance
M. Cote	Senior Training Instructor and Drill Controller
J. Curling	Manager, Protection Services
J. Dakers	Project Manager
G. D'Auria	Nuclear Chemistry Supervisor
T. Denbek	Emergency Preparedness Specialist and Drill Controller
K. Dickey	Unit 3 PEO (Plant Equipment Operator)
E. Dundon	Nuclear Engineer III
B. Ferguson	Unit 2 Shift Manager
T. Fisher	Unit 3 Unit Supervisor
C. Flory	Chemistry Engineer
J. Fuller	Senior Instructor, Nuclear
G. Gardner	Consulting Engineer
M. Garza	Unit 2 Shift Manager
J. Glaub	Chemistry Technician
T. Gleason	Senior RP Technician
M. Gobeli	Unit 2 Shift Technical Advisor
B. Gorman	Maintenance Supervisor
K. Holt	Manager, Nuclear Communications
M. Hollis	Unit 3 Reactor Operator (OATC)
T. Hughes	Supervisor, Instrumentation and Control

C. Janus	Maintenance Rule Coordinator
R. Kastner	Unit 2 SRO and Drill Emergence Communicator
F. Kearney	Project Engineer
J. Laine	Manager, Radiation Protection/Chemistry
M. Letterich	Unit 2 Control Operator
G. Marshall	Manager, Outage and Planning
M. Martell	Unit 3 VARs Test Coordinator
M. Maxson	Manager, Nuclear Oversight
H. McKenney	Operations
B. Nichols	Unit 3 Shift Technical Advisor
M. O'Conner	Director if Station Emergency Operations
J. Palmer	Manager, Training
B. Pinkowicz	Senior Training Instructor and Drill Controller
T. Quinley	Nuclear Technical Specialist III
D. Reed	Unit 3 Shift Manager
J. Rigatti	Manager, Nuclear Site Engineering
P. Russell	Unit 3 Shift Manager
W. Ruoppo	Unit 3 PEO
D. Russo	Nuclear Engineer Level III
R. Saddler	Unit 3 Unit Supervisor
L. Salyards	Licensing, Nuclear Technology Specialist
S. Scace	Site Vice President
P. Scott	Unit 3 Reactivity SRO
J. Semancik	Director, Nuclear Engineering
D. Smith	Manager, Emergency Preparedness
E. Smith	System Engineer
S. Smith	Manager, Nuclear Operations
T. Steahr	Engineering Supervisor
J. Stoddard	Unit 3 Shift Manager
P. Stringfellow	Unit 3 SRO
B. Strizzi	Supervisor Nuclear Engineering
V. Wessling	Unit 2 Unit Supervisor
S. Turowski	Health Physics Supervisor
C. Widdifield	Unit 3 PEO
M. Wiese	Unit 2 Senior Reactor Operator
W. Woolery	Unit 2 Shift Manager
M. Wynn	Radiological Analysis Supervisor
J. Young	Senior Instructor, Nuclear Operation

LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED

Opened

05000423/2013004-01	VIO	Inadequate Corrective Actions to Restore Degraded Unit 3 Main Feedwater Isolation Valves (Section 1R15)

Opened/Closed

05000423/2013004-02	FIN	Inadequate Operability Determination for the Turbine Drive Auxiliary Feedwater (TDAFW) Pump (Section 1R15)

Closed

05000336/2012-001-00	LER	Historical Gaps in High Energy Line Break Barrier (Section 4OA3)
05000036/2013-002-00	LER	Turbine Driven Auxiliary Feedwater Pump HELB Door Left Open During Surveillance Test (Section 4OA3)
05000336/2012005-00	URI	Gaps in West 480V Switchgear HELB Barrier May Impact Safety Related Equipment (Section 4OA3)
05000336/2012-003-00	LER	Potential for a Loss of Safety Function due to Postulated Flood Conditions (Section 4OA3)
05000336/2012005-01	URI	Unsealed Penetrations in Flood Barriers May Impact Safety Related Equipment in a Design Basis Flood (Section 4OA3)

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures
AOP 2560, Storms, High Winds and High Tides, Revision 010-13
AOP 3569, Severe Weather Conditions, Revision 018

Condition Reports

481594	507712	508458	519552
526372	526373	526375	526376
526377			

Miscellaneous
Unit 2 and Unit 3 Circulating Water and Screen Wash System Health Reports, 2nd Quarter 2013
Unit 2 and Unit 3 Doors and Barriers System Health Reports, 2nd Quarter 2013
MRE014129
MRE015751

Section 1R04: Equipment Alignment

Procedures
OP 2307-001, LPSI System Valve Alignment, Facility 1, Revision 000-04
OP 2307-003, Common ECCS Suction Header Valve Alignment, Facility 1, Revision 000-02
OP 2326A-002, SW Alignment Verification, Facility 2, Revision 000-08
OP 2346B-003, DG Fuel Oil Valve Alignment, Revision 000-00
OP 2346C-004, 'B' DG SW Valve Alignment, Revision 000-04
OP 2346C-005, 'B' DG Starting Air Valve Alignment, Revision 000-00
OP 2346C-006, 'B' DG Jacket Water Valve Alignment, Revision 000-01
OP 2346C-007, 'B' DG Lube Oil Valve Alignment, Revision 000-03
OP 2346C-008, 'B' DG Breaker/Control Switch Alignment, Revision 000
OP 3322-001, TDAFW Pump and Components Common to Both Trains, Revision 007-09
OP 3322, Auxiliary Feedwater System, Revision 021-17
SP 3622.3, Auxiliary Feedwater Pump 3FWA*P2 Operational Readiness Test, Revision 017-13

Condition Reports
523762

Section 1R05: Fire Protection

Procedures
U2-24-FPP-FHA, Millstone Unit 2 Fire Hazards Analysis, Revision 12
U2-24-FFS, MP2 Firefighting Strategies, Revision 0
Millstone Unit 3 Fire Protection Evaluation Report, Revision 16
U3-24-FSS-BAP01-SB, Millstone Unit 3 Fire Fighting Strategies, Service Building, Revision 0
MNPS-3-FPER, Analysis 62, Normal Switchgear Room, Fire Area SB-1, Zone N/A, El. 4'6"

Section 1R06: Flood Protection Measures

Condition Reports
520414

Miscellaneous
WO 53102591422, M33EMH*3B
RAS000235, RAS Required to Determine if Turbine Building Penetrations Challenge Equipment Flooding
ETE-MP-2013-1195, Penetration Flood Seals between Cable Pit 5 in the Turbine Building and the Transformer Yard, dated July 14, 2013
Dominion Letter Serial 07-0268 dated May 7, 2007 Subject: Response to Generic Letter 2007-01, Inaccessible or Underground Power Cable Failures that Disable Accident Mitigation Systems or Cause Plant Transients

Dominion Letter Serial 07-0268A dated April 4, 2008 Subject: Generic Letter 2007-01, Inaccessible or Underground Power Cable Failures that Disable Accident Mitigation Systems or Cause Plant Transients; Response to Request for additional Information

Section 1R07: Heat Sink Performance

Procedures
OP 2326A, Revision 024-04, "Millstone Power Station, General Operating Procedure, SW System OP 2326A"
OP 3330A, Revision 018-06, "Reactor Plant Component Cooling Water"

Apparent Cause Evaluations
ACE 018565, CR416736, "SW Pump Strainer required repair after PM"
ACE 0018693, CR428785, "Work Management Issues with Corrective Action Plan from ACE 017509"
ACE 018774, CR434891, "MP3 SW Leak at 3SWP*V31 Stub End Required Weld Repair on July 16, 2011"
ACE 018875, CR443501, "Leak Identified on 'A' CCP HX"
ACE18878, CR444912, "Corrective Maintenance of 2-SW-178C"
ACE 018978, CR454096, "3SWP*MOV24D and 3SWP*STR1D did not move with demand causing SW unavailability"
ACE 019113, CR471677, "Unplanned Ultimate Heat Sink Shutdown Tech Spec Action Statement entry during Condenser Backwashing"
ACE19371, CR501458, "SWP*P3A, Procurement of New Pumps with Known Material Deficiency"
ACE 019407, CR506524, CR506519, "Corrosion Identified on SW Valve Flange Bolting Resulting in Inoperable Equipment"

Root Cause Evaluations
RCE001037, "Unit 2 Automatic Reactor Trip due to Unexpected Loss of Second Circ Pump"
RCE001063, "Unplanned Shutdown due to SW Leak"

Condition Reports

502484	502489	503652	504417
510492	513373	516934	518141
518142	518480	518507	520137
520233			

Inspection Reports
3CCP*TK1 RPCCW Surge Tank, West Side, AWO 53M30613902
3CCP*TK1 RPCCW Surge Tank, East Side, AWO M30612546
Ultrasonic Straight Beam Measurement SK-2962A, AWO 53102599329
Ultrasonic Straight Beam Measurement 2-SW-84A, AWO 53102599352

Calculation
97-169 Revision 4, "MP2 RBCCW Design Basis Flow Distribution"
12-001, Revision 0, "MP2 SW Model and Design Basis Analysis"
12-347, Revision 000, "Millstone Unit 2 Thermal Performance of the RBCCW Heat Exchangers for USH Temperature Increase"

Electric Power Research Institute Guidance
EPRI TR-100385, “Balance-of-Plant Heat Exchanger Condition Assessment Guidelines”
EPRI TR-110392, “Eddy Current Testing of SW Heat Exchangers for Engineers Guideline”
EPRI NP-7552, “Heat Exchanger Performance Monitoring Guidelines”
EPRI 1012129, “Heat Exchanger Thermal Performance Margin Guidelines”
EPRI 1013454, “Nondestructive Evaluation: Enhanced ID Pit Sizing for Heat Exchangers”
EPRI 1013470, “Plant Support Engineering: Guidance for Replacing Heat Exchangers at Nuclear Power Plants with Plate Heat Exchangers”
EPRI TR-108923, “Recommended Cleaning Practices for SW Systems”
EPRI TR-107397, “SW Heat Exchanger Testing Guidelines”
EPRI 1003320, “Supplemental Guidance for Testing and Monitoring SW Heat Exchangers”

Health Reports
Millstone Unit 2, 2330A – RBCCW, 2nd Quarter 2013
Millstone Unit 2, 2326A – SW, 2nd Quarter 2013
Millstone Unit 3, 3330A – Reactor Plant Component Cooling (CCP) (ed. a.k.a. RPCCW)

Surveillance
‘A’ RBCCW HX D/P DETERMINATION, April 7, 2013
‘B’ RBCCW HX D/P DETERMINATION, May 19, 2013
‘C’ RBCCW HX D/P DETERMINATION, May 5, 2013
SW Heat Exchangers Fouling Determination, July 6, 2013
SW Heat Exchanger Fouling Determination, June 29, 2013

Section 1R11: Licensed Operator Requalification Program

Miscellaneous
S13401, ESD with electrical Malfunctions and a Dropped CEA
S13402, EOP 2540, ESD with a SGTR in Different SGs
S13407L, Simulator Exercise Guide
EOP 35 E-0, Reactor Trip or Safety Injection, Revision 026-01
EOP 35 FR-H.1, Loss of Heat Sink, Revision 21
MP-26-EPI-FAP06-003, Millstone 3 Emergency Action Levels, Revision 8
MP-26-EPI-FAP06-001, Millstone 1 Emergency Action Levels, Revision 01-001
OP 2316A, Main Steam System, Revision 034
AOP 2508, Loss of 23 kV Off Site Power, Revision 001-03
AOP 2559, Fire, Revision 008-01
OP3202, Reactor Start Up, Revision 021-06
OP 3209A Attachment 2, Estimated Critical Condition Data Sheet (Computer Method), Revision 008-04
OP 3203, Plant Startup, Revision 020-04
OP 3323A, Main Turbine, Revision 015-04
S&W Drawing 12179-EM145A

Condition Reports
522262 522285 522286 522261
522888

Section 1R12: Maintenance Effectiveness

Condition Reports

490986	493419	507712	508458
509099	517387	524299	526108

Maintenance Rule Evaluations

MRE013498	MRE013502	MRE014223	MRE014577
MRE015270	MRE015271	MRE015463	MRE015471
MRE015491	MRE015492	MRE015493	MRE015494
MRE015500	MRE015509	MRE015651	MRE015691
MRE015692	MRE015693	MRE015752	MRE015838
MRE016148	MRE016219	MRE016255	MRE016507
MRE016516	MRE016607	MRE016751	

Work Orders

53102611064	53102643901

Miscellaneous

ACE19288
DC Cooling Unavailability August 2011 through July 2013
Fire Doors, Barriers, and Buildings System Health Report, 3rd Quarter 2012 and 2013
Unit 2 Chilled Water System Health Report 2nd Quarter 2013 and 4th Quarter 2011

Section 1R13: Maintenance Risk Assessments and Emergent Work Control

Procedures

MP-GARDMP-000-PI-AA-5003, Human (Hu) Performance Review Board Guidelines, Revision 000.000
SP-3646D.1-001, SBO Black Start Test, Revision 003-02
SP 3670.4-015, Quarterly SBO PM, Revision 001-06
OP-3346D-007, SBO Diesel Operating Log, Revision 007-02
SWP076C, SW System Lesson Plan, Revision 3, Change 1
OP 3330A, Reactor Plant Component Cooling Water, Revision 018-06

Condition Reports

520028	521661	521665	521675
521677	521719	521764	521775
521959	520958	526230	526309
526329	526571		

Miscellaneous

High Risk Contingency Plan for Unit 2 NSST Replacement Project
Human Performance Review Board Investigation dated July 11, 2013
M33BGS-SWGRA2
AWO53M30713912
AWO53102652545
AWO53102652545
AWO53102593383
AWO53102446741
ETE MP-2012-1199

AWO53102515750
AWO53102511751
High Risk Contingency Plan Actions, WW 1334
SFP Cooling Total Outage FEG Notes, Week 1334
MP 2702C20, Anchor Darling Bolted Bonnet Non-Slamming Swing Check Valve Overhaul, Revision 1
WM-AA-301 High risk Contingency Plan for freeze seal and repair of pinhole leak on 3SWP-750-406-3 constant vent header
AWO53102655213
AWO53102655546

Section 1R15: Operability Evaluations

Procedures
SFP 31, Fire Water System Back-up Supply Plan, Revision 004-05
SP 3630A.7, Reactor Plant Component Cooling Water System Valve Operability Test, Revision 007-08
SP 3630A.7-008, 'B' Train RPCCW Valve Stroke Time Test, Revision 000-07
MP-08-MP-GDL06, "Millstone Module Repair Process," Revision 001

Condition Reports

485173	520414	520432	520647
520638	520253	520717	520983
522566	523645	524580	524364
524595	524603	524915	525109
525322	526784	526809	526989
527043	525288	520983	

Maintenance Orders/Work Orders
53102666742
53102666359
53102661412

Miscellaneous
ACE019518, Non-Safety Related Parts installed in 7300 Circuit Cards
ETE-MP-2013-1195, Penetration Flood Seals between Cable Pit #5 in the Turbine Building and the Transformer Yard
ETE-MP-2013-1198, Use-as-is Disposition for Westinghouse 7300 Process Boards Repaired at North Anna repair Facility, approved July 17
ETE-CME-2013-1018, Code Case N-513-3 Evaluation of Structural Integrity of SW Pipe 3-SWP-750-406-3, Ref CR 522566, Revision 1
Unit 2 Standing Order SO-13-006, Revision 1
25203-34059, Sheet 1, Transformer Area 12 Underground Raceway Area Main Transformer in Position, Revision 5
CA242374 Corrective Action Plan Development, Millstone 3 UHS Temperature Surveillance and Temperature Monitoring Uncertainty
DWG 25212-26933 Sheet 4, SW, Revision 44
OD000551, Revision 0
OD000549, Revision 0
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ETE-CME-2013-1018, Revisions 1, 2, 3
ETE-CME-2013-1019, Revision 0
ETE-CME-2013-1020, Revision 0
NUCENG-08-032
Calc 09-ENG-04441M3 with Addendum 'A', MP3 IST Pump Summary of Design Flow Rates, Revision 0
Calc 97-112, Determination of SW & Control Building Temperature from use of SW Cooling for Control Building Air Handling Units, Revision 2
Calc 97-002, Minimum Required SW Flow to 3HVQ*ACUS1A/B, 3HVQ*ACUS1A/B, 2 and 3HVK*CHL1A/B, Revision 3

Section 1R18: Plant Modifications

Maintenance Orders/Work Orders
53102614778
53102618736

Miscellaneous
12-405, Millstone Unit 2 SW Inlet Temperature Indicator Accuracy, Revision 1

Section 1R19: Post-Maintenance Testing

Procedures
C MP 780A-001, Magne-Blast Circuit Breaker Data Sheet, Revision 002-02
C PT 1425I01-1, Relay Type IAC Overcurrent Data – Up to 3 Relays with Identical Settings, Revision 2
C PT 1456-001, 5 KV and 7.2 KV Magne Blast Breaker tests Data, Revision 003-03
OP 2346C-002, 'B' DG Data Sheet, Revision 002
PT 21461, MP2 Protective Relay calibration Program, Revision 006-13
SP 2613L-001, Periodic DG Slow start Operability Test, Facility 2 (Loaded Run), Revision 004-03
SP-3646D.1-001, SBO Black Start Test, Revision 003-02
SP 3670.4-015, Quarterly SBO PM, Revision 001-06
OP-3346D-007, SBO Diesel Operating Log, Revision 007-02
IC3489A30-001, Valve Response Data for Controller Calibration Target Rock Model 81AB (Fail Open), Revision 003-02
SP3622.3, TDAFW Pump IST Comprehensive Pump and Check Valve Test, Revision 004-04
SP3622.3-001, TDAFW Pump Operational Readiness and Quarterly IST Group 'B' Pump Tests, Revision 014-05
SP 3626.8, Control Building Air Conditioning Booster Pump 3SWP*P2A Pre-Service Test, Revision 006-10

Condition Reports

521661	521665	521675	521677
521719	521764	521775	523110
523111	522896	522911	522932
522937	523006	523020	523274
524759	525628	525633	526014
526017	526119	522036	522646

Maintenance Orders/Work Orders

53M30713912	53102652545	53102593383	53102446741
53102656881	53102256620	53102261975	53102664693
53M20801171	53102600853	53102600858	53102637324
53102637326	53102637328	53102637329	53102637718
53102641397			

Miscellaneous
M33BGS-SWGRA2
ETE MP-2012-1199 - replace 24 volt power supplies
Drawing 25212-26930, Feedwater System, Revision 47
Curtis Wright Solenoid Operated Control Vales General Specifications
P&ID 12179-EM-133D, SW, Revision 44
25203-30108, Sheet 14, 4160V System Relay Settings, Revision 3
MP3-13-01005, MP3 DC for SW Temperature Indicator Upgrades
LBDCR 13-MP3-010, Proposed Technical Specification Bases Change to Technical Specification 3/4.7.5 “Ultimate Heat Sink,” License Amendment Request
50.59 Evaluation S3-EV-13-0004
FSRC Summary Memo dated August 1, 2013 Subject: 50.59 Evaluation S3-EV-13-004 Revision 0

Section 1R22: Surveillance Testing

Procedures
SP-2613K-001, Periodic Slow Start Operability Test, Facility 1 (Loaded Run), Revision 004-02
SP 2613K, Periodic Slow Start Operability Test, Facility 1, Revision 005-01
C SP 605, “Millstone Reactor Power Capability Test (ICCE),” Revision 000-01

Miscellaneous
CR523848
CR524169

Section 1EP6: Drill Evaluation

Procedures
SP 3646A.1, EDG ‘A’ Operability Test, Revision 019-02
SP 3646A.1-001, EDG Operability Tests, Revision 018-06
Millstone Power Station Unit 3 Training Drill Package MAUG13TD on August 21, 2013
MP-26-EPI-FAP06-003, Unit 3 EALs, Revision 008
MP-26-EPA-REF03, Millstone Unit 3 Emergency Action Level (EAL) Technical Basis Document, Revision 017
EOP 3505, Loss of Shutdown Cooling and/or RCS Inventory, Revision 011
EOP 3505A, Loss of Spent Fuel Pool Cooling, Revision 010
OP 3310A, Residual Heat Removal System, Revision 017-06
MP-26-EPI-FAP07, Notifications and Communications, Revision 017
AOP 3561, Loss of Reactor Plant Component Cooling Water, Revision 011-02

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524947

Section 2RS5: Radiation Monitoring Instrumentation

Procedures
CCP803.26, Open EMS-Effluent Management System Operation, Revision 000-02
RPM 4.3.6, RO-2, RO-2A, and RO-20 Dose Rate Meter Calibration, Revision 005
RPM 4.3.8, Teletector Dose Survey Rate Meter Calibration, Revision 005
RPM 4.3.15, ESM Model FH40G with External Probes Calibration, Revision 002
RPM 4.3.20, MGP Telepole Calibration, Revision 000
SP3450H01, Liquid Waste Radiation Monitor Channel Calibration (3LWS-RIY70), Revision 007-06

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457738	459627	476429	479407
485673	492512	505058	506489
509630	511417	511559	513324
513862			

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Audit 12-06: Radiological Protection/Process Control Program/Chemistry, September 20, 2012

Instrument Functional Checks and Calibrations
RIT-8240, U-2 Containment High Range Radiation Monitor (RM)
Functional Test June 11, 2013, WO 53102584672
Calibrations April 14, 2011, WO53102293789
October 16, 2012, WO53102429584
RIT-8241, U-2 Containment High Range RM
Functional Test, May 29, 2011, WO 53102581211
Calibrations, April, 14 2011, WO53102293789
October 16, 2012 WO, 53102429584
RM-4262, Steam Generator Blowdown Liquid Process RM
Source check, May 29, 2013, WO53102581185
Functional Test, April 14, 2013, WO53102572198
Calibrations, December 14, 2011, WO 531022364454
July 2, 2010, WO53102252366
RM-5099, Steam Jet Air Ejector
Calibrations, March 1, 2013, WO53102377384
RM-8139, Spent Fuel Pool Area RM
Calibrations, January 13, 2011, WO53102318303
RM-7891, Containment Refuel Machine Service Platform
Calibrations, November 1, 2012, WO53102429010
RIT-9799A, Control Room Air Conditioning System Area RM
Functional Test, May 29, 2013, WO 53102584654
Calibrations, June 20, 2010, WO 53102263529
March 24, 2012, WO 53102389487
RIT-9799Bm, Control Room Air Conditioning System Area RM
Functional Test, May 29, 2013, WO 53102585314
Calibrations, November 22, 2011, WO 53102312057
April 3, 2012, WO 53102408723
RIT-4229, A/B/C Main Steam Line (MSL) RM
Calibrations, 'A' September 19, 2012, WO53102443808
'B' September 19, 2012, WO53102443808

'C' September 17, 2012, WO53102443808
'A' June 9, 2011, WO53102339502
'B' June 8, 2011, WO53102339502
'C' June 8, 2011, WO53102339502

3HVR*RIY19B, Supplemental Leak Collection and Recovery System (SLCRS)
Channel Operational Test, July 15, 2013, WO53102569703
A/B Flow Test, May 2, 20113, WO53102569703
Calibrations, August 22, 2012, WO53102445556
6/16/11 WO53102277723

3HVR*RIY19A, SLCRS High Range Monitor Calibration
Calibrations, March 1, 2012, WO 53102446989
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HRV-10A, MP3 Ventilation Stack
Channel Operational
Test, April 8, 2013, WO 53102564738
Calibrations August 16, 2012, WO53102402167
December 20, 2010, WO53102233605

Model	Serial	Calibration Date(s)
AMP-50	#0910-034	3/8/13
AMS4	#1270	8/20/12
ARGOS-4AB	#095	4/4/12, 4/3/13, 7/3/13, 7/15/13
ASP-1	#0157	5/3/13
BC-4	#126	7/26/12, 7/18/13
CM-11	#9128	10/1512
L-177	#155822	7/23/12, 7/23/13
L-2241	#229680	3/20/12, 3/8/13
L-2241-2	#275182	5/17/12, 5/3/13
PCM-1B	#1047	10/3/11, 4/8/13
PM-7	#560	7/30/12, 6/24/13
REM-500	#232	10/28/11, 10/31/12
RO-2	#0722	3/26/13
RO-2A	#0588	6/24/12, 6/5/13
RO-20	#0989U	4/17/13
SAC-4	#1123	9/2/11, 9/14/12
SAM-12	#144	9/5/11, 9/16/12
TELE	#19595	4/10/12, 4/2/13
TELEPOLE	#6610-054	5/1/13
TP-903A	#903032	5/10/12, 5/23/13
VAMP	#0805	10/4/12, 4/2/13

Section 2RS6: Radioactive Gaseous and Liquid Effluent Treatment

Procedures
CCP806.4, Ground Water Protection Program Sampling, Revision 000-00
COP200.11, Operation of a Cross Contaminated System, Revision 004-01
CP 2806x, Unit 2 Containment Atmosphere Sampling and Discharge, Revision 009-01
CSP806.1, Unmonitored Liquid Release Paths, Revision 000-03
OP3335D, Radioactive Liquid Waste System, Revision 018-07
RP-AA-502, Ground Water Protection Program, Revision 4
SP 2617A, Aerated Radioactive Liquid Waste Discharges, Revision 030-04

SP 2617C, Condensate Polishing Facility Radioactive Liquid Waste System, Revision 002-07
SP 2617D, Clean Radioactive Liquid Waste Discharges, Revision 000-02
SP 2814A, Gaseous Effluents for Iodines and Particulates from Unit 2 Vent, Revision 011-00
SP 2815, Main Station Stack Wide Range Gas Monitor Sampling for Iodine and Particulate, Revision 002-02
SP 2843, Enclosure Building Roof Vent Monthly Sampling and Analysis for Principle Gamma Emitters and Tritium, Revision 010-04
SP 2843A, Main Station Stack Gas Sampling and Counting, Revision 003-00
SP 2843B, Main Stack WRGM Tritium Sampling and Analysis, Revision 002-01
SP 2848, Waste Gas Decay Tanks Sampling and Discharge Permit Preparation, Revision 010-01
SP 2852, Unit 2 Liquid Radwaste Effluent Rad Monitor Inoperable, Revision 004-00
SP 2855C, Main Stack Wide Range Gas Monitor RM 8169 Nonfunctional, Revision 003-00
SP 2864, Liquid Waste Discharge, Revision 010-01
SP 3809A, Liquid Waste Discharge, Revision 005-03
SP 3876, Supplementary Leak Collection and Recovery System (SLCRS), Normal Vent, ESF Building Gaseous Effluent Iodine and Particulates, Revision 010-01
SP 3877, Unit 3 Quarterly Composite of Particulate Filters, Revision 004-01
SP 3880, SLCRS Vent Rad Monitor System-Inoperative, Revision 003-03
SP 3883, Normal Vent Rad Monitor System-Inoperative, Revision 009-04

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458506	481090	469060	486407
470282	503833	478202	504047
480782	511559	480789	519460

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Audit 11-11 Offsite Dose Calculation Manual, Radiological Environmental Monitoring Program and Environmental Protection Plan, January 12, 2012
RER-11-04 Radiological Environmental Review, February 21, 2012

Release Packages

L-EFF2-20120823-305-B, L-EEF3-20120813-292-B, G-EFF3-20120801-387B, G-EEF2-20120807-339-B

With RMS OOS

G-EEF3-20130424-198C, G-EEF3-20130424-200C, G-EEF3-20130425-201C
G-EEF3-20130426-202C, G-EEF3-20130428-203C, L-EEF2-20130608-297-B

Analytical Cross Checks

4th Quarter 2011, December 20, 2011
2nd Quarter 2012, July 12, 2012
4th Quarter 2012, December 20, 2012
2nd Quarter 2013, July 29, 2013

Section 4OA1: Performance Indicator Verification

Condition Reports

504236
527356

Procedures
ER-AA-SPI-1001, Implementation of the Consolidated Data Entry (CDE) Reporting for Mitigating System Performance Index (MSPI), Revision 2

Miscellaneous
Millstone Unit 2 MSPI Basis Document, Revision 3
Millstone Unit 3 MSPI Basis Document, Revision 3
System Health Report: Unit 2 EDG and Fuel Oil 2nd Quarter 2013
System Health Report: Unit 2 High Pressure Safety Injection 2nd Quarter 2013
System Health Report: Unit 2 Condensate Storage Tank and Aux FW System 2nd Quarter 2013
System Health Report: Unit 2 SW 2nd Quarter 2013
System Health Report: Unit 3 EDG and Fuel Oil 2nd Quarter 2013
System Health Report: Unit 3 High Head Safety Injection 2nd Quarter 2013
System Health Report: Unit 3 AFW and DWST 2nd Quarter 2013
System Health Report: Unit 3 Containment Recirculation Spray 2nd Quarter 2013
System Health Report: Unit 3 SW 2nd Quarter 2013

Section 4OA2: Problem Identification and Resolution

Procedures
PI-AA-2001, Trending, Revision 3
SP 3646A.1, EDG 'A' Operability Test, Revision 019-02
OP-AA-2100 Operations Crew Performance Monitoring and Key Performance Indicators Revision 0
SP 3623.1, Turbine Generator Testing (ICCE), Revision 018-19
OP 3323C, Electrohydraulic Control (EHC), Revision 011-14
OP 3323A, Main Turbine, Revision 015-04
OP 3203, Plant Startup, Revision 020-04
OP 3204, At Power Operation, Revision 019
Root Cause Evaluation, RCE001107, Revision 0
Common Cause #0002565, Weaknesses in Operator Verification Practices
Effectiveness Review, EFR000388
Effectiveness Review, EFR000366
Effectiveness Review, EFR000343

Condition Reports

400687	460214	460806	467034
519140	519397	519399	519618
498542	488587		

Drawings
25212-32001, SH5DR, Elementary Diagram 4.16kV EDG Breaker, Revision 21
25212-32001, SH8KE, Elementary Diagram 125VDC EDG 'A' Governor Control Circuit, Revision 14
25212-32001, SH5BD, Elementary Diagram 4.16kV RSST Breaker, Revision 27

Maintenance Orders/Work Orders
53102509582

Miscellaneous
Corrective Action Trend Report, 2nd Quarter 2012 and 1st Quarter 2013
Millstone – PM Indicators, May 2013
Millstone Outage and Planning Monthly KPIs, May 2013
ETE-MP-2013-1158, Unit 3 'A' Diesel Load Oscillation Data Analysis for OD000468, Revision 0
CA244809
CA244815
CA246071
CA244817
CA244803
CA244804
CA244810

Section 4OA3: Follow-up of Events and Notices of Enforcement Discretion

Condition Reports

522878	522888	522920	522922
522940	523009	523024	523031
523048	523069	523079	523890
524001	524002		

Miscellaneous
OP-AP-105, Post Trip Review, Revision 4
OP-AP-105, Attachment 3, Reactor Shutdown and Trip Report, Unit 3 on August 9, 2013
Non-Emergency Report Form 2013032
Memo from S. Scace to D. Stoddard, Subject Millstone Unit 3 Reactor Trip on August 9, 2013
Dominion 15-minute Review dated August 15, 2013
Millstone "To the Point" Announcement of Fatality on August 27, 2013

Section 4OA5: Other Activities

Drawings
1101234-C-25205-59049 Revision 1, ISFSI HSM Storage Module Pad Plans and Details
R.01 ISFSI HSM Storage Module Pad Reinforcement -1, dated February 7, 2013
R.02 ISFSI HSM Storage Module Pad Reinforcement -2, dated February 7, 2013

Procedures
MP-SPECMP-IS-CV-1208, Revision 00, ISFSI, dated June 5, 2013

Miscellaneous
Bill of Lading, Harris Rebar, B/L No. 265744-WIN, dated June 11, 2013
Certificate of Compliance, Harris Rebar, B/L No. 265744-WIN, dated June 13, 2013
Concrete Batch Ticket 7117967, Truck No. 101, July 18, 2013
Concrete Batch Ticket 7117963, Truck No. 69, July 18, 2013
Concrete Batch Ticket 7117959, Truck No. 79, July 18, 2013
Concrete Batch Ticket 7117951, Truck No. 138, July 18, 2013
Concrete Batch Ticket 7117948, Truck No. 69, July 18, 2013
Concrete Batch Ticket 7117942, Truck No. 231, July 18, 2013
Materials Testing Inc., Concrete Placement Inspection, Report No. M-1005, dated July 18, 2013
Materials Testing Inc., Compression Tests, Report No. M-108A, dated August 22, 2013
Materials Testing Inc., Compression Tests, Report No. M-110, dated August 5, 2013

LIST OF ACRONYMS

ADAMS	Agencywide Documents Access and Management System
AFW	auxiliary feedwater
ALARA	as low as reasonably achievable
AOP	abnormal operating procedure
ARERR	annual radiological effluent release report
ARM	area radiation monitor
CAM	continuous air monitor
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CR	condition reports
DC	design change
DNMS	Division of Nuclear Materials Safety
DRP	Division of Reactor Projects
DRS	Division of Reactor Safety
EDG	emergency diesel generator
ESF	emergency safety feature
ETE	engineering technical evaluation
FIN	finding
GPI	groundwater protection initiative
HELB	high energy line break
IMC	Inspection Manual Chapter
IP	Inspection Procedure
ISFSI	independent spent fuel storage installation
LER	licensee event report
NCV	non-cited violation
NIST	National Institute of Standards and Technology
NRC	Nuclear Regulatory Commission
ODCM	offsite dose calculation manual
OOS	out of service
PARS	Publicly Available Records
PI	performance indicator
PM	preventive maintenance
RBCCW	reactor building closed cooling water
RG	Regulatory Guide
RPCCW	reactor plant closed cooling water
RFO	refueling outage
RSST	reserve station service transformer
RWP	radiation work permit
SAM	small article monitors
SBO	station blackout
SDP	Significance Determination Process
SG	steam generator
SSC	structure, system, or component
SW	service water
TDAFW	turbine driven auxiliary feedwater
TS	technical specifications
UFSAR	Updated Final Safety Analysis Report
URI	unresolved item
UT	ultrasonic testing
WBC	whole body counter